

ETHIOPIAN HOSPITAL REFORM IMPLEMENTATION GUIDELINES

Volume 1, May 2010







Ethiopian Hospital Management Initiative

Federal Democratic Republic of Ethiopia Ministry of Health

Ethiopian Hospital Reform Implementation Guidelines

Volume 1

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Foreword

Ethiopia's Federal Ministry of Health (FMOH) has been leading a sector-wide reform effort aimed at significantly improving the quality and accessibility of services at all levels of the country's decentralized health system. As part of this reform, health facilities throughout the country have been streamlining their operational processes and building their capacities with a view to making their services more effective and efficient. Recognizing the importance of strengthening management capabilities, the FMOH has given priority to building the management capacities of hospitals, including through the pioneering Ethiopian Hospital Management Initiative (EHMI). Launched in 2006 in collaboration with the Clinton Foundation and Yale University (USA), EHMI has introduced a comprehensive blueprint of standards for the optimal management of hospitals and made considerable progress in establishing health management as a profession in Ethiopia. The training of hospital CEOs through a new Hospital Administration Masters degree program started at Jimma University will soon be expanded to the Addis Ababa University.

The ongoing hospital reform is reorganizing hospital services into emergency services and nonemergency care delivery and further streamlining outpatient and inpatient services. Each of these service categories are being staffed by case teams with a well-rounded skill-mix, including medical doctors, nurses, pharmacy personnel, laboratory personnel, runners and other support staff. The aim is to ensure that patients obtain the comprehensive quality health services they require, in line with the principle of 'one-stop-shopping'.

This handbook contains a common set of guidelines to help hospital managers and health providers in steering the consistent implementation of these reformed processes in hospitals throughout the country. These *Ethiopian Hospital Reform Implementation Guidelines* focus on selected management functions, including hospital governance, service quality, patient flow, medical records, pharmacy and laboratory services, infection prevention, nursing care, human resources, facility and equipment management, finance management, as well as monitoring and reporting. The Guidelines also incorporate recent lessons from the operationalization of the hospital management blueprint, as well as the core principles of the system-wide 'business process re-engineering' conducted as part of the health sector reform. While primarily intended as a reference for hospital personnel, it is hoped that managers and practitioners across all levels of the national health system will also find this handbook useful. It is also expected that the guidelines will continuously evolve as new evidence emerges regarding improved management practices and procedures better-tailored to the particular needs and circumstances of different facilities.

I would like to take this opportunity to express our profound appreciation to all partners that have participated in the production of this important handbook. Special thanks go to our colleagues at the Clinton Foundation for their substantial contributions and support throughout the development of these guidelines as well as their dedicated efforts in support of our health reform efforts in so many other capacities.

Hon. Minister Tedros Adhanom Ghebreyesus (PhD) Minister of Health, Federal Democratic Republic of Ethiopia

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Abbreviations

BOFED	Bureau of Finance and Economic Development
CEO	Chief Executive Officer
FMOH	Federal Ministry of Health
HSDP	Health Sector Development Programme
MOFED	Ministry of Finance and Economic Development
RHB	Regional Health Bureau
SMT	Senior Management Team

Section 1 Introduction

Hospital leadership and governance arrangements are essential to ensure effective and efficient hospital services that contribute to the health and wellbeing of the population served. Hospital leaders require a unique set of skills to both manage their organization and to liaise with external agencies and the local community. Hospital leaders must be able to lead their organizations through change, identifying and solving any challenges that arise.

The Federal Government of Ethiopia through the Health Care Financing Strategy has established the legislative framework for enhanced hospital autonomy with authority decentralized to hospitals in areas such as strategy, planning and budget development. To achieve this, hospitals should be governed by a Governing Board that is responsible to appoint the CEO who in turn leads on all hospital operations and functions.

Governance can be defined as "the system by which an organization directs, controls and monitors its functions and its interactions with stakeholders"¹.

Effective hospital governance requires:

- Clear national standards for services and treatments,
- Clear objectives for hospital services, articulated through strategic and annual plans,
- Local delivery of high quality healthcare, and
- Effective monitoring of progress.

This chapter describes structures and mechanisms through which the above functions can be achieved.

Section 2 Operational Standards for Hospital Leadership and Governance

- 1. The Hospital Governing Board is developed using clear and transparent systems and processes and includes a representative sample of community members.
- 2. An assigned Board Chairperson leads and manages Board activities.
- 3. The Board selects the Chief Executive Officer (CEO), who leads on all Hospital operations and functions.
- 4. The Board approves an annual strategic plan for the Hospital to achieve its goal of improving its community's health and welfare.
- 5. The Board has open communication via effective and regular meetings and written minutes of meetings, which are reviewed and approved by vote of the Board members.
- 6. The CEO is evaluated annually, consistent with FMOH or Regional Legislation to ensure he/she is meeting operational and strategic plans as established by the Board and the CEO collectively.

¹ Clinical Governance and Risk Management: Achieving safe, effective, patient-focused care and services. NHS Quality Improvement Scotland, October 2005.

Section 3 Implementation Guidance

3.1 Practical tools of leadership and management

Common tools for effective management include problem solving and change management. Although there are many approaches to both problem solving and change management, some common elements are apparent. These can be summarized in the '8 steps of Scientific Method of Problem Solving' which is described below.

Step 1	Define the problem,
Step 2	Set the overall objective,
Step 3	Conduct a root cause analysis,
Step 4	Generate alternative interventions,
Step 5	Perform comparative analyses of alternatives,
Step 6	Select the best intervention and address its limitations,
Step 7	Develop an implementation plan and implement, and
Step 8	Develop an evaluation plan and evaluate.

To successfully move from one step to the next, leaders can rely on a number of useful management tools including:

- Root cause analysis, including fishbone diagramming, flow charting, and histograms,
- Options appraisal using evaluative criteria, and
- Gantt chart.

Each step, together with the associated management tools, is described in detail below.

Step 1: Define the problem

As leaders we are often very familiar with the challenges and problems that face our organizations. The first step to solving a problem is to define the problem (the 'problem statement') in a way that allows us to find solutions. Defining the problem requires substantial analysis of the current situation and how it differs from the desired situation. The defined problem reflects the priority of the organization in a particular area and sets the path for management interventions to address the selected problem. Therefore, the problem statement should be defined after careful consideration.

To devise a good problem statement the following should be considered:

- 1. *Focus on a single problem:* The challenges that many leaders face are complex, but it is important to identify one single problem to work on, rather than getting lost in a tangle of multiple problems.
- 2. *Address problems that are feasibly solved:* Selecting a problem that is impossible to solve will result in frustration and no clear progress.
- 3. *Keep it short:* Simply state, "The problem is..." Long, complex problem statements can be confusing and may result in a lack of a shared understanding of the problem.

- 4. *Find statements that are shared widely by key constituents:* In order to gain support for your solutions, key players must all believe that this problem exists and is important.
- 5. *Do NOT include solutions themselves*: This first step simply states the problem. Subsequent steps focus on identifying solutions. Good leaders often may have a solution in mind, but a clear strategy starts with the problem, and next focuses on generating multiple solutions.

Figure 1 below shows some common mistakes in defining the problem and gives suggestions for improvement.

Weak Problem Statement	Suggestions for Improvement	Strong Problem Statement
"We need more regular	Focus on a problem, rather than the	Stock-outs of essential drugs are
delivery of supplies."	solution. In this case, why is a more	common in our pharmacy.
	regular delivery important?	
"Due to understaffing,	Focus on the problem, rather than the	Nurses feel overworked.
nurses are overworked."	causes of the problem when defining	
	the problem statement.	
"Our budgets are too small	Focus on a single problem.	There is not sufficient revenue to
and we run out of		cover costs.
pharmaceuticals in the		
middle of the year and no		
one pays their bills, and		
our medical director is		
leaving soon, along with 4		
doctors."		

Figure 1	Common	Mistakes	and	Suggestions	for	Problem	Statements
riguit	Common	winstances	anu	Suggestions	101	I I UDICIII	Statements

Step 2: Set the overall objective

The overall objective should be phrased to address or solve the problem. The objective identifies where the organization wants to be regarding the specific problem. In this sense, the defining of the problem (i.e., reflecting the current state) and the setting of the objective (i.e., the desired state) is a central part of strategic management. The objective is the goal that your team will focus all of its efforts toward achieving, so it is important that it is clearly defined. Good overall objectives *address the problem you have defined in the problem statement and have measurable targets*.

Figure 2Relating the Problem Statement, Objective and Target

Relating the problem statement, objective and target			
Problem Statement	Stock-outs are common		
Overall Objective	Reduce the frequency of stock-outs by 50%		
	in the next quarter		
Measurable Target	Number of stock-outs per quarter		

Step 3: Conduct a Root Cause Analysis

Your overall objective has been defined, but how can you best reach your goal? A root cause analysis will help identify the factors that cause the problem. Like peeling away the layers of an onion, finding the root cause requires careful analysis of multiple layers. Several management tools can help leaders find the root causes of the problem, including:

- 1) Fishbone diagram,
- 2) Flow charting, and
- 3) Histograms.

<u>Fishbone Diagram</u>

A fishbone diagram helps leaders identify multiple causes of a single problem. The diagram takes its name from its shape, which resembles the skeleton of a fish as shown in Figure 3.



Figure 3 Sample Fishbone Diagram

As shown in the diagram, the problem statement is placed at the "head" of the fish. Causes of this problem are grouped into 4 categories:

- 1) People: Are staff behaviours or characteristics contributing to the problem?
- 2) Process/policy: What procedures or policies contribute to the problem?
- 3) Equipment: Is there any equipment, including supplies, that contribute to the problem?
- 4) *Environment:* Does the immediate environment (i.e., the building or compound), or the broader environment (i.e., the community, town, or nation) contribute to the problem?

As you identify factors that contribute to the problem, place them on the appropriate "fishbone." For each factor that you identify, ask, "What leads to that factor?" For example, in the diagram above, the laundry machines were identified as an important factor in the lack of sanitation. This is an equipment issue, and "Laundry Machines Broken" was placed on the equipment fishbone. The laundry machines

were broken because of 2 factors: lack of parts and a budget shortfall. Both of these were added to the diagram.

Fishbone diagramming is useful for a number of reasons:

- 1) *Allows for open session:* Involves everyone in an open session. Using a chalkboard or other display to brainstorm allows everyone to contribute their ideas, no matter how big or small.
- 2) *Ideas are generated quickly:* Generates an abundance of diverse ideas quickly. Because there are many bones, there is room for many ideas.
- 3) *Group understanding develops:* Helps group members understand and appreciate others' perspectives. Some participants will be more focused on the environmental factors while others will focus on factors related to people. The diagram makes room for all of these perspectives.
- 4) *Alternative approaches emerge:* Helps generate alternative approaches. Identifying multiple factors will lead to multiple possible solutions.

One drawback to the fishbone diagram is that this tool cannot display the importance or commonality of a particular issue. To address this weakness, managers may wish to use a problem ranking matrix.

Ranking Matrix of Root Causes

A Ranking Matrix helps determine which causes are the most important to address given limited resources. A sample *Problem Ranking Matrix* is presented in Figure 4.

Figure 4Problem Ranking Matrix



In this figure, there are 2 sets of rankings used to determine the importance of a factor: risk and costbenefit.

Risk: Risk (indicated by the blue text) is a measure of how much the factor affects the problem. Risk is a function of frequency (on the x-axis) and severity (on the y-axis). Consider the example of the broken laundry machines. A breakdown occurs only occasionally (frequency), but has a critical impact on the sanitation of the hospital (severity), resulting in a score of 4.

Cost-benefit: Cost-Benefit (indicated by black text) is a measure of how difficult or costly it is to fix the problem (on the y-axis), as compared to the level of benefit or improvement that is expected (on the x-axis). Repairing the broken washing machines is relatively easy to do (cost) and will result in great benefit, resulting in a score of 4.

Therefore the total score for repairing broken laundry machines is 8(4+4).

Flow Charting

Sometimes managers find it necessary to identify problems within larger processes or systems. The flow chart is a diagram that puts the process into pictures so that problems can be "seen."

Flow charts are useful because they:

- 1) Describe complex processes in manageable steps that can be improved,
- 2) Illustrate breakdowns in the process, including parallel processes, extra steps, or incomplete feedback loops (an incomplete feedback loop is when the communication loop is not "closed," i.e., the conversation ends without a clear assignment of action steps for specific people to accomplish in a specific time period),
- 3) Show how one's own actions influence "downstream" events,
- 4) Foster a team that "owns" the whole process, not simply individuals focused only on fragments, and
- 5) Help generate alternative approaches.

While a flow chart is useful for identifying breakdowns in the process, this tool does not tell **how often** breakdowns occur.

Figure 5 indicates a sample flow chart for medication ordering. Notice that the start and end points are indicated by circles, and each step in the process is shown in a rectangle. If there is a decision point, or question, that must be asked along the way, this is indicated by a diamond shape.



<u>Histogram</u>

A histogram is a useful tool for quantifying the frequency of common causes of the problem. By quantifying the frequency, managers can focus on the biggest issues first. The histogram below shows reasons that in-patients do not receive required drugs:





Histogram analysis provides a useful representation of data that allows managers to prioritize. This analysis also helps generate alternative approaches and provides a tool for showing progress. One

drawback is that this analysis shows the frequency of the problem without indicating possible solutions.

Step 4: Generate alternative interventions

To the point above, the problem solving process has focused on identifying all of the factors that contribute to a problem, including the root causes, or underlying factors. After identification of the problem's cause(s), the next step is to start generating solutions. By generating multiple alternatives for solving the problem, the chances of reaching a solution are increased. Effective leaders are creative in developing these alternatives.

Good alternatives are:

- Clearly described,
- Comprehensive, but not too many (try to identify 2 to 4 solutions),
- Feasible to implement, and
- Mutually exclusive, so you can compare and choose one of the options:
 - Do A and do not do B,
 - Do B and do not do A, or
 - $\circ \quad \text{Do both A and B}$

Step 5: Perform comparative analysis of alternatives

When a few alternative interventions have been generated, the most promising intervention must be identified. Comparing these alternatives can be challenging, as some members of the group may prefer one alternative, while other members may champion a different alternative. An Options Appraisal allows for a side-by-side comparison of the strategic alternatives using evaluative criteria to select the best option. Consider the following options for addressing low productivity:

Problem Productivity is inadequate						
Option 1	Increase staffing					
Option 2	Increase pay among existing staff					
Option 3	Increase supervision of existing staff					

In order to compare these 3 options, the group must agree on a set of evaluative criteria. Evaluative criteria are factors that are important to the group and the organization. For example, they may include effect of the problem, expense, political feasibility, or time to implement. The Options Appraisal can be qualitative or quantitative as shown in Figure 7.

Figure 7Sample Options Appraisals

Qualitative	Ontions A	Innraisal
Quantative	Opiions A	ippraisai

	Impact on Productivity	Annual Expense	Political Feasibility	Time Required			
1: Increase Staff	Good	High	Low	3 Months			
2: Increase Pay	Unclear	High	Very Low	1 Year			
3: Improve Supervision	Good	Low	High	1 Month			

Quantitative Options Appraisal

	Impact on Productivity	Annual Expense	Political Feasibility	Time Required	Total Score			
1: Increase Staff	5	1	2	4	12			
2: Increase Pay	3	1	1	1	6			
3: Improve Supervision	4	4	4	4	16			

Note: Each option ranked on a score of 1-5 with 5 being the best, or strongest, option. In this case, if each evaluative criteria is weighted equally, improve supervision is the best option with a total score of 16.

Estimating the values within the matrix is not a perfect science. A sensitivity analysis allows managers to determine whether the final decision, or best option, would change if some of the estimates inside the matrix were changed, or if the estimates were slightly wrong. In other words, how much can each estimate change without changing the selection of the best strategy?

Often, managers only estimate the impact of interventions and not the other factors. An options appraisal and the sensitivity analysis allows managers to think through whether being slightly "wrong" would change the choice of the best option.

Step 6: Select the best intervention

Based on the results of the competitive analysis, select the best intervention.

Step 7: Develop implementation plan and implement

Once you have selected the best intervention, the Implementation Plan is the strategy that you will use to turn your ideas into reality.

- 1) *Identify specific tasks:* Identify tasks to be completed to meet specific objectives, including who is responsible for each step, what resources are needed, and conditions necessary for success.
- 2) *Develop timeline using a Gantt chart:* The Gantt Chart is a tool for defining the tasks, timeline and persons responsible for accomplishing the project objectives. When developing the Gantt chart, key persons responsible should be involved in the process of defining the target dates and their role(s) for each task. This step will ensure their support and commitment. The Gantt chart should be reviewed on a regular basis (e.g., weekly, monthly, and quarterly) and adjusted and revised to reflect changes in the environment to ensure progress towards objectives (see Figure 8).

Figure 8Sample Gantt Chart

Task	Description	Person Responsible	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Development of Methodology																			
1.1	Workshop on user needs																			
1.2	Draft of methodology																			
1.3	Evaluation of methodology																			
2	Specifications of Integrated System									_										
2.1	Inventory of resources in selected regions																			
2.2	Review of existing facilities																			
2.3	Specify technical developments																			
2.4	Impact analysis of different scenarios																			
2.5	Prepare detailed business plans																			
3	Feasibility studies for each region																			
3.1	Review existing practices																			
3.2	Review technologies																			
3.3	Sensitivity analysis of scenarios																			
3.4	Report on most suitable options																			
4	Project Management and Coordination																			
4.1	Dissemination of information: Workshops																			

Step 8: Monitor process and outcomes

Part of problem solving is monitoring your impact or success.

Box A Monitoring and Evaluation

Monitoring is the systematic and continuous collection of information over time to measure progress or change of an activity or objective, using pre-defined indicators of progress and/or impact of an intervention.

Evaluation is the process by which one determines if the program achieved its overall and specific objectives; it usually is an assessment at one point in time to determine the impact of the project.

A monitoring plan provides a set of indicators that will be monitored regularly to show the impact of the management interventions. Indicators should be selected that reflect both processes and outcomes. Process indicators measure interim impacts, such as the number of staff trained or the percent of drugs properly unpacked and put away properly. Outcome indicators measure the ultimate objectives such as patient waiting time or stock outs or patient satisfaction. A good evaluation system has both types of indicators. In addition, the system should identify how each indicator will be measured, and ideally, what the target is for performance (i.e., waiting time will be less than one hour for 90 percent of patients; satisfaction scores will increase by 25%, etc.). See *Chapter 13 Monitoring and Reporting* for further guidance.

The management team can use information generated from monitoring and evaluation to assess if interventions are working as expected and identify where further work is needed to improve performance in desired areas.

3.2 Governing Board

A well functioning Governing Board, that includes representatives from the hospital's community, can have a significant impact on the quality and efficiency of the hospital and its daily performance.

The establishment of a Governing Board builds in two essential characteristics of good hospitals:

- Autonomy to do what is necessary to provide good care, and
- Accountability to those served for the results of that care.

Governing Boards must be committed to creating and maintaining a strong bond between the hospital and the community it serves and to maintaining a good working relationship with higher authorities such as Woreda, Zonal, Regional and Federal Health Finance and other relevant Government Offices.

The following sections set out the basic principles related to the establishment, responsibilities and operating mechanisms of Governing Boards. More detailed information on the specific powers and duties of Governing Boards within each region are described in the Health Service Delivery and Administration Proclamations, Regulations and Directives of each Region.

3.2.1 Responsibilities of the Governing Board

Specific responsibilities of the Governing Board include:

A) Determine the organization's mission, vision and values

It is the Governing Board's responsibility to create and regularly review a statement of mission and vision that articulates the organization's goals and values.

A <u>Mission</u> statement can be defined as 'purpose, reason for being' or simply 'who we are and what we do'.

A Vision statement can be defined as 'an image of the future we seek to create'.

Sample Hospital Vision and Mission and Value Statements are given in Appendix A.

All strategies, plans and policies of the Hospital should be in accordance with the mission, vision and values set by the Governing Board.

B) Establish corporate policies

The Governing Board should ensure that corporate policies (such as policies for staff recruitment and retention, for income generation and expenditure, for quality assurance etc) are available to govern the operations of the facility.

C) Ensure effective organizational planning

Governing Boards must actively participate in an overall organizational planning process. This includes examining and approving the strategic and annual plans of the hospital, and ensuring that such plans are in accordance with the mission, vision and values of the hospital and are aligned with local, regional and national health sector priorities and targets.

D) Direct and supervise the overall activities of the hospital

Governing Boards must monitor progress towards the goals and targets of the strategic and annual plans. If the hospital is not on track to meet its stated plans the Governing Board must identify the reasons why and should assist the CEO and hospital management team to identify and implement solutions.

Further guidance on the role of the Governing Board to monitor hospital performance, including a sample monitoring tool and indicators (the Balanced Scorecard) is presented in *Chapter 13 Monitoring and Reporting*.

E) Provide proper financial oversight

The Governing Board must review and approve the hospital's annual budget, and implement proper financial controls to follow up on its utilization and ensure that the hospital operates within its budget. This includes implementation of revenue retention and utilization as per the Federal or Regional financial rules and regulations. Additional responsibilities include ensuring that internal and external financial audits are carried out as required by legislation. The Governing Board should regularly review audit reports and ensure that action is taken on any recommendations made.

F) Ensure adequate resources

The Governing Board must identify what constitutes adequate resources for the organization and ensure the effective means to access these resources. Where necessary, the Board and staff must devise strategies and the means to improve revenues. Such mechanisms could include fee revision, outsourcing of activities or the establishment of private wings in accordance with the Regional financial rules and regulations.

G) Oversee fee waiver and exemption systems

Governing Boards must ensure the provision of health services to fee waived patients without discrimination, and must ensure the provision of exempted services as described in the Regional financial rules and regulations. Boards must ensure the reimbursement of fee waiver expenses from the appropriate Fee Waiver Certificate issuing authorities.

H) Oversee quality management activities

The Governing Board must ensure that hospital services are provided to the highest possible standard. The Board should ensure that systems are in place for monitoring and evaluating the quality and outcome of patient care, customer services and use of resources. The Board should ensure there are appropriate mechanisms and activities to minimize risk, to identify and correct problems, and to identify opportunities to improve patient care and services.

I) Select the Chief Executive Officer (General Manager)

Governing Boards must ensure that the most qualified individual is appointed to the position of Chief Executive Officer (CEO), following the processes set out in Federal or Regional Directives. The CEO should be qualified by education and experience appropriate to the position. The authority and duties of the CEO must be defined and documented by the Governing Board or appointing authority.

J) Support, monitor, and assess the performance of the CEO

The Governing Board should ensure that the performance of the CEO is assessed at least annually by the Board or appointing authority. Should the CEO fail to meet the expectations of the Governing Board, his/her employment should be terminated, following the processes described by Federal or Regional Directives.

K) Provide orientation for new Board members and ensure ongoing education for existing members

All Governing Boards should participate in ongoing education to assist members to carry out their role in the hospital. For newly appointed board members, there should be a planned orientation program that ensures members understand their responsibilities. Appendix B presents areas that should be included in a training/orientation programme for Governing Board members.

L) Review effectiveness of its own performance

The Governing Board should periodically and comprehensively evaluate its own performance, taking into consideration areas such as:

- Regularity of and attendance at Board meetings,
- Board vacancy rate (% of Board positions that have been filled),
- Knowledge, skills and awareness of Board members on hospital operations, finance, on key issues affecting the hospital and any national, regional and local health priorities,
- Approval of the strategic and annual plans by set deadline,
- The relationship between the governing board, CEO and hospital Senior Management Team,
- The relationship between the hospital and communities served by the hospital, and
- Engagement with the wider health economy such as woreda, zonal and regional health departments and any local health partnerships.

A self assessment checklist for a Governing Board is presented in Appendix C.

M) Ensure legal and ethical integrity and maintain accountability

The Governing Board is responsible for ensuring adherence to legal standards and ethical norms. It ensures that activities of the hospital are carried out with transparency and accountability and that all required reports are submitted to higher authorities (e.g. RHB, BOFED, FMOH, and MOFED) in accordance with government requirements.

N) Ensure community involvement in hospital service planning and delivery

The Governing Board should ensure that mechanisms are established to enhance the involvement of patients and the public in the planning and delivery of hospital services and to maintain close consultation with community leadership.

O) Enhance the organization's public standing

The Governing Board should clearly articulate the hospital's mission, vision, values accomplishments and goals to the public and garner support from the community.

3.2.2 Membership of the Governing Board

A strong governing board is comprised of members who:

- act on behalf of the community as a whole;
- are interested and committed to serve as a board member;
- have a variety of expertise as a collective whole, including finance, administration, public health, government bureaucracy, legal and marketing;
- maintain high ethical principles, integrity and competence;
- deliver results while using resources wisely;
- give management the full authority to run the hospital and do not "micro-manage" the hospital leaders;
- commit the time required for meetings, dialogue, etc;
- subscribe to the principles of accountability for themselves and others;
- prioritize the benefits of the hospital rather than personal benefits;
- are participatory in planning, decision-making, and activities; and
- declare any conflicts of interest and excuse themselves from any decisions that have immediate benefit for themselves, their families or their business interests.

A) Appointment of Board Members

Rules and procedures for the appointment of Governing Board members are described within Federal and Regional Proclamations, Regulations and Directives. In general, Specialized, General and District Hospital Board members are nominated by Zonal or Urban Administrations and appointed by the respective RHB, or by the FMOH for Federal hospitals. Boards are comprised of between 5 to 7 members, or as specified in Federal and Regional Directives.

Governing Board members should be residents of the area where the hospital is established. Additional factors to be taken into consideration when appointing board members include:

- Due consideration to gender and professional mix,
- Community representation, and
- Professional efficiency, time and experience that will enable the Board member to contribute to the improvement of the health sector.

B) Tenure of Board membership

The tenure of service of Board members should be between 3-5 years, and Board members may serve a maximum of two terms, as determined by Federal and Regional Directives.

C) Revocation of Board membership

The membership of any Board member should be revoked when:

a) The Board member has no interest to continue membership. In such circumstances the Board member should give one to two months advance notice (as determined by Federal and Regional Directives) in writing to the Board Chairperson and RHB Head or Minister of Health;

- b) The Board member changes residence address or leaves the office he/she represented;
- c) In the case of people's or employees' representative if the Board member loses the faith of his/her constituency and a request is made by the constituency to replace him/her; or
- d) The Board member has failed to fulfil the duties of his/her membership. This includes considerations such as:
 - i. Repeated absence from Board meetings without sufficient reason
 - ii. Proven corruption such as earning benefits in the health facility other than the legally permitted benefits or other corrupt practice
 - iii. Repeated failure to follow up on actions agreed by the Board
 - iv. Breach of confidentiality

In such cases, the Board should reach consensus that membership should be revoked and should make this recommendation to the RHB Head or Minister for Health who will reach a final decision on the matter.

If a Board member leaves office during his/her period of tenure the remaining Board members should select one or more possible replacements and nominate the candidate(s) to the RHB or FMOH to make the final appointment.

D) Duties and responsibilities of Board members

Board members have a duty to:

- a) Attend ordinary and extraordinary meetings, respecting the time;
- b) Accept and implement a decision passed by the majority;
- c) Prepare for each meeting by reading agendas, minutes of the previous meeting and other documents distributed for consideration;
- d) Follow up on any actions agreed by the Board in a timely manner; and
- e) Maintain confidentiality on all matters discussed by the Board.

E) Board accountability

Board members have individual and joint responsibility for the decisions they pass and are responsible individually and jointly for any damage caused to the hospital due to their failure to accomplish the duty entrusted to them. In the event a Board member solely opposes a decision or an agenda for discussion, he/she may explain the reason for his/her unique opposition and make it noted on the minutes. He/she shall not be responsible for any damage occurred due to this decision or agenda item.

Governing Boards are accountable to their respective RHB or the FMOH and should meet all expectations that the RHB or FMOH places on the Board.

F) Allowance for Board members

Reimbursement of expenses for Board members and allowances for Board duties should be provided as established by Federal and Regional Directives.

3.2.3 Officers of the Governing Board

The Governing Board should appoint three to five Officers, who form the Executive Committee of the Board.

Officers of the Board include:

- a) The Chairperson
- b) The Vice-Chairperson
- c) The Secretary

Additional Officers, such as immediate past Chairperson may be appointed as necessary.

3.2.3.1 Roles of the Chairperson of a Governing Board

The Governing Board should be led by a Chairperson, who is appointed by the RHB or FMOH from among the Board members.

The main responsibilities of the Chairperson are to:

A) Preside over the Board

The Chairperson should chair Board meetings and direct the overall functioning of the Board. The Chairperson should take the lead in clarifying the goals of the Governing Board. This helps to build a cohesive group and clarify expectations, while focusing the Governing Board's attention to the connection between its own performance and the success of the hospital.

B) Convene and facilitate board meetings and set meeting agendas

The Chairperson should ensure that regular Board meetings take place in compliance with the periods prescribed in Federal or Regional Directives and should convene extraordinary meetings in compliance with these Directives. The Chairperson must ensure that meetings are conducted in a professional manner and are constructive for both the hospital and the individual Governing Board members. The Chairperson therefore must oversee the development of a well-thought out agenda and supporting materials. The agenda should be a collaborative effort with the CEO. The Chairperson should expect members to arrive at meetings fully prepared to participate in Governing Board meetings. It is important that the Chairperson knows how to clarify, summarize and move Governing Board members to a decision, as well as set aside some time at the end of the meeting for feedback on how the meeting went.

C) Manage Governing Board structure

The Chairperson should create, in collaboration with the CEO, a structure that supports the mission and work of the Governing Board. Where appropriate he/she should establish standing committees to undertake specific functions of the Board. The Chairperson should ensure that any such committees are working as they should.

In addition to the above, an effective Chairperson will:

1. Understand the organization

The Chairperson must have an expert understanding of the hospital's history, mission, current role, finances, programs and services, and staff. He/she must also be knowledgeable of any external forces that affect the hospital's inner workings, making certain to execute any health policies as required by the appropriate government body.

2. Know his/her own responsibilities and authority as Chairperson

By understanding his/her own responsibilities, the Chairperson serves as a model for other Governing Board members to follow. The Chairperson's real authority and influence rests in how he/she develops and manages relationships with the rest of the Governing Board and staff.

3. Create a safe environment for decision making

The Chairperson should take the lead in establishing the tone for shared decision making by inviting participation, encouraging varying points of view and promoting an open and honest exchange of ideas about issues.

4. Build a working culture

The Chairperson should encourage a participatory working culture that focuses on collective responsibility and accomplishment.

5. Cultivate future leadership

It is essential that the Chairperson is capable of cultivating and nurturing Governing Board members who have expertise and personal qualities that the hospital needs. He/she must be able to prepare Governing Board members for future leadership, which requires encouraging periodic self-assessment in order to highlight Governing Board members' strengths and leadership possibilities.

6. Communicate with the Governing Board through an effective information system

Providing information about hospital operations is an essential responsibility of the Governing Board Chairperson and CEO. Materials for Governing Board and committee meetings should be distributed in advance of the meeting to allow time for review by members. Establishing a reliable system to distribute information at other times is also important, for regular, interim updates and in the event of unexpected matters that demand Governing Board attention.

7. Maintain a productive relationship with the CEO and the appropriate government body

Maintaining productive relationships with both the CEO of the hospital, plus the appropriate government body, are extremely important. It requires clarity of roles, trust, honesty and frequent communication.

3.2.3.2 Roles of the Vice Chairperson of the Governing Board

The Vice Chairperson is appointed from among Board members and acts on behalf of the Chairperson in the Chairperson's absence.

3.2.3.3 Roles of the Secretary of the Governing Board

The Secretary of the Governing Board is appointed from among Board members. This position could be filled by the hospital CEO. The Secretary is responsible for taking minutes of Board meetings. Minutes should be reviewed and approved by the Chairperson before distribution to Board members.

3.2.4 **Procedures of Board meetings**

The main purpose of Board meetings is to ensure effective governance of the hospital. This includes developing, debating and approving strategic and annual plans, monitoring implementation, discussing and approving corporate policies and addressing any legal and ethical issues that arise. Board meetings

are also an opportunity to provide structured education sessions for Board members on emerging issues concerning the hospital and/or the community it serves.

(NB: General guidance/etiquette to ensure that any type of committee or meetings function effectively are presented in Appendix D.)

A) Frequency of Board meetings

It is recommended that during the first year of establishment the Governing Board meets once every month to become familiar with its own responsibilities, with the hospital and the health sector in general. Thereafter the Board should develop a schedule whereby the Board meets no less than the frequency set out in Federal or Regional Directives. Extra-ordinary meetings may be convened should a matter of particular importance arise. Such meetings will be convened upon the decision of the Chairperson, or if called for by a minimum of one-third of Board members.

B) Agenda items

The agenda should be set jointly by the Board Chairperson and Hospital CEO. All Board members should be invited to nominate agenda items for consideration by the Chairperson and CEO. The agenda and any documents for discussion at the meeting should be distributed to Board members at least one week in advance of the meeting.

The following should be regular standing items on each and every agenda of the Board:

- a) Approval of previous meeting minutes;
- b) Committee reports;
- c) CEO's report providing an overview of hospital operations, discussion of pressing issues and immediate concerns;
- d) Old business issues unresolved from last meeting;
- e) New business any issues Governing Board members want to raise; and
- f) Next steps plans for taking action on decisions reached by the Board, with the assignment of follow up responsibilities to individuals as appropriate.

C) Decision making

Decisions by the Board should be made by majority vote. In the case of a tie the Chairperson has the deciding vote. Voting may only take place when a full quorum of Board members is present. A vote passed by less than a full quorum is invalid. The criteria for a full quorum vary from Region to Region (from 50% + 1 of Board members to $2/3^{rd}$ of Board members) and are described in Federal and Regional Directives. The CEO is an ex officio Board member and hence has no vote on the Governing Board.

3.2.5 Governing Board standing committees

The Governing Board should assign standing committees to carry out specific functions of the Board and report on their activities to the full Board. As a minimum the following standing committees should be established:

- a) Executive committee
- b) Finance committee
- c) Audit committee

Other standing committees may be established on a temporary or permanent basis as the need arises (for example a CEO selection committee, strategic planning committee, quality assurance committee or a committee to address an emerging clinical matter).

When selecting members for each committee the following principles should be followed:

- a) Committee members should be selected from the current Board members
- b) Selection should be transparent and fair, without favouritism of any kind
- c) The Governing Board Chairperson should be a member of all committees
- d) Each committee should have its own chairperson who will preside over the actions of the committee
- e) Hospital staff, representatives of appropriate external bodies (e.g. MOFED or Woreda Health Office) or prominent members of the community with an active interest in the hospital and appropriate professional expertise (e.g. an accountant for the Finance committee) may be appointed as non-voting members to support the functions of the committee

A) Executive Committee

The Executive Committee should be chaired by the Governing Board Chairperson and should be comprised of Officers of the Board and all key Governing Board committee chairpersons. The Committee acts on behalf of the full Governing Board in their absence and is responsible for reporting to the full Governing Board on such actions.

B) Finance Committee

The Finance Committee oversees the hospital's financial planning and ongoing financial operations to ensure the viability of the hospital. This includes monitoring that adequate funds are available for the organization's financial plan, safeguarding hospital assets, and ensuring that the hospital has adequate fiscal policies. Moreover, the Finance Committee must anticipate financial problems by reviewing hospital financial information provided at regular intervals. The Finance Committee should be comprised of selected Governing Board members, the hospital Finance Head and possibly representatives from the Regional or Woreda Bureaus of Finance and Economic Development and business leaders from the local community. Other than those individuals who are members of the hospital Governing Board, all finance committee members have no voting rights.

C) Audit Committee

The Audit Committee should make sure that all required financial audits are conducted and that reports are presented to appropriate bodies. The committee should be chaired by the Treasurer of the Governing Board and comprised of selected Governing Board members, the hospital internal auditor, the Finance Head and possibly representatives from the Regional or Woreda Bureaus of Finance and Economic Development or a respected local accountant with knowledge of bookkeeping and auditing. Other than those individuals who are members of the hospital Governing Board, all audit committee members have no voting rights.

Box B The Seven Deadly Sins of Poor Hospital Governance

- 1. Lack of mission, vision, strategies and community participation/involvement.
- 2. Resisting change and failure to make strategic investments
- 3. Making do with irrelevant, useless information
- 4. Lack of hospital board and management alignment
- 5. Hiring unqualified or ineffective leaders
- 6. Failure to spend meeting time on strategic priorities
- 7. Inability to understand or relate to staff

3.3 Chief Executive Officer

3.3.1 Selection and Appointment of the CEO

Each hospital should be managed by a CEO (General Manager) who is appointed by the Governing Board or appointing authority following the processes set out in Federal or Regional Directives.

A qualified CEO should have a diverse set of leadership and management skills, as well as considerable healthcare/hospital experience as either a clinician or management professional. He/she must be capable of working with diverse groups, such as the Governing Board, various community groups, government officials and hospital staff, patients and families. He/she should be able to think strategically to provide vision and direction to the hospital with special attention to professional development. An individual with an entrepreneurial spirit and who is fiscally responsible will be valuable to the organization. He/she should be a results oriented leader with an eye for understanding how to improve patient quality of care.

3.3.2 Roles and responsibilities of CEO

The CEO is the highest ranking management officer in the hospital and as such, directs and administers the activities of the Hospital in accordance with instructions and plans developed by the Governing Board. The CEO must ensure that decisions of the Governing Board are implemented effectively and efficiently throughout the hospital and must ensure the efficient planning and utilization of all hospital resources in order to achieve the organization's goals. This entails the management of human resources, supplies, revenues, and physical and capital assets based on detailed plans developed for all aspects of the hospital's operations (see Box C).

Box C Summary of the Role of a Hospital CEO

The Chief Executive provides executive leadership to the Hospital and has corporate responsibility for setting the strategic direction, formulating policies, monitoring performance and contributing to the decision making process with fellow Board Members to ensure the future stability and success of the Hospital, whilst providing the best possible care within available resources.

CEO responsibilities should be described in a Job Description that clarifies the expectations of performance and boundaries of his/her responsibilities. Areas of responsibility include:

A) Governing Board development, communication and relationships

The CEO should work closely with the Governing Board to ensure that they, and any Standing Committees, are assisted and provided with relevant information to enable them to perform their functions effectively and efficiently. The CEO is an ex officio, non-voting member of the Governing Board. The CEO should inform the board in a timely manner of any issues of concern or risks that affect or may affect the hospital. The CEO should work with the Board to provide or facilitate trainings of Governing Board members to ensure that Board members are adequately skilled for their role.

B) Planning, monitoring and evaluation of hospital operations

The CEO should prepare hospital strategic and annual plans and submit these to the Board and all necessary higher authorities for approval. The CEO is responsible to effectively implement these plans and achieve strategic plan goals. Strategic and annual plans should include all hospital improvement initiatives.

The CEO should submit to the Board regular performance and financial reports of the hospital, showing progress towards the goals of the strategic and annual plans, and in particular highlighting any areas of concern.

The CEO should also ensure that any reporting requirements of higher authorities (such as Woreda, Zonal or Regional Health & Finance Departments) are submitted in a timely manner.

C) Fiscal

The CEO should prepare and submit to the Board the budget of the hospital for approval. After approval the CEO should maintain the hospital budget within agreed upon parameters, effecting payments in accordance with the approved budget and plans. In partnership with the Governing Board, the CEO is also responsible for designing various mechanisms to increase hospital revenue such as:

- outsourcing non clinical services to improve the overall quality of care,
- establishing, organizing, and controlling private wing health services, and
- revising fee and revenue collection and utilization procedures.

The CEO should ensure that financial audits are performed in accordance with government requirements and submitted to the Board for approval, and subsequently to the appropriate higher authority in a timely manner.

The CEO should ensure that any recommendations made by internal or external financial audits are acted upon appropriately.

D) Development of hospital management committee and other structures

Each hospital should have an organisation chart that describes the organisation of hospital functions and personnel, including reporting structures. The organisation chart should be developed by the CEO and approved by the Governing Board.

A skilled CEO finds other capable staff members with whom to share the workload. The CEO may delegate part of his/her powers and duties to the employees of the hospital to the extent necessary for the efficient performance of its activities.

The CEO is responsible to establish an effective Senior Management Team to oversee day to day hospital operations. He/she may also establish additional committees as the need arises (examples are given in Section 3.4.6 below). The CEO should ensure that each committee has clearly defined membership and responsibilities, and should ensure that each committee fulfils its functions.

E) Personnel management and development

The CEO should ensure the recruitment and retention of a qualified workforce that enables the hospital to discharge its activities. The CEO should ensure that an Employee Manual and incentive schemes are developed and submitted to the Board, and should implement these upon approval. The CEO should strive to empower and advance the professional capacity of hospital staff.

F) Quality of care

The CEO should establish mechanisms to measure the quality of care and establish programs to continuously strive for improved levels of quality. The CEO should ensure that patients' rights are respected by all staff. Further guidance on Quality Management is presented in *Chapter 12 Quality Management*.

G) Regulations compliance

The CEO should oversee compliance with all relevant regulations from government bodies. Such regulations may include safety regulations, employment regulations, finance and audit regulations among others.

H) Management of hospital buildings, campuses and physical assets

The CEO should establish and meet goals for the maintenance and improvement of hospital buildings and campuses and all physical assets including medical equipment and vehicles.

I) Public Relations: community, governmental and professional audiences

The CEO is the chief spokesperson for the hospital's various audiences and should represent the hospital in its dealings with third parties. The CEO should strive to enhance the reputation of the hospital by strengthening relationships with the community, government and professional audiences.

J) Professional development

The CEO should keep current with emerging issues and technologies and ensure that staff members are also kept current in these areas through training, access to resources, and related opportunities.

K) Leadership

The CEO should establish and increase leadership presence within the hospital and the local community, as well as in its district, provincial and national communities.

3.3.3 Accountability and evaluation of the CEO

The CEO is accountable to the Hospital Governing Board, and is the only staff member under the direct supervision of the Board. Evaluations of the CEOs performance should be conducted at least

annually by the Board or appointing authority. Evaluation criteria should be based on the job description of the CEO. Annual performance expectations should be spelled out at the beginning of each year in discussion between the Governing Board Chairperson, or appropriate member of the appointing authority, and the CEO.

If the Governing Board is concerned about the CEO's performance at any time it should use the evaluation criteria to address these concerns. The discussion can lead to goals for performance improvement in the future. If these concerns have been addressed in the past and no improvements have been made, the discussion may ultimately lead to the termination of employment of the CEO following the process described by Federal or Regional Directives.

3.3.4 Relationship between CEO and Governing Board Chairperson

The relationship between the CEO and the Governing Board Chairperson must be "managed" well by both individuals in order for the overall operations of the hospital to be conducted at their best. It is mostly the responsibility of the CEO to ensure that this relationship remains professional, courteous, and informative and defines the leadership of the organization. While Governing Board Chairpersons may come and go, as an appointed volunteer with defined terms of service, the CEO is the hired professional who will hopefully work alongside and maintain the organization through Governing Board Chairperson successions. The final authority overseeing the hospital is the Governing Board, and as such, the CEO serves at the pleasure of the Governing Board and its Chairperson.

Attending to the needs and dictates of the Governing Board Chairperson is the duty of the CEO, and this hierarchical relationship can be made constructive and successful if the two individuals understand each other's strengths, weaknesses, management/governance styles, responsibilities of their office and each other's personalities. The CEO must elicit support from the Chairperson on matters of importance to the hospital and the community it serves, so that together the Chair and the CEO can be successful in designing strategies that the Governing Board members can endorse and that the CEO can implement within the hospital.

3.4 Hospital Senior Management Team

Each hospital should have a Senior Management Team (SMT) that supports the CEO to oversee the day to day operations of the hospital. The SMT provides information and advice to the CEO, and serves as a forum to share decision making when appropriate, thus strengthening the transparency and accountability of hospital leadership.

The SMT is accountable to and chaired by the hospital CEO.

Terms of Reference for the SMT should be defined including: a description of the membership of the SMT, the roles and responsibilities of the SMT, frequency of meetings, voting rules and a statement of confidentiality. Each SMT member should sign a copy of the TOR indicating his/her acceptance.

3.4.1 Responsibilities of Senior Management Team

The main purpose of the SMT is to assist the CEO and as such many of the functions of the Management Committee are similar to that of the CEO.

Specific responsibilities include:

- A) Assist the CEO to prepare hospital strategic and annual plans for submission to the Governing Board.
- B) Provide reports to the CEO on implementation of strategic and annual plans, according to each committee member's area of responsibility.
- C) Identify areas of concern in the achievement of hospital plans, and assist the CEO to find solutions.
- D) Ensure that activities of the hospital are carried out with transparency and accountability and that all required reports are submitted to higher authorities (e.g. RHB, BOFED, FMOH, MOFED) in accordance with government requirements.
- E) Ensure the hospital complies with all relevant government regulations.
- F) Provide financial oversight, advising the CEO on mechanisms to generate income and minimize expenses.
- G) Ensure proper implementation of fee waiver mechanisms and reimbursement.
- H) Ensure proper management of hospital buildings, estate, equipment and supplies.
- I) Resolve departmental or case team problems or disputes when these are beyond the ability of the department head or case team director.
- J) Ensure high quality clinical services by establishing and implementing mechanisms to measure and improve the quality of care.
- K) Support workforce recruitment and retention, protecting the health and wellbeing of hospital staff, and creating opportunities for staff development including leadership opportunities.
- L) Communicate relevant Governing Board, CEO and Management Committee decisions with subordinate employees.
- M) Establishes mechanisms to involve patients and the public in the planning and delivery of hospital services and to maintain close consultation with community leadership.
- N) Work to enhance the organization's public standing and strengthen relationships with community, government and professional audiences.

3.4.2 Membership of Senior Management Team

The SMT should be comprised of senior hospital leaders such as department or case team heads, senior clinical staff and key administrative personnel. It is also recommended that a staff representative, nominated by staff members on a rotating basis, is a member of the SMT. The exact membership will be determined by the organization structure of the hospital but should include the following personnel (or individuals with similar responsibilities):

- 1. Hospital CEO (Chairperson of SMT)
- 2. Finance Head
- 3. Head of Human Resources
- 4. Chief Medical Officer (or equivalent)
- 5. Senior Nurse Representative
- 6. Senior Laboratory Representative
- 7. Senior Pharmacy Representative
- 8. Chair of Hospital Quality Committee (or equivalent)
- 9. Staff representative
Hospital staff or representatives of appropriate external bodies may be invited to attend SMT meetings as non-voting members, to provide reports, information or advice to the SMT as the need arises.

3.4.3 Appointment of Senior Management Team Members

The CEO should determine the membership of the SMT, taking into consideration the organization structure of the hospital and key leadership positions. He/she should recommend the proposed membership to the Governing Board for approval. After approval, specific individuals will automatically be appointed by virtue of their position within the hospital. When a committee member leaves the office which he/she represented he/she will be replaced on the SMT by the next person assigned to that post.

The main exception to this rule is the staff representative, who should be elected by majority vote of hospital employees. This member should serve on the SMT for a time limited period as determined by the Governing Board (generally one year) and should then be replaced by another elected representative.

3.4.4 Duties and responsibilities of Senior Management Team Members

Similar to Board members, SMT members have a duty to:

- a) Attend ordinary and extra-ordinary meetings, respecting the time;
- b) Accept and implement a decision passed by the majority;
- c) Prepare for each meeting by reading agendas, minutes of the previous meeting and other documents distributed for consideration;
- d) Follow up on any actions agreed by the SMT in a timely manner; and
- e) Maintain confidentiality on all matters discussed by the SMT.

3.4.5 **Procedures of Senior Management Team meetings**

A) Frequency and timing of SMT meetings

SMT meetings should be held at least monthly or more often as the need arises. Extra-ordinary meetings may be called by the CEO at any time.

As far as possible SMT meetings should be held during regular working hours, and committee members should have dedicated time within their work schedule to attend and prepare for committee meetings.

B) Agenda items for SMT meetings

The agenda should be set by the Hospital CEO. All SMT members should be invited to nominate agenda items for consideration by the CEO. The agenda and any documents for discussion at the meeting should be distributed to SMT members at least one week in advance of the meeting.

The following should be regular standing items on each and every agenda of the SMT:

- a) Approval of previous meeting minutes;
- b) CEO's report providing an overview of hospital operations, discussion of pressing issues and immediate concerns;

- c) Reports from each SMT member providing an overview of their department/function and any pressing issues and immediate concerns
- d) Old business issues unresolved from last meeting;
- e) New business any issues SMT members want to raise; and
- f) Next steps plans for taking action on decisions reached by the Committee, with the assignment of follow up responsibilities to individuals as appropriate.

C) Decision making

Ultimately, the CEO is responsible for all hospital operations and as such has the authority to reach decisions on hospital management matters. However, he/she may decide to determine specific issues by a vote of the SMT. In such circumstances decisions of the SMT should be made by majority vote. In the case of a tie the CEO has the deciding vote.

3.4.6 Subcommittees of the SMT

The SMT may establish a number of subcommittees to carry out specific duties related to hospital management. Examples include:

A) Quality Committee

This committee is responsible to establish and monitor implementation of a quality management strategy for the hospital. Further discussion on the roles and responsibilities of the Quality Committee are presented in Section 3.2.1 of *Chapter 12 Quality Management*.

B) Drug and Therapeutic Committee

A Drug and Therapeutic Committee serves to promote the safe, rational and cost-effective use of medicines within the facility. Further guidance on the establishment and functions of a DTC are presented in Section 3.1 of *Chapter 4 Pharmacy Services*.

C) Infection Prevention Committee

An Infection Prevention Committee serves to establish and monitor all infection prevention policies and procedures in the hospital. Further guidance on the establishment and functions of an Infection Prevention Committee are presented in Section 3.1 of *Chapter 7 Infection Prevention*.

D) Medical Equipment Committee

The Medical Equipment Committee serves to oversee all medical equipment maintenance in the facility, including development of a medical equipment strategy, equipment inventory control, procurement plan and preventive and corrective maintenance. Further information on Medical Equipment Committee can be found in Section 3.1 of *Chapter 9 Medical Equipment Management*.

E) Major Incident Committee

The Major Incident Committee is responsible to supervise and co-ordinate emergency planning. For further information on the membership and roles of a Major Incident Committee please see Section 3.8.1 of *Chapter 8 Facilities Management*.

F) Disciplinary Committee

The Disciplinary Committee serves to investigate all employee disciplinary charges and to determine the appropriate disciplinary measure. Further information on the membership and responsibilities of the Disciplinary Committee can be found in Section 3.10.5 of *Chapter 11 Human Resource Management*.

3.5 Strategic and Annual Planning

Strategic planning is the process of determining what an organization intends to be in the future and how it will get there. The Annual Plan shows how the broader objectives, priorities and targets of the strategic plan will be translated into practical activities. Each hospital should have strategic and annual plans that are developed taking into consideration the mission, vision and values of the organization and aligned with national, regional and local priorities.

Strategic plans should cover a 5 year period and should be ambitious towards reaching the desired outcome. The annual plan should align with this, providing greater operational detail on a year by year basis, tied to the annual budget. The Health Sector Development Programme (HSDP) and the Regional/Zonal/Woreda Strategic Plans are the source documents for hospital strategic plans and targets.

Detailed annual plans should have the following features:

- **Scope:** should reflect all activities and budgets, including those implemented by the public sector, donor agencies, NGOs and communities
- **Resource and source of finance:** estimation of the total amount of resources available from all sources (government, specific donors, internal revenue, NGOs etc).
- **Implementation schedule:** a list of major activities, a quarterly/monthly implementation schedule and the responsible body for the implementation of each activity
- **Monitoring framework:** for assessing progress during implementation. This includes key performance indicators, baseline data, annual targets, information sources and collection mechanisms, as well as reporting and feedback mechanisms.

Annual plans should be developed in two stages. The **core plan** is about achieving national targets; the **detailed** plan is the core plan plus other activities of local importance.

Figure 9 shows how the planning process works in practice. Hospitals should first review Federal, Regional, Zonal and Woreda 'indicative plans', based on which the hospital should develop its owns strategic and annual 'indicative plan'. This is then passed back up the chain for review and approval, with higher bodies amending their own strategic or annual plans to take account of lower level plans, or advising amendments to lower level plans where necessary. This 'top down, bottom up' approach will lead to integration of plans at all levels.

The FMOH has established an Annual Planning Template for hospitals that describes the core indicators for each year, based on HSDP and national targets. The Planning Template for EFY 2002 is presented in Appendix E. This template may change from year to year in accordance with national priorities.

In addition to the planning template of the FMOH, hospitals should also follow the processes established by MOFED/BOFED for budget allocation. This involves preparation of an annual plan and budget using the MOFED/BOFED template and submission of this to the appropriate authority. Further details on the budget allocation process are presented in *Chapter 10 Financial and Asset Management*.



Figure 9 Strategic and Annual Planning at all Levels

3.6 Essential Service Package

Each hospital should develop an Essential Service Package that describes the core functions and clinical services provided by the hospital. The Essential Service Package is the foundation for the Human Resource Development Plan (see Section 3.2 of *Chapter 11 Human Resource Management*) and for the Model Medical Equipment List and Equipment Development Plan (See Sections 3.5 and 3.6 of *Chapter 9 Medical Equipment Management*).

The Essential Services Package should be developed based on the hospital vision, mission and strategic and annual plans.

Section 4 Implementation Checklist and Indicators

4.1 Assessment Tool for Operational Standards

In order to determine if the Operational Standards of Hospital Leadership and Governance have been met by the hospital an assessment tool has been developed which describes criteria for the attainment of a Standard and a method of assessment. This tool can be used by hospital management or by an external body such as the RHB or FMOH to measure attainment of each Operational Standard. The tool is presented in Appendix E of *Chapter 13 Monitoring and Reporting*.

4.2 Implementation Checklist

The following Table can be used as a tool to record whether the main recommendations outlined above have been implemented by the hospital. This tool is not meant to measure attainment of each Operational Standard, but rather to provide a checklist to record implementation activities.

		Yes	No
1.	A Governing Board has been established.		
2.	Terms of Reference for the Board are defined.		
3.	The Board meets at a minimum every quarter.		
4.	Board members participate in ongoing education.		
5.	There is a planned orientation programme for new Board members.		
6.	The hospital has a Statement of Vision, Mission and Values that has been approved by the Governing Board.		
7.	All staff have been oriented to the Hospital Vision, Mission and Values.		
8.	A CEO has been appointed.		
9.	The CEO has signed a job description that outlines his/her duties to lead the hospital.		
10.	The CEO is evaluated annually.		
11.	A Senior Management Team has been established. Membership of the SMT has been approved by the Governing Board.		
12.	Terms of Reference for the SMT are defined.		
13.	The SMT meets as a minimum every two weeks.		
14.	The hospital has a strategic plan that has been approved by the Governing Board.		
15.	The hospital has an annual plan that has been approved by the Governing Board.		
16.	All staff have been oriented to the hospital strategic and annual plans.		
17.	An Essential Service Package has been defined for the hospital.		
	1	1	

 Table 1.
 Hospital Leadership and Governance Checklist

4.3 Indicators

In addition, the following indicators may be monitored on a regular basis to assess the effectiveness/outcomes of implementation of the recommendations provided in this chapter.

	Indicator	Formula	Frequency	Comments
1.	Number of Board meetings in reporting period	Total number of board meetings in the reporting period	Quarterly	
2.	a) Number of Board meetings cancelled or deferredb) Proportion of scheduled Board meetings cancelled or deferred	 a) Total number of board meetings cancelled or deferred in the reporting period b) Total number of board meetings cancelled or deferred in the reporting period ÷ total number of scheduled Board meetings x 100 	Quarterly	
3.	Average attendance rate at Board meetings	\sum number of attendees \div [total number of Board members x number of meetings] x 100	Quarterly	
4.	Number of Senior Management Team meetings held	Total number of SMT meetings held in the reporting period	Quarterly	
5.	 a) Number of SMT meetings cancelled or deferred b) Proportion of scheduled SMT meetings cancelled or deferred 	 a) Total number of SMT meetings cancelled or deferred in the reporting period b) Total number of SMT meetings cancelled or deferred in the reporting period ÷ total number of scheduled SMT meetings x 100 	Quarterly	
6.	Average attendance rate at SMT meetings	\sum number of attendees \div [number of SMT members x number of meetings] x 100	Quarterly	

Table 2Hospital Governance and Leadership Indicators

Source Documents

- 1. Addis Ababa City Administration Health Bureau. (2009, January). Directive No. 1/2001 issued to provide for the execution of Addis Ababa City Government Health Services Provision and Health Institutions Administration and Management Regulation No. 26/2001. Addis Ababa: Addis Ababa City Government.
- 2. Amhara National Regional State. (2005). Health Service Delivery and Administrative Proclamation. Healthcare Financing Regulation. Regulation No. 117/2005.
- 3. Amhara National Regional State. (2005). Health Service Delivery and Administrative Proclamation. Healthcare Financing Regulation. Regulation No. 39/ 2006.
- 4. Department of Health. (1999, March). *Clinical Governance, Quality in the New NHS*. London: Department of Health.
- 5. Department of Health. (2009, January). *The NHS Constitution for England*. London: Department of Health.
- 6. Federal Democratic Republic of Ethiopia Ministry of Health. (2007). *The Health Sector Development Program Harmonization Manual*.
- 7. Federal Democratic Republic of Ethiopia Ministry of Health. (2008, July). *Policy, Business Process Reengineering: Policy, Planning and Monitoring & Evaluation Core Process.*
- 8. Federal Democratic Republic of Ethiopia Ministry of Health. (2008, January). *HMIS/M&E*. *Strategic Plan for Ethiopian Health Sector*.
- 9. Federal Democratic Republic of Ethiopia Ministry of Health. (2008, January). HMIS/M&E. Indicator Definitions. HMIS/M&E Technical Standards Area 1.
- 10. Federal Democratic Republic of Ethiopia Ministry of Health. (2007, May). HMIS/M&E. Disease Classification for National Reporting. Technical Standards Area 2.
- 11. Federal Democratic Republic of Ethiopia Ministry of Health. (2008, January). HMIS/M&E. HMIS Procedures Manual: Data Recording and Reporting Procedures. HMIS/M&E Technical Standards Area 3.
- 12. Federal Democratic Republic of Ethiopia Ministry of Health. (2008, January). HMIS/M&E. Information Use Guidelines and Display Tools. HMIS/M&E Technical Standards Area 4.
- 13. Federal Democratic Republic of Ethiopia Ministry of Health. (2008, August). *Performance Monitoring and Quality Improvement Guideline for the Ethiopian Health Sector.*
- 14. Federal Democratic Republic of Ethiopia Ministry of Health. (2009, June). Performance Monitoring and Quality Improvement Guideline for the Ethiopian Health Sector.
- 15. Federal Democratic Republic of Ethiopia Ministry of Health. Data Collection Guide for Healthcare Quality Assessment.
- 16. NHS Quality Improvement Scotland. (2005, October). Clinical Governance and Risk Management: Achieving safe, effective, patient-focused care and services.
- 17. Oromia Regional Government Administrative Council. (2005). Oromia Regional State Health Service Delivery and Administration Regulation No. 56/ 2005.
- 18. Tigray National Regional Government Council. (1999 EC). Bylaw for the Provision, Management and Administration of Health Services in Tigray National Regional Government Number 42/1999.

Appendices

Appendix A Sample Hospital Mission, Vision and Values Statements

A Mission can be defined as 'purpose, reason for being' or simply 'who we are and what we do'.

A Vision can be defined as 'an image of the future we seek to create'.

Mission statement

The mission of [] Hospital is to provide all patients quality, accessible and cost effective health care.

Vision Statement

[] Hospital strives to be the premier hospital in Ethiopia, recognized nationwide for the quality of care provided.

We aspire to:

- provide an excellent standard of service
- deliver patient care in a way that inspires public confidence
- expand our skills and knowledge to serve our clients
- continually build up our services to meet our clients' needs
- be cost effective and financially secure
- be recognized as an 'employer of choice' in the Ethiopian health system

Underlying principles governing [] Hospital

- 1. [] Hospital provides a comprehensive service, available to all.
- 2. Access to [] Hospital is based on clinical need, not an individual's ability to pay.
- 3. [] Hospital aspires to the highest standards of excellence and professionalism.
- 4. Services provided by [] Hospital must reflect the needs and preferences of patients, their families and their caregivers.
- 5. [] Hospital works across organizational boundaries and in partnership with other organizations in the interest of patients, local communities and the wider population.
- 6. [] Hospital is committed to providing best value for money and the most effective, fair and sustainable use of finite resources.
- 7. [] Hospital is accountable to the public, communities and patients that it serves.

Values of [] Hospital

Respect and dignity. We value each person as an individual, respect their aspirations and commitments in life, and seek to understand their priorities, needs, abilities and limits. We take what others have to say seriously. We are honest about our point of view and what we can and cannot do.

Commitment to quality of care. We insist on quality and striving to get the basics right every time: safety, confidentiality, professional and managerial integrity, accountability, dependable service and good communication. We welcome feedback, learn from our mistakes and build on our successes.

Compassion. We respond with humanity and kindness to each person's pain, distress, anxiety or need. We search for the things we can do, however small, to give comfort and relieve suffering. We find time for those we serve and work alongside. We do not wait to be asked, because we care.

Improving lives. We strive to improve health and well-being and people's experiences of our hospital. We value excellence and professionalism wherever we find it – in the everyday things that make people's lives better as much as in clinical practice, service improvements and innovation.

Working together for patients. We put patients first in everything we do, by reaching out to staff, patients, caregivers, families, communities, and professionals outside the hospital. We put the needs of patients and communities before organizational boundaries.

Everyone counts. We use our resources for the benefit of the whole community, and make sure nobody is excluded or left behind. We accept that some people need more help, that difficult decisions have to be taken – and that when we waste resources we waste others' opportunities. We recognize that we all have a part to play in making ourselves and our communities healthier.

Adapted from The NHS Constitution for England. DOH, London, Jan 2009.

Appendix B Sample content of Governing Board training programme

Governance:

- What is hospital governance?
- What are RHB expectations of Governing Boards?
- Roles and responsibilities of Governing Board
- Jurisdiction and Power of Hospital Governing Board
- Leadership and Code of Conduct for Governing Board Members
- Role of Chairman, Members and CEO
- Disclosure of Gifts and Loans
- Register of Interests
- Conflict of Interest
- Meeting Agendas and Rules
- 8 Deadly Sins of Hospital Governance
- Policies, Guidelines and Protocols
- Hospital Committees
- Complaints Management
- Adopting the Code of Conduct
- Public Interest vs. Private Interest
- Dealing with Material Personal Interest and Conflict of Interest
- Dealing with Official Misconduct

Performance monitoring:

- So you think your hospital is doing in a good job. How do you know?
- Hospital Reporting System to Board
- Benchmarking

Patient and community involvement:

- Patients' Rights and Responsibilities
- Involving the community

Business and Financial Management:

- Planning Cycle
- Hospital Corporate Plan
- Hospital Operational Business Plan
- Annual Budget
- Annual Report
- Revenue and Expenditure
- Raising Revenue
- Commercial activities
- Hospital enterprises
- Private Wing
- Fees and Charges
- Grants and Subsidies
- Borrowings

• Developer Contributions/Infrastructure Charges

Planning and Development

- Planning and Development
- Land Use Planning
- Masterplan Development
- Planning for Prosperous Hospital
- Building

Local Health Economy and Health Priorities

- Catchment population
- Population demographics
- National priorities and targets (Health Sector Development Program)

Other

- WHO Six Building Blocks of a Health System
- Worldwide trends in hospital development
- Twinning
- Universal principles for hospital reform

Appendix C Sample Self Assessment Checklist for Governing Board

1.	Legal Structure of the Hospital and Background I	nformation
a.	Is there documentation relating to the role and	Yes/No
	reporting responsibilities and appointment of the	
	Governing Board (GB) and its members	If yes, list and provide copies of documentation
		available:
b.	Are there any special issues or challenges facing	Describe:
	the hospital (i.e. member communication,	
	resources, stability)	
C.	Date of most recent governance review	State date:
Z.	Role of Governing Board and Accountabilities	List and provide somiss of shipsts/purpose mission
a.	Role of the corporation	List and provide copies of objects/purpose, mission,
		vision, values, shalegic difections etc
b	Date of last strategic plan and date of next review	State dates:
0.	of strategic plan	
c.	Is there a formal statement of corporate	Yes/No
	accountability? If yes, what is the date of the last	
	review?	If yes, state date:
3. '	The Board's Governance Role	-
a.	Define the role of the Board	Define:
b.	Has the Board expressly adopted a statement of	Yes/No
	the Board's role? If yes, date of last review	
		If yes, date:
		Provide conject of statement if available
C	Is there an annual Board work plan?	Ves/No
С.	is there an annual board work plan:	103/100
		If yes, provide copy
d.	Provide an outline of how the Board performs its	Describe:
	responsibilities for the following areas of Board	
	performance:	
•	Strategic planning	
•	Oversight of management (CEO)	
•	Quality and risk identification and management	
•	Financial oversight	
•	Board Governance including board size and	
	composition, committee mandates and	
	composition, Officers, meeting effectiveness	
•	Communications and accountability with	
A 1	stakenolders	Doord Mombors
4.	Is there a formal policy with respect to Doord	Describe:
а.	members' duties? How are Board members made	
	aware of their duties and obligations?	Provide copy of policy is available
b	Is there a Board Code of Conduct that describes	Yes/No
	the rules of fiduciary conduct (avoid conflict of	
	interest, corporate obedience – solidarity, board	If yes, provide copy.
L	speaks with one voice - confidentiality, loyalty)?	
c.	Describe expectations regarding the level of	Describe:
	attendance and participation at Board and	
	Committee meetings. How are these expectations	
	communicated?	

d	Describe participation in Board and individual	Describe:
ч.	Board member evaluation (self-evaluation and/or	
	peer review)	
5.	Board Governance Policies	
a.	Has a formal Board Governance Policy Manual	Yes/No
	been prepared? What is the date of the last	
	review?	If Yes state date of last review:
		Provide copy of available
b.	Describe the process for updating Board policies	Describe:
6.	Board Composition and Recruitment	
a.	Identify the number of elected/appointed/ex-	Describe and list:
h	officio directors. List ex-officio officers by office	Vac/Na
D.	Is there a process to identify the skins required of Board members?	I ES/INO
	Board memoers!	If ves describe
C	Is a Board profile or skills matrix of the current	Ves/No
0.	Board maintained?	
	bourd manualled:	If yes provide copy
d.	How are prospective Board nominees identified?	Describe:
	Is a roster of eligible candidates maintained?	
e.	How are prospective candidates advised with	Describe:
	respect to the role and expectations of Board	
	members?	
f.	How are prospective candidates evaluated?	Describe:
g.	Who makes the recommendation of approved	Describe:
<u> </u>	candidates?	
h.	What is the term of office of Board members	Describe:
:	(Initial, renewal and maximum terms)?	Describer
1.	(initial renewal and maximum terms)?	Describe.
i	What is the term of office of Board Officers	Describe and identify Officers:
J.	(initial renewal and maximum terms)? Identify	Describe and identify officers.
	Officers	
7.	Officers of the Board	
a.	Is there a clear process to select officers and	Yes/No
	committee chairs	Describe:
b.	Are position descriptions prepared and	Yes/No
	periodically reviewed?	
		If yes, describe and give copies if available
8.	Board Committees	
a.	Do all Committees have written mandates/TORs	Yes/No
1		
		If yes, provide copies
b.	Are Committee mandates/TORs reviewed	Yes/No
1	periodically?	
<u> </u>		Describe:
C.	How are Committees established?	Describe:
1	How are Committee and and a lt with her the	Describe
a.	now are Committee reports dealt with by the	Describe:
	Doard:	
1		

0.	Is the Audit Committee comprised of independent directors?	Describe:
f.	Is there an Executive Committee? What is its role? Describe decision making role.	Yes/No
		If Yes describe:
9.	Board Orientation, Education and Evaluation	
a.	Is Board orientation mandatory? How is orientation conducted?	Yes/No
		Describe and provide index of orientation manual if
b.	Is there a written manual for new Board members?	Yes/No
		If yes, provide index
g.	Is there a clear process for Board members to participate in external education programs?	Yes/No
		If yes, describe process:
h.	How is Board education conducted?	Describe:
i.	What is the frequency of continuing education for Board members?	Describe:
j.	Is an annual Board retreat held?	Yes/No
		If was state data of last rational attendance and agenda
k	Is there an annual evaluation of the performance	Ves/No
к.	of individual Board members and the Board as a	103/100
	whole?	If yes, provide copy of the evaluation tool and describe
		process for providing feedback and action on results
10.	Board Governance Policies	-
a.	Is Board work aligned with the annual Board goals and work plan?	Describe and provide sample Board agendas?
1.	Are decision items separated from information	Yes/No
D.	items?	
р. с.	items? Is specific time allocated for agenda items and is time adhered to?	Yes/No
b. с. d.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports?	Yes/No Describe:
b.c.d.e.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated?	Yes/No Describe: Yes/No
D. c. d. e.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated?	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool
 b. c. d. e. f. 	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No
 b. c. d. e. f. 	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings?	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No
b. c. d. e. f.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings?	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No If yes, describe and provide copy of policy
b. c. d. e. f.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings? Is there a clear policy that allows the Board to	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No If yes, describe and provide copy of policy Yes/No
D. C. d. e. f. g.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings? Is there a clear policy that allows the Board to obtain independent advice (legal or financial or other)?	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No If yes, describe and provide copy of policy Yes/No
b. c. d. e. f. g.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings? Is there a clear policy that allows the Board to obtain independent advice (legal or financial or other)? Members	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No If yes, describe and provide copy of policy Yes/No If yes, provide copy of policy
D. C. d. e. f. g. 111. a	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings? Is there a clear policy that allows the Board to obtain independent advice (legal or financial or other)? Members Describe the following:	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No If yes, describe and provide copy of policy Yes/No If yes, provide copy of policy Describe as listed:
b. c. d. e. f. g. 111. a.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings? Is there a clear policy that allows the Board to obtain independent advice (legal or financial or other)? Members Describe the following: • Board members composition and	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No If yes, describe and provide copy of policy Yes/No If yes, provide copy of policy Describe as listed:
b. c. d. e. f. g. 11. a.	 items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings? Is there a clear policy that allows the Board to obtain independent advice (legal or financial or other)? Members Describe the following: Board members composition and qualification 	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No If yes, describe and provide copy of policy Yes/No If yes, provide copy of policy Describe as listed:
b. c. d. e. f. g. 111. a.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings? Is there a clear policy that allows the Board to obtain independent advice (legal or financial or other)? Members Describe the following: Board members composition and qualification Term	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No If yes, describe and provide copy of policy Yes/No If yes, provide copy of policy Describe as listed:
b. c. d. e. f. g. 111. a.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings? Is there a clear policy that allows the Board to obtain independent advice (legal or financial or other)? Members Describe the following: Board members composition and qualification Term Termination	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No If yes, describe and provide copy of policy Yes/No If yes, provide copy of policy Describe as listed:
b. c. d. e. f. g. 11. a.	items? Is specific time allocated for agenda items and is time adhered to? What is the process to bring forward Board Committee's recommendations and reports? Are meetings regularly evaluated? Are Board meetings open? Is there a policy for public attendance at Board meetings? Is there a clear policy that allows the Board to obtain independent advice (legal or financial or other)? Members Describe the following: Board members composition and qualification Term Termination Role	Yes/No Describe: Yes/No If yes, provide copy of evaluation tool Yes/No If yes, describe and provide copy of policy Yes/No If yes, provide copy of policy Describe as listed:

Appendix D Guidelines/etiquette for effective committees and meetings

When a new committee/group is established it is important to:

- 1) Determine group membership:
 - Consider which departments/people are most involved and should be on the team.
 - Include all points of view, including conflicting ones.
- 2) Assign a Chair and Secretary
- 3) Establish Terms of Reference for the group including:
 - Function/duties of the committee
 - Description of outputs expected
 - Realistic timeline for completion of project (if relevant)
 - Statement of who the group/committee is accountable to (if relevant)
 - Frequency of meetings
- 4) Set schedule for meetings, ideally at a fixed frequency, day and time. (For example, the first Monday of every month at 4pm; or every Wednesday at 3pm). A fixed schedule makes it easier for committee members to plan their schedule and remember to attend the meetings.

For each meeting:

- 5) The Secretary and Chair should circulate an agenda, the minutes of the previous meeting, and papers for discussion in advance of the meeting. These should be circulated to all committee members in advance (ideally one week before the meeting).
- 6) All committee members should review the agenda, minutes and items for discussion BEFORE the meeting so that they have full information for discussion at the meeting. If the meeting is spent reviewing items for the first time then much time will be wasted and the meeting will be unproductive.
- 7) Begin and end the meeting ON TIME. Do not wait more than a few minutes for members who are late.
- 8) Be concise and stay on topic. If the agenda is long, a time limit should be set for each agenda item.
- 9) Begin the meeting by reviewing the minutes of the previous meeting and obtaining an update report on any action points that were assigned from the previous meeting.
- 10) For each item on the agenda agree any action points that need to be followed up after the meeting. For each action assign a specific individual to complete the task and a deadline for completion (for example prior to next meeting, or within one month etc)
- 11) Prepare minutes of each meeting. These should include a summary of discussions and all action points should be clearly stated with the name of the responsible individual.

Appendix E



FEDERAL MINISTRY OF HEALTH

HOSPITAL ANNUAL PLAN FOR EFY 2002

Hospital Name ______Zone

Region

Date (DD/MM/YY): ____/___

1. PROFILE

- 1.1. Type of hospital:
- 1.2. Catchment population:

1.3. Employees in the Hospital:

a) Number of Employees:

Technical_____

Supportive_____

Total_____

S.No	Type (profession)	Currently providing service
1	Specialist	
2	General practitioner	
3	Health Officer	
4	B.Sc. Nurse	
5	Midwives (All type)	
6	Nurses (diploma all type)	
7	Nurses (certificate all	
	type)	
8	Lab (all type)	
9	Pharmacy (all type)	
10	X-ray (all type)	
11	Others	

2. BACKGROUND INFORMATION:

2.1. Major health problems seen in the hospital (top diseases and health problems):

2.2. Major achievements in EFY 2001 implementation period & financial resources utilization:

2.3. Challenges/problems encountered in the EFY 2001implementation period:

Chapter 1 Hospital Leadership and Governance

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3.1. SPECIFIC OBJECTIVES, INDICATORS AND TARGET FOR THE EFY 2002:

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Tangat	1 al get	In number																											
	ше	%																											
Baseli	Dasell	In	number																										
Flimhla	amanne	in	number																										
Flicible Decorintion	Euginie Description				Total number of Specialists at	the beginning of the year	Total number of General	Practitioners at the beginning of	the year	Total number of months in the	given period of time *Total	number of tracer drugs	Total number of tracer drugs				Total Number of Admissions		Total number of deliveries in the	hospital	Total number of live births	attended in the hospital							
Indiantar	IIIUICAUUI				Proportion of Specialists leaving		Proportion of General Practitioners	leaving		Proportion of months in the time period	under consideration for which given	tracer drug was available when needed.	The number of days in which a tracer	drug was not available averaged over all	tracer drugs		Patient deaths before discharge per 100	patients admitted	Proportion of maternal deaths from all	deliveries attended in the hospital	Proportion of deaths within the 24 hours	of life from total births attended in the	hospital	Number of cataracts that were operated	Number of safe abortion services	provided as far as the law permits		Number of Smear Positive TB cases	detected
Obiactiva Dasarintian	Objective Description			ces (Human and Logistics)	Decrease attrition rate of	Specialists in the hospitals	Decrease attrition rate of	General Practitioners in the	hospitals	Ensure essential drug availability	in health centres		Decrease Average stock out	duration		Prevention and Control	Decrease Inpatient Mortality	Rate	Decrease institutional maternal	death	Decrease institutional very early	neonatal death		Cataract Surgical rate	Increase safe abortion service		rosy	Increase detection of new	sputum smear-positive TB cases
Z				Resourc	1.		2.			3.			4.			Disease	5.		6.		7.			9.	10.		TB/Lep	11.	

			- - - -	_	Γ
12.	Increase 1B treatment success Rate	Percentage of cohort of new smear Positive TB cases registered in a specific	lotal number of new smear- positive TB cases registered in		
		period that successfully completed	the same period		
		treatment			
13.	Increase TB Cure rate	Percentage of a cohort of new Smear-	Total number of new smear-		
		positive TB cases registered in specified	positive TB cases registered in		
		period that was cured as demonstrated by	the same period		
		bacteriologic evidence			
14.	Test newly diagnosed TB	Proportion of newly diagnosed TB	Total number of new TB cases		
	patients for HIV	patients tested for HIV	enrolled in the same period		
15.	Increase detection of new	Number of new cases of Multi bacillary			
	leprosy cases	leprosy, never treated before and			
		registered during the specified period of			
		time			
16.	Increase leprosy treatment	Proportion of newly registered multi	Total number of new multi		
	completion rate	bacillary cases completed their treatment	bacillary cases registered in the		
			same period		
HIV/A	IDS				
17.	Increase number of individuals	Number of individuals who received VCT			
	counselled and tested for HIV	services			
	[VCT]				
18.	Increase PIHCT Pre-test	Number of individuals who received HIV	All OPD and family planning		
	counselling	Pre-test counselling that was initiated by a provider	visits		
19.	Increase PIHCT Testing rate	Proportion of individuals counselled who	Number of individuals who		
		received HIV testing that was initiated by	received HIV Pre-test		
		a provider	counselling that was initiated by		
			a provider		
20.	Increase number of pregnant	Proportion of pregnant women counselled	Total number of ANC clients in		
	women counselled and tested for	& Tested for PMTCT	the facility		
	HIV				
21.	Reduce mother to child	Proportion of HIV+ pregnant women	Total number of HIV+ ANC		
	transmission of HIV	received ARVs for prophylaxis	client mothers in the facility		

The total number of HIV+ women who deliver during a given time period	Total number of infant born from HIV+ mother			Number of People (15 to 49 years) with HIV in the facility who are eligible for ART	Number of children (under 15 years) with HIV in the facility who are eligible for ART	Number of HIV+ pregnant mothers in the facility who are eligible for ART	Total number of HIV positive clients in the facility		Population in the catchment area	Number of beds available times number of days in the period	Number of inpatient discharges	Total number of planned supportive supervision visits for respective health institutions
Proportion of deliveries of HIV+ women that receive a full course of ARV prophylaxis	Proportion of infant born from HIV+ mother averted from HIV infection	Cumulative number of People Living With HIV/AIDS (PLWHA) ever enrolled in HIV care	Cumulative number of People Living With HIV/AIDS (PLWHA) ever started on ART	Number of PLWHA currently receiving ART	Number of eligible children receiving ART	Number of eligible HIV+ pregnant women receiving ART	Proportion of HIV positive clients screened for TB	management and Monitoring and Evaluation)	Average number of out patient visit[including first and repeat visits] per person per year	Average percentage of occupied beds during the period under review	Average length of stay [in days] of patients in an inpatient facility during a given period of time	Number of supportive supervision visits reported by respective health institutions
		Increase number of People enrolled in HIV Care [Pre-ART]	Increase number of People receiving ART	<u>.</u>	·	<u>.</u>	Increase TB screening among HIV positive People	Systems (Health service Utilization,	Increase out patient [OPD] attendance per capita	Increase bed occupancy rate [BOR]	Decrease average length of stay [ALOS]	Increase number of supportive supervision conducted
22.	23.	24.	25.	26.	27.	28.	29.	Health !	30.	31.	32.	33.

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4. MAJOR ACTIVITIES FOR THE EFY 2002

$4^{\mathrm{th}}\mathrm{Q}$			
3^{rd} Q			
2^{nd} Q			
1^{st} Q			
Qt			
Unit			
Activity Description			
S.N			

5. BUDGET FOR THE EFY 2002

<i>S.N</i> .	Items of Expenditure		Total Required Budget For EFY 2002
1	- Government source	6100 Personnel services	
2		6200 Goods & Services	
3		6300 Fixed Assets & Construction	
4		6400 Other Payments	
5	Non- Governmental	Other sources	
6	TOTAL		

6. CONCLUSION

Planning team:

1.	Name:	Position:
2.	Name:	Position:
3.	Name:	Position:
4.	Name:	Position:
5.	Name:	Position:



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Abbreviations

CEO	Chief Executive Officer	PA	Public Announcement
ETAT	Emergency Triage and Treatment	WHO	World Health Organization
FMOH	Federal Ministry of Health		
ICU	Intensive Care Unit		
OPD	Outpatient Department		
OR	Operating Room		

Section 1 Introduction

Patient flow in a hospital setting refers to the processes and procedures needed to ensure the efficient flow of patients between services. Patient flow requires various inputs including human resources, infrastructure, equipment, protocols and pathways. Properly designed and implemented patient flow will reduce patient waiting times, increase provider efficiency and staff and client satisfaction as well as improve overall quality of care. This chapter details the inputs required to ensure well-organized patient flow and describes the flow of services from the patient's first encounter with the reception service at the entrance of the hospital until the patient exits the hospital. Four main service processes are described in the chapter: emergency, outpatient, inpatient and delivery services. Triage, liaison, admission and discharge and referral processes are also outlined.

Section 2 Operational Standards for Patient Flow

- 1. Procedures are established to ensure efficient patient flow; such procedures are specific to emergency, outpatient, and inpatient settings and seek to reduce patient crowding.
- 2. The hospital has an Emergency Triage, staffed with appropriately trained personnel and equipped with necessary equipment and supplies.
- 3. The hospital has a Central Triage, staffed with appropriately trained personnel and equipped with necessary equipment and supplies.
- 4. All patients (except labouring mothers, patients with an appointment for an outpatient clinic or admission and private wing patients) undergo triage.
- 5. Outpatient appointment systems are in place for all disciplines provided by the hospital.
- 6. Appointment systems are in place for elective inpatient admissions in all disciplines that are provided by the hospital.
- 7. The hospital has a Liaison and Referral Service that:
 - a. Manages bed occupancy,
 - b. Facilitates emergency and non-emergency (elective) admissions, and
 - c. Receives referrals from, and makes referrals to, other facilities in the referral network.
- 8. The hospital has a written protocol for the admission and discharge of patients that is known, and adhered to, by all relevant staff.
- 9. The hospital has a Referrals Service Directory, listing facilities which the hospital may refer patients to or receive patients from, categorized by the type of clinical services they provide.

- 10. Criteria for the referral of patients from the hospital to other health facilities are established, including standardized referral and feedback forms and necessary clinical documents to accompany referred patients, in accordance with the national referral implementation guidelines.
- 11. The hospital has a standardized method for managing referrals.
- 12. Hospital staff members are familiar with the referral systems including relevant referral protocols and forms.
- 13. The hospital promotes and publicizes the referral system throughout the community in order to ensure that all constituents are aware of the applicable service pathway.

Section 3 Implementation Guidance

3.1 Patient Reception Services

A patient's experience at a hospital is often impacted by their first encounter. Therefore, it is critical that a patient's reception at the gate is a positive experience.

Reception personnel should be stationed close to the main gate to direct patients or visitors to the appropriate location in the facility. Reception staff should be easily identifiable (by uniform or identification badges). The reception staff should be knowledgeable of the services provided by the hospital, the staff who provide services (case team leaders etc.), and the layout of the hospital. Wheelchairs and stretchers should be available to transport patients to appropriate areas when needed.

Reception staff should ascertain the following from each patient and direct the patient accordingly (see Figure 1 below).

- 1. Is the patient an emergency patient?
- 2. Is the patient a labouring mother?
- 3. Does the patient have an appointment for a follow-up clinic?
- 4. Does the patient have an appointment for admission?
- 5. Is the patient a private patient?

Figure 1 Reception Service Responsibilities



3.2 Hospital Layout

Patient flow can be improved by an appropriate arrangement of services (hospital layout) supported by well-placed signs to indicate all service areas. Services should be organized in way that:

- Minimizes patient travel time between services; and
- Reduces the likelihood of patients getting lost when going from place to place.

A site map should be displayed at the hospital entrance. Signboards should be used throughout the facility to direct patients, caregivers and visitors to the appropriate service areas.

Hospitals should also consider establishing a colour coded system to direct patients who may not be literate. For example, blue signs could indicate all outpatient services and red signs could indicate emergency services, etc. The use of drawings and photographs may also be useful in directing patients. For further guidance on the layout of patient services please see Section 3.2.1 of *Chapter 8 Facilities Management*.

3.3 Emergency Services

3.3.1 Emergency Services Layout

The Emergency Services should be organized so that the Emergency Service's entrance can be easily accessed by ambulances and patients. This means that the entrance to the Emergency Services should be clearly labelled in a way that is visible from the street. The Emergency Services should have the following:

- Ambulance parking space
- Triage area
- Resuscitation room(s)
- Examination room(s)
- Procedure room(s)
- Laboratory sample collection and testing facilities
- Ambulatory imaging facilities
- Pharmacy dispensary
- Nursing station
- Short stay beds
- Waiting area
- Cashier window(s)
- Administration room(s)
- Toilet and bathroom
- Duty room(s)
- Direct telephone line

Additionally, an operating room should be readily accessible to the Emergency Services Case Team. If the workload is high, there should be a specific operating theatre for Emergency Services only. However, the general operating theatre may be used if the workload is less, in which case emergency cases should always be given priority over elective/cold surgical cases.

3.3.2 Emergency Services Management and Organization

The Emergency Case Team should be overseen by a Director of Emergency Services. He/she is responsible for all activities conducted in Emergency Services including:

- Patient triage,
- Case management, and
- Laboratory, pharmacy and diagnostic services.

The Director of Emergency Services is responsible for managing all department staff and should ensure that sufficient equipment and supplies are available for the patient load.

3.3.3 Emergency Triage and Treatment

A) Emergency Triage and Treatment Pathway

Patients entering the hospital through the separate Emergency Department entrance, from the reception desk or those referred to the Emergency Department from Central Triage (see section 3.4.3 below) should undergo Emergency Triage. If further investigations and/or treatments are required following triage, these should be provided by the Emergency Case Team. Patients that are not classified as emergency cases should be referred to Central Triage.

B) Emergency Triage and Treatment Activity

Triage can be defined as the "sorting of patients into priority groups according to their need and the resources available."¹ The aim of triage is to give priority treatment to those with the most critical conditions, thus minimizing delay, saving lives, and making the most efficient use of available resources. During emergency triage any problems identified with critical body functions (airways, breathing or circulation) should be treated immediately. For this reason emergency triage may be better described as 'Emergency Triage and Treatment' (ETAT).

Ideally, adult and paediatric ETAT areas and triage staff for emergency patients should be separate. However, if the workload is low a single triage may serve both adult and paediatric patients in the emergency department. In this case, paediatric patients should be given priority over adults in the event that more than one patient requires ETAT at the same time.

The ETAT service should be provided 24 hrs a day, 365 days a year. Adult and Paediatric Triage Protocols should be developed and implemented. Protocols should be posted on the walls of triage areas as an 'aide memoire' for triage staff.

The WHO has developed detailed ETAT guidelines for paediatric cases. These are presented in Appendix A and should be adopted by all hospitals.

The WHO is currently developing ETAT guidelines for adults. When finalized, these should also be adopted by hospitals. In the meantime, hospitals should develop their own triage protocols following the basic steps outlined in Appendix B.

Following the initial triage and treatment to stabilize vital functions, patients should be assigned to the Case Management Team for further investigations, treatment and follow up. The Triage Officer should prioritize cases, determining which patients need the immediate attention of the Case Management Team, which patients are 'priority' cases, and which are less urgent (for example a patient with a minor wound whose vital signs are intact). The Triage Officer should also identify 'non-emergency patients' and refer such patients to Central (outpatient) Triage.

During triage and case management of adult and paediatric cases, runners'- should handle relevant administrative processes (such as patient registration, retrieving the patient's medical record, making payments etc). For further information on the process of registration see *Chapter 3 Medical Records Management*.

C) Emergency Triage and Treatment Human Resource Requirements

The Emergency Triage Officer should be trained in Emergency Triage and Emergency Case Management. Preferably he/she should be a physician but if this is not possible another skilled health worker may take this role. He/she should be assisted by a Clinical Nurse and runner. If the workload is high the hospital may appoint more than one Emergency Triage Officer, Nurse and Runner.

¹ World Health Organization. 2005. *Emergency Treatment and Triage: Participant Manual.*

D) Emergency Triage and Treatment Equipment and Supply Requirements

The emergency triage should be equipped with the following items as a minimum. Each hospital should conduct its own assessment to determine the quantity of each item and any other necessary items in addition to the following:

- Desk
- Chairs
- Examination bed
- Thermometer
- Adult Stethoscope
- Paediatric Stethoscope
- Adult sphygmomanometer
- Paediatric sphygmomanometer
- Light source
- Tourniquet
- Pulse oximeter
- ECG
- Defibrillator
- Oxygen
- Oral and nasopharyngeal airways- adult/paediatric size
- Ambu bags- adult/paediatric size
- Suction
- Intubation sets
- Foley catheters
- Chest drain sets
- Dry dressings/ bandages
- Casting materials
- Finger prick glucotest and finger prick haemoglobin
- Urine dipsticks and urine pregnancy tests
- Weight scale- adult/paediatric- hanging, tape measures
- Screens, partitions or separate rooms
- Walkers, wheelchairs, stretchers
- Gloves, face masks and other personal protective equipment
- Emergency drug supply (See *Chapter 4 Pharmacy Services;* Appendix H for a list of recommended drugs).

E) Emergency Triage and Treatment Training Requirements

All emergency triage clinical staff should be trained to conduct triage and emergency treatment, following the established triage protocols

3.3.4 Emergency Case Management

A) Emergency Case Management Pathway

Patients enter the emergency case management pathway upon referral from the Emergency Triage Officer. Appropriate care is then initiated by the emergency physician and based on the outcome the patient is either admitted, discharged (with or without a follow up appointment) or referred (see Figure 2 below).





A: Inpatient service flow D: Discharge service flow DR: Delivery service flow: DI: Diagnostic Imaging Service flow E: Epidemic notification flow ER: Emergency Service flow F: Pharmacy service flow L: Laboratory service flow O: Outpatient service flow R: Registration service. Source: Federal Democratic Republic of Ethiopia Ministry of Health. (2008). Curative, Rehabilitative and Treatment Sub-Business Process. The New General and Specialized Hospital Business Process Study Report

B) Emergency Case Management Activity

The emergency physician on duty should take a full history and examine the patient and arrange for any investigations required.

Laboratory samples should be obtained within the emergency department and analyzed either within the department or at the central laboratory, depending on the test requested.

At a minimum the following tests should be provided in the Emergency Department:

- Haemoglobin,
- Haematocrit,
- Blood film,
- Blood group and cross match,
- Total cell count,
- Random blood sugar,
- Urinalysis,
- Stool examination, and
- Pregnancy test.

More complex tests may be performed in the Central Laboratory. If the sample is to be tested in the central laboratory then a runner should take the specimen to the laboratory and collect the result.

If radiology tests are required these too should be conducted in the Emergency Department using a portable X-Ray. If this is not possible a runner should transport the patient to the X-Ray department where the test will be conducted. Results should be taken back to the Emergency Department by a runner.

If medication is required, a prescription should be issued by the emergency physician and should be dispensed by the emergency room dispensary.

A cashier service should be available within the emergency department for the payment of all emergency room treatments, investigations, drugs and consumables. Runners should assist the patient and/or caregiver with making payment.

Patients who require short term treatments (such as IV fluid administration, a loading dose of IV antibiotics etc) may be transferred to a bed in the Emergency Services and kept for a maximum of 24 hours. Any patient who requires treatment for a longer period of time should be admitted to an inpatient ward.

Following assessment, investigation and treatment the patient may be discharged home, referred for a follow-up appointment at the outpatient services admitted to an inpatient ward or referred to another facility.

If an outpatient follow up appointment is necessary this should be arranged by the Liaison Officer and an appointment card should be given to the patient before he/she leaves the emergency department (see section 3.4.3 below).
If the patient is to be admitted to the hospital the Liaison Officer will check the availability of a bed and arrange for the patient to be transferred to the appropriate ward, escorted by a runner with his/her medical record (see section 3.7.3 below).

If a bed or the service required is not available at the hospital, the Liaison Officer will contact other facilities or the Regional Emergency Command Centre (if available) to identify a hospital with the capacity to provide care to the patient and will facilitate referral following agreed protocols (see section 3.7.4 below). If the service is not available in another facility the patient must be kept in the hospital to receive treatment.

C) Emergency Case Management Human Resource Needs

A case team comprised of clinical and support staff will provide emergency services. Table 1 describes the minimum human resource needs of the Emergency Case Team.

NB: some of the personnel described in Table 1 below (such as Specialists, Social Worker) may also be part of the Inpatient Case Team, however they should be readily available to provide support/consultation to the Emergency Case Team whenever required. The Emergency Case Team should have ready access to the Liaison and Referrals Service (see section 3.7 below).

	8 /
Clinical	Non-Clinical
General Practitioner/Health Officer	Data clerk
Professional/Clinical Nurse	Runner
Pharmacist/Druggist	Porter
Lab Technologist/Technician	Cashier
Imaging Personnel	Cleaner
Specialists (e.g. Internal Medicine, Paediatrics,	Security
Surgery, Gynaecology etc)	Social Worker

Table 1.Human Resource Needs for Emergency Services

D) Emergency Case Management Equipment and Supply Needs

Each triage and treatment room should be equipped with equipment and supplies needed to provide care. Table 2 presents a list (not exhaustive) of items that should be available in the emergency department for patient treatment and care. Each hospital should conduct its own assessment to determine other items in addition to those described in Table 2 below.

Table 2.Equipment and Supply Needs for Emergency Services

Equipment and Furniture	Supplies
Stretcher	Emergency Drugs
Wheel chair	Cleansing agents/chemicals
Office furniture	Antiseptics/Disinfectants
Screen	Dressing materials
Diagnostic kits	Stationary
Resuscitation tools -adult/paediatric	Personal Protective Equipment
Examination beds	
Short stay beds	

Refrigerator
Weighing scale
IV stand
Procedure kits
Lab equipment
Mobile X ray
Ultrasound
Monitoring machines
Electrocardiogram
Oxygen cylinder with accessories
High power mobile lamps
Telephone
Computer
Wall clock

3.4 Outpatient Services

3.4.1 Outpatient Services Layout

Outpatient services consist of:

- a) central triage
- b) clinical assessment, sample collection and treatment rooms
- c) pharmacy dispensing unit and cashier
- d) laboratory team, with cashier
- e) imaging diagnostic team, with cashier

Outpatient Services should be organized in a manner that reduces the amount of time that it takes a patient to travel from one service location to another. Although each facility has a different layout and plan, clinical services should be organized as close to one another as possible. A possible layout of outpatient services is presented in Figure 3 below.

Figure 3 Sample Layout of Outpatient Services



The central triage is the first point of patient contact in outpatient services. The central triage infrastructure should include a shaded waiting area, registration and medical record storage, cashier and, clinical assessment areas. There should be separate assessment areas for adult and paediatric cases. Following central triage, patients should be directed immediately to a case team, or to a shaded waiting area where they will wait until it is their turn to be seen by their assigned case team.

3.4.2 Outpatient Services Management and Organization

Outpatient Services will be overseen by the Director of Outpatient Services. He/she is responsible for all activities conducted in the Department including:

- Patient triage,
- Case management, and
- Laboratory, pharmacy and diagnostic services.

3.4.3 Central Triage

A) Central Triage Pathway

Patients will be directed to Central Triage from the reception service (or Emergency Department). Within Central Triage the patient will undergo a triage assessment and all relevant administrative processes (registration, medical record retrieval, payment etc) will be conducted. (For further information on the process of registration see *Chapter 3 Medical Records Management*). The triage assessment will assign each patient to an appropriate case team (outpatient case team or emergency case team). The patient will then be directed to the relevant case team and his/her medical record will be delivered to the case team by a runner.

B) Central Triage Activity

Central Triage should be open during regular working hours. All patients should undergo Central Triage EXCEPT:

- Emergency cases (should immediately attend emergency department),
- Labouring mothers (should immediately attend delivery unit),
- Those with an appointment (should immediately go to relevant case team), and
- Private patients (should immediately go to private wing).

The first step in Central Triage activity is to assess and treat emergency signs, following the adult and paediatric ETAT protocols described in Appendices A and B. The Triage Officer should identify patients who would be more appropriately treated by the emergency case team, and after stabilizing vital signs, should transfer these patients to the emergency case team. If the patient does not have an emergency condition, the Triage Officer should then determine the nature and urgency of the client's medical problem and determine the appropriate service/case team required by the patient. If the service is not available in the hospital then a referral should be made to another facility (see section 3.7.4 below). If the service is available the patient should be transferred to the appropriate case team or given an appointment for the next available date.

When scheduling appointments for the same, or a future date, staff should take all relevant patient information into account, including:

- The severity of the condition,
- Distance travelled by patient,
- Financial status of patient (for example financial difficulties that could prevent the patient returning to the hospital at a future date taking into consideration transport and/or hotel costs), and
- Social circumstances of patient (for example loss of income due to absence from work, childcare needs of dependent children etc).

The criteria by which a patient is given priority for treatment should be written and visible to patients and staff to ensure transparency in the process.

If the patient can receive services on the same day he/she will complete all necessary registration and payment requirements in the Central Triage and then be directed to the relevant outpatient case team.

If the appointment is scheduled for a future date, the patient should be given an appointment card and advised to report to the appropriate case team on the date of their appointment, without undergoing Central Triage again. A sample Appointment Card is presented in Appendix A, item 3 of *Chapter 3 Medical Records Management*.

Appointment system

Outpatient appointment systems should be established for both general outpatients and for all specialist services provided by the hospital.

To achieve this, Appointment Books should be established for each general and specialist case team. Each Appointment Book should have a defined number of slots that are kept free for 'urgent' patients who undergo triage and require treatment on the same day.

Figure 4 below presents the Contents of a Sample Appointment Book for a Case Team that can manage 15 'same day treatment' patients and 10 'booked appointments' on a single day.

Date:					
Appointment	Patient name	Medical	New or follow-	For new	Case Team
number		record number	up	appointments,	
				source of	
				appointment (e.g.	
				Central Triage or	
				referred from	
				elsewhere)	
Urgent cases, req	uiring same day t	treatment (these a	ppointment slots	should not be filled	
in advance)					
1					
2					
3 etc					
15					
Non urgent cases.	. These appointme	ent slots can be bo	oked in advance		
16					
17 etc					
25					

Figure 4 Contents of Sample Appointment Book

Appointments can be made following Central or Emergency Triage. During regular working hours the Appointment Books should be maintained by the Central Triage Case Team. A clerical staff member of the Central Triage Case Team should complete the Appointment Book and issue Appointment Cards following the instructions of the Triage Officer. Patients should then be directed as follows:

- a) *Patient to be seen on the same day*: Registration and payment completed. Patient's Medical Record created or retrieved, and passed to assigned case team. Patient directed to outpatient department waiting area.
- b) *Patient to be seen on future date*: Appointment book completed by clerical staff member and Appointment Card given to patient following the instructions of the Triage Officer. A runner should assist patients from the Emergency Case Team to book follow-up appointments if necessary. On the day of the appointment the patient should be directed straight to the relevant case team without undergoing Central Triage.

Appointments may also be booked by other facilities through the Liaison and Referral Service (see section 3.7.2 below)

During non-regular hours the Appointment Books should be held by the duty Liaison and Referral Officer, who should complete the Appointment Book and issue an Appointment Card to any patient who attends the Emergency Services during 'non-regular hours' and who requires outpatient follow-up.

At the start of each day runners from the respective Case Teams should ensure that the Medical Records for all patients who have an appointment for that date are available in the Case Team first thing in the morning.

The appointment system should be kept under review to ensure efficiency. For example, if a Case Team regularly finishes the workload early in the day, before the end of regular working hours then the number of appointments should be increased, whereas if the Case Team regularly fails to complete the workload during regular working hours, or patient transit time (from arrival to completion of the episode of care) is long, then the number of appointments may need to be reduced.

C) Central Triage Human Resource Requirements

The Central Triage Case Team consists of both clinical and non-clinical staff. Paediatric and adult triage should be conducted separately, with separate Triage Case Teams and rooms for adult and paediatric cases.

Ideally, triage should be carried out by a General Practitioner. However, depending on the availability of human resources, a Health Officer or BSc Nurse could conduct triage for patients attending the outpatient department.

Non-clinical members of the Central Triage case team include runners, cashiers, registrars/ clerks and cleaners. The runners are responsible to facilitate the registration of patients and to transport patients as needed.

The Central Triage Case Team should have ready access to the Liaison and Referrals Service (see Section 3.7.5 below).

D) Central Triage Equipment and Supply Requirements

The Central Triage should have sufficient equipment and supplies for the patient workload.

The following is a list of the minimum items that should be available for the Central Triage:

- Office furniture
- Examination bed x 2 (one for adult and one for paediatric cases)
- Thermometer x 2
- Adult stethoscope
- Paediatric stethoscope
- Adult sphygmomanometer (automatic or manual)
- Paediatric sphygmomanometer (automatic or manual)
- Adult weight scale
- Paediatric weight scale/balance
- Resuscitation tools
- Electrocardiogram (ECG)
- Pulse oximetry
- Wheelchair

- Stretcher
- Screens, partitions or separate rooms
- Gloves, face masks and other personal protective equipment
- Wall clock(s)
- Microphone/PA system

E) Central Triage Training Requirements

All Central Triage clinical staff should be trained to conduct triage, following the established triage protocols. Staff should also be trained on customer service.

3.4.4 Outpatient Case Management

A) Outpatient pathway

Outpatient services should be organized as Case Teams. There should be General Case Teams and Specialist Case Teams for all specialist services provided by the hospital. Patients enter the outpatient case management pathway from Central Triage or directly from the reception service if they have a pre-booked appointment. Appropriate care is then initiated by the Case Team and based on the outcome the patient is either admitted, discharged (with or without a further appointment) or referred.

Figure 5. Typical Pathway for Outpatients



A: Inpatient service flow **D**: Discharge service flow **DR**: Delivery service flow: **D**I: Diagnostic Imaging Service flow **E**: Epidemic notification flow **ER**: Emergency Service flow **F**: Pharmacy service flow **L**: Laboratory service flow **O**: Outpatient service flow **R**: Registration service. **Source:** Federal Democratic Republic of Ethiopia Ministry of Health. (2008). *Curative, Rehabilitative and Treatment Sub-Business Process. The New General and Specialized Hospital Business Process Study Report.*

B) Outpatient activity

The outpatient case team will take a history and examine the patient. If laboratory tests are required samples should be collected from the patient within the outpatient department. Ideally, samples should be collected in the initial consultation suite by a nurse or phlebotomist, and a runner is responsible to take the sample to the laboratory testing area and to assist the patient to make payment. If it is not possible to take a sample in the initial consultation room then there should be a specific sample collection and payment area within the OPD that is easily accessible to all OPD patients and has sufficient staff to prevent delay. Runners should transport samples from the collection area to the testing laboratory and should take all results back to the clinical case team.

The Diagnostic Imaging department should be located in close proximity to OPD and any patient who requires imaging services should be directed there, with the assistance of a runner, if necessary.

The results of all investigations should be taken by a runner back to the patient's case team as soon as they are available. The patient will then be reviewed by the case team and the results of any investigations and treatment options should be explained and discussed with the patient.

If the patient needs consultation with another Specialist this should, as far as possible, take place on the same day. A consultation request form should be completed and this should be given to the appropriate Specialist together with the patient's Medical Record. A sample Consultation Request Form is presented in Appendix B, item 6 *Chapter 3 Medical Records Management*.

If medication is required the patient should be directed to the pharmacy dispensing unit from where he/she will make payment (if necessary) and obtain the necessary drugs and appropriate counselling.

Any minor procedures that are required (such as dressings change or injections) should be carried out in the outpatient department.

If the patient needs to be admitted to hospital the case team will contact the Liaison and Referral Service to arrange admission (emergency or elective).

C) Outpatient case team human resource needs

The hospital's outpatient services should be organized in clinical case teams according to the clinical services provided by the hospital. Each case team should have a clinician (specialist, physician or health officer) plus a nurse. Additionally, there should be sufficient staff to run a pharmacy dispensing unit (pharmacy case team), to collect samples for laboratory testing and to undertake diagnostic imaging.

Non-clinical staff required within the OPD include: runners, cashiers, cleaners and security personnel.

The Outpatient Case Team should have ready access to the Liaison and Referrals Service (see section 3.7.5 below).

D) Outpatient case team equipment and supply needs

Each case team room should be equipped with equipment and supplies needed to provide care. The following is a list of suggested items that should be found in the case team room. It is not an exhaustive list of all possible equipment and supplies, but should be used by each facility as a guide when determining equipment needs.

Equipment and Furniture	Supplies
Examination bed	Patient forms:
Chairs and tables	• History and examination sheets
Stretcher	Consultation request form
Wheel chair	Referral form
Stethoscope	• Laboratory, X ray request form
Sphygmomanometer (automated or manual)	Prescription pads
Otoscope	Sample collection supplies
Ophthalmoscope	Dressing supplies
Thermometer	Personal protective equipment
Weight scale	
Measuring tape	
Screen for patient examination	
Steam sterilizer	
Minor procedure kits	
Computer	

 Table 3.
 Equipment and Supply Needs for Outpatient Services

3.5 Inpatient Services

3.5.1 Inpatient Services Layout

Patient wards should be located in close proximity to the emergency and outpatient departments and should be easily accessible from elevators, ramps or stairways. Each ward should have a functioning set of toilets, sinks and showers. There should be sufficient seating for caregivers and visitors. If mixed-sex wards are used there should be separate areas/rooms for male and female patients. Similarly, if adult and paediatric cases are mixed there should be separate areas/rooms for paediatrics. All wards should have a case team station and patients should be allocated beds such that the most critical patients are closest to the case team station. Wards should be laid out to facilitate the collection of laboratory samples from patients (i.e. sufficient space around beds for blood collection, bed screens or curtains to maintain privacy during wound examination and swab collection, etc.). Each ward should have a procedure room where minor procedures can be performed and where simple diagnostic tests (such as urinalysis) can be carried out.

Laboratory and pharmacy dispensary services should also be readily accessible to the inpatient wards.

3.5.2 Inpatient Services Management and Organization

The Director of Inpatient Services should oversee all inpatient activities. Clinical and support staff should be organized into Case Teams by type of Speciality (e.g. Surgery, Internal Medicine, Paediatrics, Obstetrics and Gynaecology). Case Teams should be comprised of specialists, general practitioners, health officers, nurses, runners, cleaners etc. Each Case Team should be led by a Case Team Leader. Pharmacy and laboratory personnel should also form part of inpatient services and should provide support and advice to the Clinical Case teams on individual patient care as the need arises (see *Chapter 4 Pharmacy Services* and *Chapter 5 Laboratory Services* for more information).

3.5.3 Inpatient Case Management

A) Admission process

All admissions should be arranged through the Liaison Service following the process described in Sections 3.7.2 and 3.7.3 below.

The hospital should have a written protocol for the admission of patients that includes all steps to be taken in the admission process including how to arrange admission, and the activities to be undertaken when the patient arrives on the ward. This should be known by, and adhered to by all relevant staff.

Upon arrival on the ward the patient should be received by a nurse who will initiate the ward admission process, including orientation to the facilities (such as toilet and showers), instructions for care-givers etc.

The patient should be assessed by a medical doctor upon arrival on the ward and a History and Physical Examination Assessment should be completed. This should include the immediate management plan for the patient. A sample History and Physical Examination Assessment Form is presented in Appendix B, item 4, *Chapter 3 Medical Records Management*.

Additionally, a Nursing Assessment should be completed within 24 hours of admission and a Nursing Care Plan developed. For further information on the Nursing Process, including sample formats, see *Chapter 6 Nursing Care Standards*.

Figure 6. Typical Pathway for Inpatient Admission.



A: Inpatient service flow **D**: Discharge service flow **DR**: Delivery service flow: **DI**: Diagnostic Imaging Service flow **E**: Epidemic notification flow **ER**: Emergency Service flow **F**: Pharmacy service flow **L**: Laboratory service flow **O**: Outpatient service flow **R**: Registration service. **Source:** Federal Democratic Republic of Ethiopia Ministry of Health. (2008). *Curative, Rehabilitative and Treatment Sub-Business Process. The New General and Specialized Hospital Business Process Study Report.*

B) Inpatient activity

After the initial assessment by the physician, the patient should be reviewed regularly (at least once a day) by the relevant Case Team and all clinical contact should be documented in the Medical Record using a hospital Progress Sheet (see Appendix B, *Chapter 3 Medical Records Management*).

Any required investigations should be ordered on the relevant request forms. Laboratory specimens should be collected from the patient while on the ward. If the patient requires an X-Ray or ultrasound investigations he/she should be directed to the relevant department, transported to the department using a wheelchair or stretcher and accompanied by a runner or clinical staff member if necessary.

Medications should be administered and documented using standardized formats.

Samples of all Medical Record Forms, including Investigation Order and Report Forms, Medication Administration Record etc, are presented in Appendix B of *Chapter 3 Medical Records Management*.

As part of inpatient services particular attention should be given to the the organization of operating theatre activities, Box A presents recommendation on operating theatre management and layout.

Box A Operating Theatre

Management: The Operating Theatre should be under the team leader (or equivalent) of surgical services who is accountable to the Inpatient Services Director.

Layout: For a successful outcome of the operation in terms of healing the wound, decreasing blood loss and controlling pain, the OR should be a place that is comfortable and unobstructed by the movement of other staff. It should have a table that is strong enough to hold the patient and is easy to clean.

The Operating Theatre should have basic services of water, light and medical gasses and an adequate place to store instrument. The number of OR tables depends on the number of beds of the hospital. There should be one OR table for every 25 surgical beds. Ideally, the Operating Theatre should be located on the floor as the surgical ward and should be connected to the ward by the simplest possible route. Preferably the Operating Theatre should adjoin the sterilization units, delivery suites and intensive care unit.

The following service areas are needed in an operating theatre suite:

- 1. Reception and office area
- 2. Transfer area: large enough to transfer a patient from bed to trolley
- 3. Holding bay: to allow supervision of patients waiting for the OR
- 4. Staff changing room
- 5. Operating theatre
- 6. Scrub room
- 7. Trolley parking
- 8. Recovery room

Equipment and Staff: should be provided as per the national standard for general and specialized hospitals.

The intensive care unit of a hospital should also be given attention. Recommendations on ICU management are presented in Box B.

Box B. Intensive Care Unit (ICU)

The ICU, also called critical care unit, is a specialized unit in a hospital that provides intensive care medicine. Many hospitals have also designated areas for intensive care for certain specialties. Examples include; neonatal, medical, surgical, cardiac etc. The ICU is for critically ill patients who need constant medical attention and highly specialized equipment, to control bleeding, support breathing, control toxaemia and prevent shock. Patients come from the recovery room of the operation theatre, from wards, or from emergency or outpatient units.

Management: The management of the intensive care unit should be under the team leader of the respective specialty who is accountable to the Inpatient Director or equivalent.

The layout of intensive care unit depends on the type of intensive care unit that a hospital has.

However, the following points are applicable:

- The ICU should be adjacent to the operating theatre and recovery unit.
- The number of beds should be approximately 1-2% of the total number of beds of the hospital.
- Preferably, the ICU should have a controlled environment with medical gasses and power sources.

Equipment and Staff: should be provided as per the national standard for general and specialized hospitals.

C) Discharge Process

The hospital should establish a written protocol for the discharge of patients stating all the steps to be followed when arranging discharge, including preparation of a discharge summary and handling of the medical record after discharge. In particular, when a patient is ready for discharge he/she should be counselled by a member of the Case Team. This should include:

- An explanation of the patient's diagnosis, investigation results and treatments given
- An explanation of any medications that the patient should continue to take upon discharge
- Any necessary follow up arrangements
- A discussion of any 'warning signs' that the patient should be aware of and for which he/she should seek medical attention

The decision for discharge should be made by a physician who should complete a discharge summary for the patient. A copy of the discharge summary should be given to the patient and a second copy filed in the Medical Record. If a patient was referred from another facility the discharging physician should also complete the feedback section of the Referral Paper. A Sample Discharge Summary is presented in Appendix B, item 21 of *Chapter 3 Medical Records Management*.

D) Patient death

If a patient dies in the hospital the death should be confirmed by a physician. A death summary should be completed and should be documented in the patient's medical record. A sample Death Report is presented in Appendix B, item 3 of *Chapter 3 Medical Records Management*. If it is necessary to confirm the cause of death a post mortem examination form should be completed and the body should be transferred to the pathology case team for post mortem examination. A sample Post Mortem Request Form is presented in Appendix B, item 22 of *Chapter 3 Medical Records Management*. When all necessary medical examinations are complete the body should be stored in the hospital morgue until collection by the patient's relatives or other responsible person. If the patient does not have a next of kin, the local authority is responsible for collecting the body.

All unexpected deaths should be reported to, and investigated by, the hospital Mortality Committee. For further information on roles of the Mortality Committee see Section 3.2.2 of *Chapter 12 Quality Management*.

E) Inpatient Service Human Resource Requirements

Inpatient services should be provided by Case Teams comprised of:

- Specialist(s)
- General practitioner(s)
- Nurses
- Porters/runners
- Cleaners

Laboratory and Pharmacy staff should also be assigned to each Case Team. It may not be necessary for Laboratory and Pharmacy personnel to attend every ward round or case team meeting. However, the frequency with which Laboratory and Pharmacy personnel meet with the case team and/or participate in ward rounds should be sufficient to ensure that each can provide appropriate advice to the case team on individual patient care when needed (see *Chapter 4 Pharmacy Services* and *Chapter 5 Laboratory Services*).

F) Inpatient Service Equipment and Supply Requirements

The minimum equipment and supplies for patient wards include:

- beds, mattresses, pillows, linens and blankets
- chairs, tables, and bed side tables
- bed screens
- emergency trolley with resuscitation equipment and emergency drugs
- oxygen
- suction machine
- stethoscope(s)
- sphygmomanometer(s)
- thermometer(s)
- tendon hammer
- weight scale

- pulse oximeter
- IV stands
- trolleys, wheelchairs and stretchers
- dressing sets
- minor procedure sets according to the type of ward/case team
- personal protective equipment

3.6 Delivery Services

3.6.1 Delivery Services Layout

The Delivery Service is comprised of the antenatal and postnatal ward(s), delivery suite (labour and delivery rooms) and the neonatal unit. An operating room(s) should be readily accessible. Ideally, there should be a specific operating theatre(s) for the delivery suite but if this is not possible the general operating theatre should be located nearby and obstetric cases should be given priority over other surgical cases to minimize delay and prevent avoidable maternal and perinatal deaths.

Ideally the delivery suite should be located on the ground floor and should be easily accessible to stretchers, wheelchairs and ambulances. The antenatal, postnatal and neonatal wards should be located adjacent to, or nearby the delivery suite. The delivery suite should be organized sequentially as follows: pre-delivery assessment, observation room(s), delivery room(s) equipped with equipment for neonatal resuscitation, and post-delivery room(s). The delivery suite should also be equipped with patient toilets, sinks and showers. The delivery suite should have a nurses' station, staff changing facilities and a store.

There should be an emergency drug supply within the delivery suite for all essential maternity and neonatal drugs.

3.6.2 Delivery Services Management and Organization

The Maternity Services will be led by the Director of Inpatient Services. He/she is responsible to oversee all activities and ensure sufficient manpower, equipment and supplies for safe delivery services.

3.6.3 Delivery Services Case Management

A) Delivery Services Pathway

Labouring mothers should be directed immediately to the delivery suite by the reception service. Assistance may be provided by a runner, using a wheelchair or stretcher if necessary. Within the delivery suite the patient will be assessed by the Midwife in Charge. At the same time all relevant administrative processes (registration, medical record retrieval, payment etc) will be conducted with the assistance of a runner. The patient will be admitted, discharged or referred to another facility according to her status and the availability of the necessary service in the receiving facility.

Figure 7. Typical Pathway for Delivering Mothers



A: Inpatient service flow D: Discharge service flow DR: Delivery service flow: DI: Diagnostic Imaging Service flow E: Epidemic notification flow ER: Emergency Service flow F: Pharmacy service flow L: Laboratory service flow O: Outpatient service flow R: Registration service. Source: Adapted from Federal Democratic Republic of Ethiopia Ministry of Health. (2008). *Curative, Rehabilitative and Treatment Sub-Business Process. The New General and Specialized Hospital Business Process Study Report.*

B) Delivery Services Activities

Upon arrival in the delivery suite the labouring mother should be assessed for signs of, and the stage, of labour. An assessment of foetal wellbeing (using foetoscope, Doppler or cardiotocograph) should also be conducted.

If the mother is in labour a partograph should be commenced and labour and delivery managed accordingly.

If laboratory investigations are required the sample should be collected in the delivery suite and taken to the testing area by a runner. Payment should be facilitated by a runner.

Normal and complicated deliveries should be managed in the delivery suite including:

- Assisted vaginal delivery, preferably with vacuum,
- Manual removal of placenta,
- Blood transfusion, and
- Neonatal resuscitation.

If Caesarean section is required the patient should be transferred immediately to the operating theatre where surgery should be performed without delay (ideally within 30 minutes from the time at which the decision to operate was made).

After normal delivery the mother and neonate should remain in the hospital for 6 hours and may then be discharged if both are in a stable condition.

If there is an obstetric complication that cannot be managed by the hospital then the patient should be referred to another facility by the Liaison and Referral Service, following the process described in section 3.7.4 below.

Before discharge all patients should be advised to attend for postnatal care. Those with uncomplicated, normal deliveries should be advised to receive postnatal care at a primary healthcare unit (health post or health centre). Those with complications (such as Caesarean Section, eclampsia, haemorrhage etc) may be advised to return to the hospital for postnatal care, and an appointment should be given before discharge (see Section 3.7.3 below).

C) Delivery service human resource requirements

The delivery service case team is comprised of clinical and support staff as follows:

- Obstetrician(s)
- General physician (s)
- Paediatrician(s)
- Anaesthetist(s)
- Midwife Nurses
- Porter/runner
- Cleaners, etc

D) Delivery Suite Equipment and Supply Requirements

The minimum equipment and supplies for the delivery service include:

- Beds, mattresses, pillows, blankets, linens, etc
- Chairs, bed side tables/lockers
- Bed screens
- Delivery beds
- Examination couches

- Thermometer(s)
- Sphygmomanometer(s)
- Tendon hammer(s)
- Stethoscope(s)
- Foetoscope(s) or Foetal Doppler
- Adult weight scale
- Neonatal weight scale
- Oxygen (cylinder with flow meter or oxygen concentrator) with face mask and connectors
- Suction machine and tubes
- Ambu-bag and airways
- IV stands
- Vacuum extractor (preferably with silastic cups of various sizes)
- Procedure kits:
 - Delivery set
 - Episiotomy set
 - Perineal suture set
 - Manual Vacuum Aspiration Set
 - Craniotomy set
- Personal protective equipment
- Neonatal cots
- Neonatal heater/baby warmer(s)
- Neonatal incubator (s)
- Stretchers and wheelchair
- Patient trolley(s)
- Emergency drugs
- Wall clock

3.7 Liaison and Referral Service

Each hospital should establish a Liaison and Referral Service that is responsible to:

- 1. Manage hospital bed occupancy (bed management)
- 2. Facilitate emergency and non-emergency (elective) admissions
- 3. Provide social service support to the Emergency, Inpatient and Outpatient Case Teams
- 4. Manage the referral service, specifically:
 - Coordinate the overall referral activities within the health facility
 - Record and report the referral activities to facility management
 - Compile, analyze and interpret data to improve the referral service
 - Take part in the quality assurance programs of the referral system by participating in regular review meetings within and outside the health facility
 - Perform supportive supervision
 - Ensure feedback is sent back to the referring health facility

The Liaison and Referral Service is staffed by Liaison Officers. Each hospital should determine the number of Liaison Officers required based on the caseload. If the number of admissions and/or referrals is high, then at least one Liaison Officer should be assigned to the Outpatient Case Team and another to the Emergency Case Team. However, if the number of admissions and/or referrals is low then a single Liaison Officer could be responsible for all Liaison and Referral Services, providing he/she is readily accessible to each Case Team by telephone, pager or via a 'runner'.

Additionally, the Liaison and Referral Service should include at least one social worker. Social work assessment, advice and any necessary follow up is particularly important for emergency and paediatric cases, and should also be provided for any patient where social work assessment is requested by the relevant clinical case team.

The Liaison and Referral Service should establish and regularly update a Hospital Service Directory which includes:

- information about services provided by the hospital,
- contact information for key services (such as emergency, outpatient, inpatient, and delivery case teams, laboratory, radiology services etc), and.
- a map indicating the layout of hospital services.

Copies of the Service Directory should be distributed to Emergency, Outpatient and Inpatient Case Teams in addition to hospital managers.

3.7.1 Bed Management

The aim of bed management is to make maximum use of hospital beds, ensuring high bed occupancy, high patient turnover and minimum waiting times for elective admission.

Bed management is also a critical function of Major Incident Planning and Management (See Section 3.8.5 of *Chapter 8 Facilities Management*.

Steps to achieve the above include:

a) Reduce length of stay

No patient should remain in hospital any longer than is necessary. Patients are often not discharged when ready because:

- Ward rounds are irregular or infrequent and there is no one to authorize discharge,
- Required investigations or procedures are not carried out in a timely manner,
- There is a delay in arranging necessary follow up appointments, discharge or referral papers, or
- The hospital does not provide administrative or cashier functions to handle discharges 24 hours a day, 365 days a year.

A pro-active approach should be taken to minimized length of stay. Discharge planning should begin at the point of admission of each and every patient when the admitting physician should outline a plan of action, including investigations and procedures for the patient. Ward rounds should be conducted daily and the case team should ensure that each day the treatment plan is being followed or modified as required. On each ward round case teams should consider the possible discharge date for each

patient and should plan accordingly, ensuring that all necessary investigations and procedures are carried out promptly, referral papers are prepared etc.

Patients should be discharged every day of the week and hence ward rounds should be conducted daily to authorize discharge and all necessary administrative/payment functions required for discharge should be available on each and every day.

b) Make greater use of day surgery

Many surgical procedures can be carried out as day cases. Each hospital should establish a list of procedures that may be performed as day surgery. An example is given in Appendix C.

Day surgery requires a pre-operative assessment at which the patient is assessed for suitability as a day surgical case and appropriate pre-operative instructions (for example the need to fast prior to general anaesthesia, medication use etc) are given to the patient. When considering a patient for day surgery the following should be considered:

- The type of procedure
- The general health of the patient (for example patients with cardiac or respiratory disease are generally not suitable as day cases)
- Medications taken by patient (for example those on anticoagulant treatment may not be suitable for day surgery)
- The social circumstances of the patient (for example patients who do not have a responsible adult to care for them at home, or who must travel a long distance to reach home after surgery may not be suitable for day surgery)

Each hospital should strive to increase the proportion of day surgery carried out. The Director of Inpatient Services should monitor the proportion of surgery that is carried out as day surgery and report this to the Chief Clinical Officer on a regular basis (e.g. monthly). The proportion of all surgery that is carried out as Day Surgery could also be included as one of the indicators that is included within the Balanced Scorecard and regularly monitored by the Governing Board (see *Chapter 13 Monitoring and Reporting*)

c) Manage the admission process

All admissions should be co-ordinated through the Liaison and Referral Service. Priority should be given to emergency cases.

Effective management of the admission process requires knowledge of:

- 1. The total number of beds
- 2. The number of occupied beds at the midnight census (bed occupancy)
- 3. The number of beds that are due to be vacated or *could* be vacated that day
- 4. The number of 'reserved beds' for elective admissions that day, the urgency of and reason for admission, and length of time on the waiting list for that patient.

Each night, at midnight, every ward or inpatient case team should count the number of occupied beds. This number should be reported to the Liaison and Referral Service at the start of the working day.

Each ward/case team should also determine the number of patients due to be discharged that day, and this number should also be reported to the Liaison and Referral Service.

At the same time, the Liaison and Referral Service should keep a record of the number of elective admissions to each ward/case team expected for the day.

The number of available beds available in each Case Team can be calculated on a daily basis as follows:

Number of available beds

= total number of beds *minus* number of occupied beds *plus* number of expected discharges *minus* number of elective admissions.

The above calculation should be done on a daily basis for each ward/case team and for the hospital as a whole.

3.7.2 Elective Admission Process

Elective admissions may be booked by the Outpatient Case Team or Emergency Case Team.

When a patient requires elective admission a clinical member of the relevant Case Team should contact the Liaison Service providing, as a minimum, the following information:

- Patient name and medical record number,
- Summary of clinical history and reason for admission,
- Case team to which patient should be admitted (for example surgical case team, internal medicine case team etc), and
- Urgency of admission.

The Liaison and Referral Service should book the admission date and bed and give an appointment card to the patient.

On the day of admission the patient should report to the Liaison Officer and from there he/she will be assisted to make any necessary payment or registration and will be directed to the relevant Inpatient Case Team/Ward.

On a daily basis the Liaison Officer should inform each Inpatient Case Team of any planned admissions for the following day to ensure that the required service is available and allow the Case Team to make all necessary preparations for the admission.

3.7.3 Emergency Admission Process

If the patient is to be admitted as an emergency a clinical member of the relevant Case Team should contact the Liaison Service providing, as a minimum, the following information:

- Patient name and medical record number,
- Summary of clinical history and reason for admission,
- Case team to which patient should be admitted (for example surgical case team, internal medicine case team etc), and
- Urgency of admission.

When a request for admission is made the Liaison Officer should follow the steps below:

1. Is a bed immediately available in the relevant inpatient case team/ward?

If yes \rightarrow admit patient.

The Liaison Officer should inform the Case Team Leader of the admission and the patient should be transferred to the ward and any necessary administrative tasks carried out with the assistance of a runner.

2. Is there any patient in the relevant case team/ward due to be discharged that day?

If yes \rightarrow confirm that patient will be discharged. Identify and address any factors that are delaying discharge. Consider moving patient to Transit Lounge (if available) or another waiting area. In this way the bed can be freed and the new patient can be admitted.

Box C Transit Lounge

A Transit Lounge is an area where patients can wait for either admission or discharge. Similar to an airport, the Transit Lounge is a 'holding area' for patients who are either on their way into or out of the inpatient wards.

Patients who are due for discharge but who are awaiting administrative tasks (such as awaiting medication, referral papers for bill payment) can be asked to wait in the Transit Lounge for completion of these activities. In this way their bed becomes empty and is available for another admission.

Similarly, a patient who is being admitted to the hospital may be asked to wait in the Transit Lounge until his/her bed is prepared.

The Transit Lounge should ideally be located within Inpatient Services at a place that is easily accessible to all inpatient wards.

3. Is a bed available within another case team/ward?

If yes \rightarrow discuss with Director of Inpatient Services, and if appropriate, admit patient to that bed and inform the Leader of the Inpatient Case Team that is responsible for the patient where the patient is located. Ensure that the patient is transferred to 'correct' case team bed/ward as soon as a bed there becomes available.

- 4. Is there an elective admission that could be cancelled to make a bed available for the patient? As far as possible, planned admissions should not be cancelled. However depending on the priority it may be necessary to do so. Factors to be considered are:
 - The clinical urgency of both the planned admission and the emergency patient requiring admission,
 - The time on waiting list, distance travelled and other pertinent social circumstances of the elective case, and
 - The availability of a bed in another facility for the emergency patient requiring admission, and the distance to reach that facility.

If a bed can be made available by any of the steps above then the patient should be admitted. If a bed is not available, or if the required service is not available at the hospital then the patient should be referred to another facility (see section 3.7.4 below).

3.7.4 Referral Service

Each hospital should establish a Referral Protocol that outlines the criteria for making a referral to another facility and the process to be followed when making a referral, including use of the Referral and Feedback Form and any necessary clinical documents that should accompany the referred patient. The protocol should be known and adhered to by all relevant staff.

Each hospital should establish a Referrals Service Directory that lists facilities to/from which patients can be referred or received and the services available at each facility (the Referral Network). The contact details of each facility in the Referral Network should be documented. The criteria for receiving/referring patients to each facility should also be documented and agreed between all facilities participating in the Network. Standardized Referral and Feedback formats should be used by all facilities participating in the Network.

A sample Referral and Feedback Form is presented in Appendix B, item 24 of *Chapter 3 Medical Records Management*. For further guidance please also refer to the *Guideline for Implementation of a Patient Referral System in Ethiopia*.

Box D Referral Network and Emergency Command Centre

A Referral Network is a group of facilities that, in aggregate, provide comprehensive health care services in a defined geographical area. The Referral Network is comprised of both Referring and Receiving Units.

Each member of the Referral Network should have a Directory of Services and Organizations within the network, including contact information.

A standardized referral format should be used by each member of the Referral Network.

Ideally, the Referral Network should be developed by the Regional Health Bureau and should include a functioning transport system, with a Unit responsible to co-ordinate and oversee referral activities.

Regions may also establish an Emergency Command Centre to direct emergency patients to an appropriate facility for treatment. If a Command Centre exists then each hospital Liaison and Referral Service should provide regular updates to the Command Centre on the number of beds available in the hospital. If an emergency case arrives at the hospital, but cannot be handled by the hospital Emergency Service, or if no bed is available, then the Liaison and Referral Officer may contact the Emergency Command Centre to identify an alternative hospital to which the patient should be referred.

A hospital can be both a 'Receiving Unit' for patients referred from other facilities and a 'Referring Unit' to refer patients to another facility.

Referrals can be made for both outpatient services and for inpatient admissions.

a) The hospital as a Receiving Unit

The Liaison and Referral Service should maintain a Directory of all services that are available in the facility and should have an assigned telephone number and/or fax number that can be called by other facilities when making a referral request. This telephone/fax number should be circulated to other facilities in the Referral Network.

i) Receiving inpatient referrals

At the start of each working day the number of beds available in the facility should be ascertained by the Liaison and Referral Service (see section 3.7.1 above). When another facility phones/faxes the service to request an emergency admission the Liaison Officer can check bed and service availability, and if appropriate, agree to accept the referral. The Liaison Officer should then inform the Reception Service and the relevant Case Team (Emergency or Inpatient) so that the patient can be directed straight to the Case Team/Ward on arrival.

If the referral is non-urgent, an elective admission date can be given and the Referring Unit should be instructed to pass this information onto the patient, advising him/her to present to the Liaison Officer on the assigned date. As described under section 3.7.2 above, the Liaison and Referral Service should include these patients in the 'elective admission' list that is presented to the Inpatient Case Teams on a daily basis.

ii) Receiving outpatient referrals

If a telephone/fax request for an outpatient appointment is made, the Liaison Officer should obtain all relevant patient details and confirm that the referral is appropriate. The Liaison Officer should then book an appointment in the Appointment Book of the relevant Outpatient Case Team (see section 3.4.3 above) and give this appointment date to the Referring Unit, instructing the Referrer to pass this information onto the patient and to advise him/her to present at the Outpatient Department on the assigned date.

Patients who have been given appointments in this way should be directed by the reception service straight to the inpatient ward or to the Outpatient Case Team (without undergoing Central Triage).

iii) Receiving patients who are referred without a pre-booked appointment

If a patient attends the hospital with a referral paper but without a pre-booked appointment, then he/she must first be directed to Central Triage where the appropriateness and urgency of the case will be determined and subsequent Case Management conducted.

iv) Providing feedback on referrals

The 'Feedback' section of the referral paper should be completed by a physician. This should include a summary of the patient history, examination, investigation results, treatments given, future management plan/advise and any follow up appointments (if relevant). A copy should be given to the patient, a second copy should be faxed (or sent by alternative means) to the referring unit, and a third copy should be kept in the patient's medical record.

b) The hospital as a Referring Unit

All referrals from the hospital should be handled by the Liaison and Referral Service.

Referrals may be necessary if:

- The service required is not available in the facility, or
- A bed is not available in the facility.

To make a referral, a clinical member of the patient's Case Team should contact the Liaison and Referral Service and provide information on the case. The Liaison and Referral Service will advise whether a referral is necessary. If referral is necessary the Case Team member should complete the relevant clinical sections of the Referral and Feedback Form and give this to the Liaison Officer. The Liaison Officer should contact the most appropriate facility in the network (in accordance with policies established in the Referral Network Directory) and request the referral. If the patient is an emergency case and an Emergency Command Centre exists then the Liaison Officer should contact the Emergency Command Centre in the first instance. Once the referral has been agreed the Liaison Officer should complete the relevant administrative details on the Referral and Feedback Form. A copy of the Form should be kept in the patient's Medical Record and a copy should be given to the patient. Ideally, the Form should also be faxed to the Receiving Unit. The Liaison Officer should ensure that the patient has any necessary transport to reach the Receiving Unit, making use of a hospital vehicle if necessary.

If the required service and/or bed are not available in another facility then the hospital should keep the patient and provide treatment as necessary until the patient can be discharged or until the service and/or bed becomes available in another facility.

c) Follow up and audit of 'received' and 'referred' patients

The Liaison and Referral Service should keep a Register of all referrals received by and made from the facility. As a 'Receiving Unit' the hospital should ensure that a summary of the patient attendance is prepared and sent back to the Referring Unit. As a 'Referring Unit' the hospital should establish a mechanism to track all referrals and ensure that Feedback Forms are received for all patients who were referred by the facility. If Feedback Forms do not arrive when expected, the Liaison Officer should follow up with the Receiving Unit to check that the patient attended and to request a copy of the Feedback Form.

The Liaison and Referral Service should prepare regular (e.g. quarterly) reports on referral activities including:

- 1. The number of referrals accepted for outpatient appointments (by speciality if appropriate)
- 2. The number of referrals accepted for inpatient admissions (by speciality if appropriate)
- 3. The number of referrals made for outpatient appointments at another facility (by speciality if appropriate)
- 4. The number of referrals made for inpatient admission at another facility (by speciality if appropriate)
- 5. A breakdown, by facility name, or referrals received and referrals made

The number of referrals received and made by the hospital, as a proportion of all attendances, could be included as indicators in the Balanced Scorecard and monitored regularly by the Governing Board (see *Chapter 13 Monitoring and Reporting*).

3.7.5 Availability of Liaison and Referral Service

The Liaison and Referral Service should be available 24 hours a day, 365 days a year. Possible options to achieve this include:

- 1. If the caseload is high there should be a Liaison Officer 'on shift' within the Emergency Department providing 24 hour cover, 365 days a year; or
- 2. If the caseload is low, the Emergency Case Team could handle admissions and referrals during 'out of hours' periods. To achieve this, at the end of each working day the Liaison Service should provide information to the Emergency Department indicating the number and location of beds available in the hospital. A member of the Emergency Case Team on shift during each 'out of hours' period should be assigned as 'Deputy Liaison Officer' for the duration of that shift. He/she is responsible to facilitate emergency admissions to the available beds and to arrange emergency referrals (following hospital protocols) if a bed is not available. If an outpatient appointment is necessary this can be arranged by the 'Deputy Liaison Officer' by booking the appointment in the Appointment Book of the relevant Outpatient Case Team.

If the second option is selected then the Liaison and Referral Service should collect a record of patients admitted or referred from the Emergency Department at the start of each working day.

3.7.6 Promotion of Referral Network

The hospital should collaborate with other facilities in the network and the Regional Health Bureau to promote, monitor and evaluate the referral system. In particular, the hospital should promote and publicize the referral system through the community in order to ensure that all constituents are aware of the applicable service pathway. For further guidance on mechanisms to inform and involve the community see Section 3.1.5 of *Chapter 12 Quality Management*.

Section 4 Implementation Checklist and Indicators

4.1 Assessment Tool for Operational Standards

In order to determine if the Operational Standards of Patient Flow have been met by the hospital an assessment tool has been developed which describes criteria for the attainment of a Standard and a method of assessment. This tool can be used by hospital management or by an external body such as the RHB or FMOH to measure attainment of each Operational Standard. The tool is presented in Appendix E of *Chapter 13 Monitoring and Reporting*.

4.2 Implementation Checklist

The following Table can be used as a tool to record whether the main recommendations outlined above have been implemented by the hospital. This tool is not meant to measure attainment of each Operational Standard, but rather to provide a checklist to record implementation activities.

		Yes	No
1.	There is an emergency triage.		
2.	There is a central triage.		
3.	There are personnel trained in triage processes working in both the central and emergency triages.		
4.	Emergency and central triages are equipped with necessary supplies and equipment.		
5.	Outpatient appointment system is in place.		
6.	There is an appointment system for elective inpatient admission.		
7.	A Liaison and Referral officer has been assigned.		
8.	There is a written protocol for admission and discharge of patients.		
9.	There is a written protocol for the referral of patients (receiving into the hospital and referring outside of the hospital).		
10.	There is a referral directory listing which facilities that hospitals can receive patients from or refer patients to.		
11.	Bed occupancy information is gathered and reported.		

Table 4.	Patient Flow	Checklist
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4.3 Indicators

In addition, the following indicators may be monitored on a regular basis to assess the effectiveness/outcomes of implementation of the above recommendations.

S/N	Indicators	Formula	Frequency	Comments
1.	Total OPD attendances	The number of new and repeat outpatient visits (including emergencies and specialized clinics such as ART, VCT) during reporting period	Quarterly	HMIS indicator
2.	Number of ER attendances	Total number of ER attendances	Quarterly	
3.	a) Number of emergency inpatient admissionsb) % of total admissions	 a) Total number of ER inpatient admissions b) Total number of ER inpatient admissions/total number of admissions *100 	Quarterly	
4.	a) Number of elective inpatient admissionsb) % of total admissions	 a) Total number of elective inpatient admissions b) Total number of elective inpatient admissions/total number of admissions *100 	Quarterly	
5.	Number of major surgeries per surgeon	Total number of major surgeries/ total number of surgeons	Quarterly	HMIS indicator
6.	Inpatient days per doctor	Total length of stay in days (sum total of each daily patient census)/number of physicians	Quarterly	HMIS indicator
7.	Inpatient days per nurse	Total length of stay in days (sum total of each daily patient census)/number of nurses	Quarterly	HMIS indicator
8.	Inpatient days per other clinical staff	Total length of stay in days (sum total of each daily patient census)/number of other clinical staff	Quarterly	HMIS indicator
9.	Doctors per bed	Number of doctors/Average number of beds	Quarterly	HMIS indicator
10.	Nurses per bed	Number of nurses/Average number of beds	Quarterly	HMIS indicator
11.	Other clinical staff per bed	Number of other clinical staff/ Average number of beds	Quarterly	HMIS indicator
12.	Number of OPD visits per practitioner per day	Number of outpatient visits/(number of OPD practitioners *22*number of months in period)	Quarterly	HMIS indicator

Table 5.	Patient Flow Indicators

13.	ER wait time to triage [Average time from arrival at the emergency department to initiation of triage (minutes);]	Σ triage wait time/number of attendances	Quarterly	HMIS indicator
14.	OP wait time to triage [Average time from arrival at the outpatient department to initiation of triage (minutes)]	Σ triage wait time/number of attendances	Quarterly	HMIS indicator
15.	OP consulation transit time	Σ time from beginning of OPD consultation to discharge from the facility (following completion of investigations and purchase of any necessary drugs)/ number of attendances	Quarterly	HMIS indicator
16.	Bed Occupancy rate	Total length of stay in days (sum total of each daily inpatient census) during reporting period /[number of beds available * number of days in reporting period]	Quarterly	HMIS indicator
17.	Bed Turnover rate	Total number of discharges (including transfer outs and deaths)/average number of beds in reporting period	Quarterly	HMIS indicator
18.	Average length of stay (ALOS)	Total length of stay in days (sum total of each daily patient census) during reporting period /[total discharges + transfer outs and deaths]	Quarterly	HMIS indicator
19.	Delay for elective medical inpatient admission	Σ number of days on waiting list/number of patients	Quarterly	
20.	Delay for elective surgical inpatient admission	Σ number of days on waiting list/number of patients	Quarterly	
21.	Delay from inpatient admission to surgery	Σ number of days in hospital awaiting surgery/number of elective surgical admissions	Quarterly	
22.	 a) Number of referrals made to other facilities b) Referral rate (referrals made to other facilities) 	 a) The total number of OPD, ER or admitted patients who were referred to another facility with a referral paper b) The total number of OPD, ER or admitted patients who were referred to another facility with a referral paper / total OPD visits, ER visits and inpatient admissions*100 	Quarterly	

23.	 a) Number of referrals accepted from other health facilities b) Proportion of all attendances that were referred from another facility 	 a) The total number of OPD visits, ER visits and inpatient admissions who were referred from another facility with a referral paper b) The total number of OPD visits, ER visits and inpatient admissions who were referred from another facility with a referral paper / total OPD visits, ER visits and inpatient admissions*100 	Quarterly	
24.	% of inpatients indicating that it was it easy to find their way around the health facility.	The number of inpatients that responded yes to the question on the patient survey "Was it easy to find your way around the health facility?"/total number of respondents *100	Biannual	Survey tool presented in Appendix F of <i>Chapter</i> 12 Quality Management.
25.	% of outpatients indicating that it was easy to find their way around the health facility	The number of outpatients that responded yes to the question on the patient survey "Was it easy to find your way around the health facility?"/total number of	Biannual	Survey tool presented in Appendix F of <i>Chapter</i>

Source Documents

- 1. Federal Democratic Republic of Ethiopia Ministry of Health. (2008). Curative, Rehabilitative and Treatment Sub-Business Process. The New General and Specialized Hospital Business Process Study Report. Addis Ababa, Ethiopia.
- 2. Federal Democratic Republic of Ethiopia Ministry of Health. (2009, November). *Guideline for Implementation of a Patient Referral System in Ethiopia*. Addis Ababa.
- 3. Federal Democratic Republic of Ethiopia Ministry of Health. (2008, October). *Patient Flow: A Manual Prepared for Heads of Hospitals and Service Providers*. Addis Ababa, Ethiopia
- 4. WHO. (2005). Pocket Book of Hospital Care for Children. Guidelines for the Management of Common Illnesses with Limited Resources. Geneva: World Health Organization.
- 5. WHO. (2005). *Emergency Treatment and Triage: Participant Manual*. Geneva: World Health Organization.

Appendices

Appendix A WHO Paediatric Emergency Triage and Treatment (ETAT) Guidelines



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- Triage is the process of rapidly screening sick children soon after their arrival in hospital in order to identify: 1. ETAT
 - those with emergency signs, who require immediate emergency treatment; 1
- those with priority signs, who should be given priority while waiting in the queue so that they can be assessed and treated without delay:
- non-urgent cases, who have neither emergency nor priority signs.
- Emergency signs include:
- obstructed breathing
- severe respiratory distress
- central cyanosis
- signs of shock (cold hands; capillary refill longer than 3 seconds; weak, fast pulse)
- coma
- convulsions
- signs of severe dehydration in a child with diarrhoea (lethargy, sunken eyes, very slow return after pinching the skin-any two of these).
- Children with emergency signs require immediate treatment to avert death.

The priority signs (see below, page 5) identify children who are at higher risk of dying. These children should be assessed without unnecessary delay

- 1.1 Summary of steps in emergency triage assessment and treatment
- The process of emergency triage assessment and treatment is summarized in the Charts on pages 4-16.
- First, check for emergency signs.
- Check for emergency signs in two steps:
- Step 1. If there is any airway or breathing problem, start immediate treatment to restore breathing.
- Step 2. Quickly determine if the child is in shock or unconscious or convulsing, or has diarrhoea with severe dehydration

If emergency signs are found:

starting the treatment. Stay calm and work with other health workers who Call an experienced health professional to help if available, but do not delay

SUMMARY OF STEPS IN EMERGENCY TRIAGE ASSESSMENT AND TREATMENT

- 1. ETAT may be required to give the treatment, because a very sick child may need several treatments at once. The most experienced health professional should continue assessing the child (see Chapter 2, page 37), to identify all
- Carry out emergency investigations (blood glucose, blood smear, haemoglobin). Send blood for typing and cross-matching if the child is in shock, underlying problems and develop a treatment plan. •
 - or appears to be severely anaemic, or is bleeding significantly
- After giving emergency treatment, proceed immediately to assessing. diagnosing and treating the underlying problem.

ables of common differential diagnoses for emergency signs are provided from page 20 onwards.

- If no emergency signs are found, check for priority signs:
- Tiny baby: any sick child aged under 2 months
- Temperature: child is very hot
- Trauma or other urgent surgical condition
 - Pallor (severe)
 - Poisoning
- Pain (severe)
- Respiratory distress
- Restless, continuously irritable, or lethargic
- Referral (urgent)
- Malnutrition: visible severe wasting
 - Dedema of both feet
 - Burns (major)
- The above can be remembered with the help of "3TPR MOB"

what further treatment is needed. Move the child with any priority sign to the These children need prompt assessment (no waiting in the queue) to determine front of the queue to be assessed next. If a child has trauma or other surgical problems, get surgical help where available.





Chapter 2 Patient Flow





Chapter 2 Patient Flow










Chapter 2 Patient Flow

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- > If the child is severely malnourished the fluid volume and rate are different, so check that the child is not severely malnourished
- Shock in child with severe malnutrition-Chart 8 (and section 1.3, Shock in child without severe malnutrition-Chart 7 page 18)
- Insert an intravenous line (and draw blood for emergency laboratory investigations).
- Attach Ringer's lactate or normal saline—make sure the infusion is running well.
- Infuse 20 ml/kg as rapidly as possible.

Age/weight	Volume of Ringer's lastate or normal saline solution (20 ml/kg)
2 months (<4 kg)	75 ml
2-<4 months (4-<6 kg)	100 ml
4-<12 months (6-<10 kg)	150 ml
1-<3 years (10-<14 kg)	250 ml

350 ml

3-<5 years (14-19 kg)

Reassess child after appropriat	e volume has run in
Reassess after first infusion:	If no improvement, repeat 20 ml/kg as rapidly as possible.
Reassess after second infusion:	If no improvement, repeat 20 ml/kg as rapidly as possible.
Reassess after third infusion:	If no improvement, give blood 20 mUKg over 30 minutes (if shock is not caused by profuse diarrhoea, in this case repeat Ringer's lactate or normal saline).
Reassess after fourth infusion:	If no improvement, see disease-specific treatment guidelines. You should have established a provisional diagnosis by now.
After improvement at any stage Chart 11, page 16.	(pulse slows, faster capillary refill), go to

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CHART 8. How to give IV fluids for shock in a child with severe malnutrition

Ghe this treatment only if the child has signs of shock and is lethergic or has lost consciousness:

- Insert an IV line (and draw blood for emergency laboratory investigations)
- > Weigh the child (or estimate the weight) to calculate the volume of fluid to be
- Give IV fund 15 mKg over 1 hour. Use one of the following solutions (in order of preference), according to availability:

 Ringer's lactate with 5% glucose (dextrose); or
 half-normal saline with 5% glucose (dextrose); or
 half-strength Darrow's solution with 5% glucose (dextrose); or unavailable;

 given
- 1
- Ringer's lactate.

Weight	Volume IV fluid Give over 1 hour (15 ml/kg)	Weight	Volume IV fisid Bive over 1 heur (15 m(Ag)
4 kg	60 ml	12 kg	180 ml
6 kg	90 ml	14 kg	210 mi
8 kg	120 ml	16 kg	240 ml
10 kg	150 ml	18 kg	270 mil

- Measure the pulse and breathing rate at the start and every 5-10 minutes.
 - If there are signs of improvement (pulse and respiratory rates fail):
- switch to oral or nasogastric rehydration with ReSoMal (see page 179). - give repeat IV 15 mL/kg over 1 hour; then I
 - 10 mVkg/h up to 10 hours;
- If the child faits to improve after the first #5mUKg IV, assume the child has septic initiate refeeding with starter F-75 (see page 184).
 - shock
 - give maintenance IV fluid (4 mUkg/h) while waiting for blood;
- when blood is available, transfuse fresh whole blood at 10 mil/kg slowly over 3 hours (use packed cells if in cardiac failure); then Ĩ
- initiate refeeding with starter F-75 (see page 184);
 - start antibiotic treatment (see page 182).

If the child deteriorates during the fV rehydration (breathing increases by 5 breaths/min or pulse by 15 beats/min), stop the intusion because IV fluid can worsen the child's condition.

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 Insert IV line and draw blood Check blood glucose. If low inourished or <3 mmol/litre (in child) or if dextrostix is not a child) or if dextrostix is not a Give 5 ml/kg of 10% glucose 	for emergency laboratory investigations <2.5 mmol/litre (45 mg/d)) in a well 34 mg/dl) in a severely malnourished valiable:
	solution rapidly by IV injection
Age/weight	Volume of 10% glucose solution to give as bolus (5 ml/kg)
Less than 2 months (<4 kg)	15 ml
2-<4 months (4-<6 kg)	25 ml
4-<12 months (6-<10 kg)	40 ml
1-<3 years (10-<14 kg)	60 ml
3-<5 years (14-<19 kg)	80 ml
 Feed the child as soon as could if not able to feed without dated 	iscious. nger of aspiration, give;
If not able to feed without da	actions. nger of aspiration, give;
 milk or sugar solution via dissolve 4 level teaspoons clean water), or 	nasogastric tube (to make sugar solution, of sugar (20 grams) in a 200-ml cup of
IV fluids containing 5-10*	6 glucose (dextrose) (see App. 4, p. 357)
Mode: 50% glucose solution is the sa If anty 50% glucose solution is avail 4 parts sertle water, or dilute 1 part solution,	me as 50%, destrose solution or D50, ble: dilute 1 part 50% glucose solution to 50% glucose solution to 9 parts 5% glucose
Note: For the use of dextrostly, refer be stored in its box, at 2–3 °C, avoid should be placed on the strip (it is ne shounds, the blood should be washe obsour corregared with the lwy on the procedure will vary with different stri	to instruction on box. Generally, the strip must an sumlight or high humidity. A drop of blood cessary to cover all the reagent area). After 60 to off gently with drops of cold water and the bottle or on the blood glucose reader. (The exact bottle



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emergency setting after initial management of shock CHART 11. How to treat severe dehydration in an

TATE .

For children with severe dehydration but without shock, refer to diarrhoea treatment plan C. p.114.

(pages 12 and 13). Switch to the present chart when the child's pulse If the child is in shock, first follow the instructions in Charts 7 and 8 becomes slower or the capillary refill is taster

saline) over 5 hours in infants (aged <12 months) and over 21/2 hours in children (aged 12 months to 5 years). Give 70 mUkg of Ringer's lactate solution (or, if not available, normal

	Total volume IV	denote and summer a summer
Weight	Age <12 months Give over 5 hours	Age 12 months to 5 years Give over 21/2 hours
<4 kg	200 ml (40 ml/h)	-
4-6 kg	350 ml (70 ml/h)	3
6-10 kg	550 ml (110 ml/h)	550 ml (220 ml/h)
10-14 kg	850 ml (170 ml/h)	850 ml (340 ml/h)
14-19 kg	I	1200 ml (480 ml/h)

The second	and the second second second second second second
Weight	Volume of ORS solution per hour
<4 kg	15 ml
4-6 kg	25 ml
6-10 kg	40 ml
10-14 kg	60 ml
14-19 kg	85 ml
Reassess after 6 hou dehydration. Then ch 117, 114) to continu	rs (infants) and after 3 hours (children). Classify loose the appropriate plan (A. B. or C, pages 120, a treatment.
If possible, observe '	he child for at least 6 hours after rehydration to be can maintain hydration by giving the child ORS

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solution by mouth.

ASSESSMENT OF EMERGENCY AND PRIORITY SIGNS

1.2 Notes for the assessment of emergency and priority signs

1. ETAT

Assess the airway and breathing (A, B)

Does the child's breathing appear obstructed? Look and listen to determine it there is poor air movement during breathing.

Is there severe respiratory distress? The breathing is very laboured, the child uses auxiliary muscles for breathing (shows head nodding), is breathing very fast, and the child appears to tire easily. Child is not able to feed because of respiratory distress. is there central cyanosis? There is a bluish/purplish discoloration of the tongue and the inside of the mouth

Assess circulation (for shock) (C)

Check if the child's hand is cold? If so

Check If the capillary refill time is longer than 3 seconds. Apply pressure to whiten the nall of the thumb or the big toe for 3 seconds. Determine the time from the moment of release until total recovery of the pink colour. If capillary refill takes longer than 3 seconds, check the pulse. Is it weak and fast? If the radial pulse is strong and not obviously fast, the child is not in shock. If you cannot feel a radial pulse of an infant (less than 1 year old), feel the brachial pulse or, if the infant is lying down, the femoral pulse. If you cannot feel the radial pulse of a child, feel the carotid. If the room is very cold, rely on the pulse to determine whether the child may be in shock.

Assess for coma or convulsions or other abnormal mental status (C)

Is the child in coma? Check the level of consciousness on the AVPU scale:

A alert,

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- V responds to yoice,
 - responds to gain,
 - unconscious. -

the arm. If the child is not alert, but responds to voice, he is lethargic. If there difficult to wake. Look if the child responds to pain, or if he is unresponsive to If the child is not awake and alert, try to rouse the child by talking or shaking is no response, ask the mother if the child has been abnormally sleepy or a painful stimulus. If this is the case, the child is in coma (unconscious) and needs emergency treatment.

is the child convulsing? Are there spasmodic repeated movements in an unresponsive child?

ţ,

Assess for severe dehydration if the child has diarrhoea (D) 1A13 .1

Does the child have sunken eyes? Ask the mother if the child's eyes are more sunken than usual. Does a skin pinch go back very slowly (longer than 2 seconds)? Pinch the skin of the abdomen halfway between the umbilicus and the side for 1 second, then release and observe.

Assess for priority signs

While assessing for emergency signs, you will have noted several possible priority signs:

Is there any respiratory distress (not severe)? Is the child lethargic or continuously irritable or restless?

his was noted when you assessed for coma.

Note the other priority signs (see page 5).

1.3 Notes for giving emergency treatment to the child with severe mainutrition

During the triage process, all children with severe malnutrition will be identified as having priority signs, which means that they require prompt assessment and treatment. A few children with severe malnutrition will be found during triage assessment to have emergency signs.

- Those with emergency signs for "airway and breathing" and "coma or convulsions" should receive emergency treatment accordingly (see charts on pages 4-16).
- Those with signs of severe dehydration but not shock should not be puts these children at risk of overhydration and death from heart failure. Therefore, these children should be rehydrated orally using the special is difficult in severe malnutrition and is often misdiagnosed. Giving IV fluids rehydration solution for severe mainutrition (ReSoMal). See Chapter 7 (page rehydrated with IV fluids. This is because the diagnosis of severe dehydration 179)
- Those with signs of shock are assessed for further signs (lethargic or unconscious). This is because in severe malnutrition the usual emergency signs for shock may be present even when there is no shock
- If the child is *lethargic or unconscious*, keep warm and give 10% glucose 5 ml/kg IV (see Chart 10, page 15), and then IV fluids (see Chart 8, page 13, and the Note given below) 1
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CHILDREN PRESENTING WITH EMERGENCY CONDITIONS

- If the child is alert, keep warm and give 10% glucose (10 ml/kg) by mouth or nasogastric tube, and proceed to immediate full assessment and treatment. See Chapter 7 (page 173) for details.

1. ETAT

Note: When giving IV fluids, treatment for shock differs from that for a wellnourished child. This is because shock from dehydration and sepsis are likely to coexist and these are difficult to differentiate on clinical grounds alone. faster capillary refill). Those with septic shock and no dehydration will not respond. The amount of fluid given should be guided by the child's response. Avoid overhydration. Monitor the pulse and breathing at the start and every 5-10 minutes to check if improving or not. Note that the type of IV fluid also Children with dehydration respond to IV fluids (breathing and pulse rates fall. differs in severe malnutrition, and the infusion rate is slower All severely malnourished children require prompt assessment and treatment to deal with serious problems such as hypoglycaemia, hypothermia, severe infection, severe anaemia and potentially blinding eye problems. It is equally important to take prompt action to prevent some of these problems, if they were not present at the time of admission to hospital.

1.4 Diagnostic considerations of children presenting with emergency conditions

specific curative treatment. The following lists and tables provide some guidance The following text provides guidance for the approach to the diagnosis and the has been provided. After you have stabilized the child and provided emergency treatment, determine the underlying cause of the problem, to be able to provide which help with the differential diagnosis, and are complemented by the tables differential diagnosis of presenting conditions for which emergency treatment in the symptom-specific chapters.

1.4.1 Child presenting with an airway or severe breathing problem

History

- Onset of symptoms: slowly developing or sudden onset
 - Previous similar episodes
- Upper respiratory tract infection
 - Cough
- duration in days
- History of choking
- Present since birth, or acquired Immunization history
- DTP, measles

ŝ (continued on page 21)

Appendix B Sample Adult Emergency Triage and Treatment Protocol

Note: The following is a guide only. Each hospital should develop a detailed ETAT protocol for the triage and emergency treatment of adult patients.

The triage and treatment of adult patients should be conducted in the following order, with all necessary action taken at each step of the assessment:

A = airway: if obstructed \rightarrow OPEN THE AIRWAY

- clear foreign body or secretions +/-
- insert oral or nasopharyngeal airway +/-
- intubate +/-
- perform tracheotomy
- give oxygen

B = **breathing**: if absent, irregular or shallow \rightarrow BEGIN ARTICIFICIAL VENTILATION

- bag and mask, with oxygen +/-
- intubate
- look for signs of impaired respiration such as pneumothorax, flail chest etc
 - o insert chest drain or perform other corrective action as necessary

C = circulation:

- a) heart beat absent \rightarrow RESTORE CARDIAC FUNCTION:
 - begin CPR
 - connect to ECG
 - give cardiac drugs or defibrillate as appropriate
- b) if pulse weak or irregular
 - connect to ECG
 - treat any arrhythmia found with appropriate drugs
- c) if haemorrhage \rightarrow control bleeding
 - wound pressure
 - insert IV lines (2, large bore cannulae)
 - give IV fluids

 $\mathbf{D} = \mathbf{disability}$: After the patient's airway, breathing and circulation have been stabilized a full assessment should be undertaken, examining the body from head to toe looking for signs of injury or disease.

Appendix C List of Possible Day Surgery Procedures

Hernia Repair	
	Umbilical
	Femoral
	Inguinal
	Incisional
	Epigastric
Mass/Cyst Excision	
	Breast
	Submandibular
	Other (Baker's Cyst, Uncomplicated lipoma)
Urological Surgery	
	Varicocele Ligation
	Hydrocele Ligation
	Uretheral Dilatation
Rectal Surgery	
	Hemorrhoidectomy
	Fistula-en-Ano correction
Thyroid Surgery	
	Small Cyst/Nodule excision
ENT Surgery	
	Nasal Polyp removal
	Soft Palate surgery
Orthopaedics	
	External Fixation
	Wire Removal and Plating Procedures
Miscellaneous	
	Varicose Vein Stripping
	Genital Warts Removal
	Abscess Drainage
	Biopsy



Medical Records Management

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Appendices

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- Item 1 Master Patient Index Card
- Item 2 Service Card
- Item 3 Appointment Card
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Appendix B Template of forms that are included in a Medical Record

Item 1	Demographic Sheet
Item 2	Summary Sheet
Item 3	Admission and discharge card
Item 4	History and physical examination assessment
Item 5	Progress notes
Item 6	Consultation request form
Item 7	Consent form
Item 8	Physician order sheet
Item 9	Haematology Order and Report Form
Item 10	Clinical Chemistry Order and Report Form
Item 11	Serology Order and Report Form
Item 12	Microbiology Order and Report Form
Item 13	Stool Analysis Order and Report Form
Item 14	Urine Test Order and Report Form
Item 15	Radiology/Ultrasound Order and Report Form
Item 16	Pathology Order and Report Form
Item 17	Routine Observation Sheet
Item 18	Medication Administration Record
Item 19	IV Fluid and Additive Administration Record
Item 20	Fluid Balance Chart
Item 21	Discharge Summary
Item 22	Post mortem Request
Item 23	Death Report
Item 24	Referral and Feedback form

Tables

Table 1	Items Required for a Medical Record Management System
Table 2	Optional Items for a Medical Record Management System
Table 3	Medical Record Management Checklist
Table 4	Medical Record Management Indicators

Figures

Abbreviations

- DOB Date of Birth
- HMIS Health Management Information System
- MPI Master Patient Index
- MR Medical Record
- MRD Medical Records Department
- MRN Medical Record Number

Section 1 Introduction

The medical record (MR) is the central documentation of the patient's visit to a health care facility. A well-managed MR system is critical to providing efficient and high quality patient care. The primary purpose of the MR is to act as an immediate record available at all times, documenting the patient's presenting symptoms and the subsequent care and treatment. MR management systems are designed to improve a patient's health status by maintaining a MR that encompasses all aspects of a comprehensive health program. In addition, the MR function supports the surveillance and audit of hospital activities. The system must include a readily available, complete, and accurate MR on all individuals evaluated and treated in the hospital. A well-designed MR management system facilitates the exchange of medical information among all health care professionals (physicians, nurses, technicians) who provide health care to the patient.

Key aspects of MR management include: 1) retrieval of existing medical record number (MRN) or generation of new MRN as needed, 2) documenting of patient MR information, and 3) handling of MRs.

This chapter describes standards and guidelines for the effective management of a MR system.

Section 2 Operational Standards for Medical Records Management

- 1. The hospital utilizes a Master Patient Index with a single, unique Medical Record Number for each patient.
- 2. The hospital utilizes a single, unified registration system for all patients, including inpatients, outpatients, emergency patients, and specialty clinics.
- 3. The hospital utilizes a paper-based or computer-based system to track where the medical record is located at all times.
- 4. The hospital utilizes a uniform set of forms that comprise a complete medical record for the duration of a patient's care.
- 5. The hospital has medical records management guidelines for proper handling and confidentiality of medical records.
- 6. The hospital has orientation and training programs for all medical records personnel to ensure awareness of and competency in medical record management procedures.

Section 3 Implementation Guidance

3.1 Retrieval of Existing MRN or Generation of New MRN

When a patient arrives at a hospital seeking care and treatment, the hospital's first interaction with the patient is to identify his/her status as an emergency or routine case and to identify if the patient is a new patient (i.e., has never been given a MRN before at the facility) or a returning patient (i.e., has a MRN at the facility from a previous visit).

Each patient should have one MRN for all visits to the health facility. The MRN is generated during the registration process at the first visit a patient has to the health facility. Subsequently, the same MRN will be used for all other visits, including outpatient, inpatient, and emergency visits.

The Master Patient Index (MPI) is a database of patient names, contact information, registration dates, and the MRN for each patient ever treated at the health facility. The MPI is an essential element of retrieving existing and generating new MRNs.

3.1.1 Master Patient Index

Each health facility should have a Master Patient Index (MPI). The MPI can be paper-based or computer-based (with paper based back up). A paper-based MPI relies on the use of an individual index card. Each MPI card should include the following information:

- Patient's first name
- Patient's father name
- Patient's grandfather name (if available)
- Date of Birth (DOB)/Age
- Sex (Male/Female)
- Address
- MRN
- Date of registration
- Phone number

A template Patient Index Card for use in Ethiopian health facilities is presented in Appendix A, Item 1.

The index cards should be filed alphabetically by first name. When the hospital learns that a patient has changed his/her name, a cross-index file should be made to identify the initial record with the previous name. The MRN of the original registration should be recorded on the cross-index card.

If a patient changes any other contact details (such as address or telephone number) a new MPI card can be prepared to replace the original. The patient name, MRN, date of registration and any other unchanged information should be transcribed exactly as written on the original onto the new card. The old card should be scored through with the signature of the individual preparing the new card. The new card should be stapled to the top of the old card and both should be filed together so that the updated information is readily available without losing any prior information. In a computer based MPI the contact details can be amended directly in the appropriate computer fields.

Manual Paper-Based System: Vertical file cabinets for filing index cards may be purchased for hospitals that use a paper-based MPI. The paper-based MPI should be monitored by the MR Department, at a minimum, every quarter to ensure that the MPI is filed correctly. Each facility must establish a procedure for this activity. Sub-headings may be added in the alphabetized system for common names ("Me" for Meskerems, "Mo" for Mohammeds, etc).

Computer-Based System: The use of a computerized MPI permits faster retrieval of patients' MRNs. Health Management Information System (HMIS)'s electronic medical record system which is being rolled out across Ethiopian hospitals includes a computerized MPI component. However, a paper-based card file should also be maintained in case of computer technical failure/downtime. Interruptions in the system can be caused by a variety of factors, including electrical outages or hardware/software problems. Therefore, hospitals should maintain a back-up, paper-based system in order to ensure no interruption in MRN retrieval.

If a computer based system is used in addition to a manual system, similar procedures should be followed for both MR management systems to ensure optimal patient care. Both systems are effective when implemented and used correctly.

3.1.2 Patient Registration

Patient registration is the process of documenting the patient's visit to the facility and assigning a MRN, which is the patient's MRN forever at that facility. When the patient arrives at registration, the clerk should ask the patient's name (first, father's first name and grandfather's name) and then look for an existing MRN in the paper-based MPI (i.e., set of index cards) or in the computerized MPI. This should be done whether the patient reports that he/she has been to the hospital before or not.

If there is an existing MRN for that patient, the registration clerk should facilitate the retrieval of the existing MR stored in the record room. A runner/transitor should retrieve the patient's MR and then take the MR to the area where the patient is to be treated.

If no previous MPI card or MRN can be found, the registration clerk should generate a new MRN. New MRNs should be issued in straight numeric sequence, without skipping any numbers. Each MRN should be assigned to one and only one patient. Reissuing a MRN to another patient should never occur. Registration staff should both create an index card for the paper-based MPI and enter the new patient in the computerized MPI if there is a computerized MPI.

All patients- regardless of which service they will access-should be registered at one central registration site.

3.1.3 Starting a Medical Record for a new patient

After the MRN is generated (i.e., the next number in the sequence is assigned to the selected patient), an individual hospital-approved folder should be assigned to the patient. Any patient information generated by hospital staff during the period of care will be kept in this folder. A paper fastener or the equivalent should be used to keep all pre-approved clinical documents/forms in the folder. The MRN should be clearly displayed on the folder as a form of identification.

3.1.4 Service Card

Each new patient registered for outpatient or inpatient services should be issued a service card. This card is a small pocket-sized card used as an identification card for each patient which should be shown to the MR staff whenever the patient attends the hospital. Selected registration information should be recorded on the card. Contents of the patient service card include:

- 1. Name of the Facility
- 2. Date of Registration
- 3. Medical Record Number
- 4. Name of client
- 5. DOB or age at registration
- 6. Sex

7. Client's address

A template Service Card for use in Ethiopian health facilities is presented in Appendix A, Item 2.

3.1.5 Storage of Medical Records

All active MRs should be filed in a single, centralized file room, i.e., the Medical Records Department or Card Room. MRs should be filed numerically according to MRN. If more than one room is needed for file storage, files should be stored numerically (i.e. MRN 1,000-5,000 in one room 1; MRN 5,001 – 10,000 in room 2). Hospitals should audit the files periodically (quarterly or as per hospital policy) to ensure correct filing. All patient files should be stored together, using one MPI, including those from specialized clinics (eg ART, EPI etc). If separate record numbers and/or filing systems exist the hospital should integrate these within a single system.

3.1.6 Retrieving existing Medical Record for a returning patient

1. Use the MRN to find the MR.

If the patient knows his/her MR number or brings his Service Card, then the MR number can be used to find the patient's MR. The MR is filed numerically in the MR room and hence can be easily retrieved from the shelf.

2. Retrieving a MR by name

If the patient does not remember their MRN or does not have their service card, then MPI can be used to search for the patient information. The patient's index card is filed alphabetically by first name in the MPI. When the Index Card is located the MR number can be read from the card and used to retrieve the MR.

3.1.7 Appointment Card

An appointment card should be given to the patient stating the date and time of planned outpatient visits or admission. A template appointment card is presented in Appendix A, Item 3.

Figure 1 below shows the flow of medical records from generation until return of the medical record to the medical record room.

Figure 1. Flow of data from registration to return of the medical record



Source: HMIS Medical Records Training Manual, p.26, June 2008.

3.2 Documenting Patient Information

3.2.1 Purpose of clinical documentation

MR documentation is essential to ensure quality of care for every patient. All information regarding the patient and his/her course of care at the hospital should be recorded in the MR. This includes his/her presenting symptoms and medical history, any diagnostic test orders and results, all documentation from care providers and consultants, interventions, medications, therapy, and information and instructions at discharge. Any subsequent return visits to the hospital should be recorded in the same MR.

The MR provides each clinician responsible for patient care with access to a record of the patient's health status, medical history, investigation procedures (lab tests, etc.), treatments and outcomes.

3.2.2 How and when to document

Each clinical event, intervention, instruction or observation should be documented by the health care professional responsible for administering each clinical event, intervention, instruction or observation, as soon as possible after the occurrence. MRs of discharged patients should have all documentation completed by the discharging physician before the patient is discharged from the hospital and the record should then be returned to the card room.

All entries should be dated and authenticated with full signatures. Professional designation (i.e. MD, RN, etc.) should also be included.

MR information includes: the patient's presenting symptoms and history; any diagnostic test orders and results; all documentation from care providers and consultants; interventions, medications, therapy, etc., provided to the patient; and information and instructions at discharge. This information is to be filed in one folder divided in separate sections for each visit/admission in chronological order.

If the patient has a chronic disease and regularly attends a Specialized Clinic (e.g. HIV, TB etc) then a separate section may be created in the MR folder to record all visits to the Specialized Clinic.

3.2.3 General rules in clinical documentation

- The patient's name and MRN should appear on each page.
- All handwriting should be in permanent ink that is legible when photocopied. Pencil entries in any part of the record are not be permitted.
- All entries should be dated and authenticated, including signature and title of the author.
- Each clinician should sign those portions of the MR containing documentation of care for which he/she is responsible.
- Transcription of verbal orders or other information should be accurate and complete. It should be signed by the person who transcribed the verbal order or other information and co-signed by the person giving the verbal order within 2 working days of the verbal order.

3.2.4 Standardized documentation and forms

Only approved and standard clinical forms (approved by government agencies or hospital management) should be used in the MR. A standardized format should be used throughout the hospital's forms to facilitate the entry, review, and retrieval of information.

The following criteria can be applied to ensure standardization.

- All forms should be of the same size, usually A4.
- Key identifiers such as the name of the form, patient's name and medical record number should be located in the same place on all medical record and clinical documentation forms.

3.2.5 Key components of clinical documentation and Medical Record forms

The MR should contain the following components, filed in the following order:

- Demographic sheet
- Summary sheet of all visit dates (including inpatient, outpatient, and emergency care)

For each inpatient admission:

- Admission Card
- History and Physical Examination Assessment
- Progress notes
- Consultation request form (if relevant)
- Consent form (if relevant)
- Physician order sheet
- Laboratory order and report form(s)
- Radiology order and report form(s)
- Pathology order and report form(s)
- Pharmaceutical care plan (if relevant)
- Nursing Process Forms
 - a) Nursing admission assessment form
 - b) Nursing problem statement list
 - c) Nursing care plan
 - d) Nursing patient progress report
- Routine observation chart
- Medication administration record
- IV fluid and additive administration record
- Fluid balance chart
- Discharge summary
- Post mortem request and report (if relevant)
- Death report (if relevant)
- Referral form(s)

NB: While the patient is in hospital some of the above forms (e.g. Nursing Care Plan, Routine Observation Chart, Medication Administration Record, IV fluid and Additive Administration Record)

may be kept in a clip folder by the patient's bedside or at the nurses' station for ease of reference. When the patient is discharged these forms should all be entered into the MR before the MR is returned to the Medical Record Room.

For each outpatient attendance:

- Progress notes
- Laboratory order and report form(s)
- Radiology order and report form(s)
- Pathology order and report form(s)
- Referral form(s)

Samples of the Nursing Process Forms are presented in *Chapter 6 Nursing Care Standards* and the pharmaceutical care plan is described in *Chapter 4 Pharmacy Services*. Templates of all other forms listed above are presented in Appendix B, Items 1 to 24.

Other forms that could be included in the MR if relevant include, but are not limited to:

- Emergency room record
- Immunization and growth monitoring records, for paediatrics
- Obstetrical care
- Family planning visits
- Anesthesia and operation report

Forms included in a Medical Record include:

1. Demographic sheet

Function: A page recording all patient demographic and contact information for all clinicians to reference (patient name, date of registration, date of birth/age, sex, address, emergency contact information).

Location: Front of MR.

Work process: When the patient is first registered a demographic sheet will be put in the patient's MR.

2. Summary sheet of all visit dates

Function: To capture patient visits to the facility.

Location: Front of medical record

Work process: All visit dates, for both inpatient and outpatients, will be recorded on the summary sheet.

3. History and physical examination assessment

Function: To record patient history and physical examination assessment findings.

Location: MR

Work process: When a patient is admitted as an in-patient a full history and physical examination should be conducted by the attending physician.

4. Progress notes

Function: To record clinical findings and progress.

Location: MR

Work process: When patient is seen by a clinician, the information obtained will be recorded with date, clinical details, and signature of the attending clinician.

5. Consultation request sheet

Function: When a different specialty opinion is sought, the form serves as a communication tool for the different consulting parties.

Location: MR

Work process: When any consultation is needed, the original physician will put the request in the physician's order sheet and sign a consultation request. Nurses or appropriate case team member will contact the consulting specialist to see the patient. The consulting specialist should record the result/opinion on the consultation request.

6. Consent forms

Function: The consent form outlines the risks associated with a particular procedure. A signed consent form indicates that the patient (or designated proxy) has been informed of the risks and has authorized the procedure.

Location: MR

Work process: Before any procedure that has associated risks, the patient should be counseled regarding all risks and alternative options for treatment and asked to sign a consent form to indicate his/her agreement to the procedure. Consent should be obtained by the person who will perform the procedure.

7. Physician order sheet

Function: All physicians will write orders on this form, including diet, nursing care, medication, and investigation procedures (lab, imaging, consultation, etc.).

Location: MR.

Work process: When the patient is admitted to a ward, a physician order form will be put in the MR. A physician will write his/her orders on this form and other individual request forms (i.e., medication prescription, lab order form, consultation request form, etc.).

8. Laboratory order and report result forms

Function: Informs laboratory of any individual patient's lab investigation order and allows lab result to be recorded on these forms.

Location: MR.

Work process:

Inpatient: When any lab test is ordered, the ordering physician will sign a lab order and report form. The lab order will be sent to lab. Lab will collect the sample and conduct corresponding test(s) upon receiving the order. The test results will be recorded on the lab order form as well as in the log book in the laboratory department. The completed lab order will then be sent back to the ward and kept in the MR.

Outpatient: When any lab test is ordered, the ordering physician will sign a lab order. The lab order will be given to the patient. For most tests, a sample will be collected by a case team member and sent to the lab. For other tests the patient takes the lab order to the laboratory for the corresponding test(s). The test results will be recorded on the order form as well as in the log book in the laboratory department. The completed lab order will then be sent back to the ordering clinic/physician and kept in the MR. If the patient goes to an external lab for test; the completed lab order will be brought to the physician by the patient upon next follow up visit, to be filed in the MR.

9. Radiology order and report form

Function: Informs diagnostic imaging department of any individual patient's imaging investigation order and allows result to be recorded on this form.

Location: MR

Work process:

In-patient: When any imaging test is ordered, the ordering physician will sign a radiology request. The radiology request will be sent to the diagnostic imaging department. The radiology technician will schedule a test appointment upon receiving the order form. The test results will be recorded on the order form by the radiologist, as well as in the log book in the diagnostic imaging department. The completed radiology request and film will then be sent back to the ward and kept in the MR.

Out-patient: When any imaging test is ordered, the ordering physician will sign a radiology request. The radiology request will be given to the patient. The patient takes the radiology request to a diagnostic imaging department for the corresponding test(s). The test results will be recorded on the order form, as well as in the log book in the diagnostic imaging department. The completed radiology request will then be sent back to the ordering clinic/physician and kept in the MR. If the patient goes to an external imaging clinic for test, the completed radiology request and film will be brought back to the physician by the patient upon next follow up visit, to be filed in the MR.

Emergency: When any imaging test is ordered, the ordering physician will sign a radiology request. If a mobile diagnostic imaging machine is available, the test will be done in the emergency room. The test results will be recorded on the order form. If mobile unit is not available, steps outlined for outpatients above should be followed.

10. Pathology order and report form

Function: Official record for the pathology request/results

Location: MR

Work process: When a pathology sample is collected (e.g. fluid aspirate, tissue biopsy) the ordering physician will complete a Pathology Request Form. The sample and form will be taken to the pathology department for analysis. If the required service is not available in the hospital the sample and request form should be taken to the central laboratory where they will be stored and then transferred to the appropriate facility, in accordance with hospital policy for sample referral.

11. Nursing Process Forms

- a) Nursing admission assessment form
- b) Nursing problem statement list
- c) Nursing care plan

d) Nursing patient progress report

Function: To describe the nursing assessment, care plan and outcome of nursing care of an admitted inpatient.

Location: Bed-side clip board during the patient's stay, but must ultimately be included in the patient's MR as part of the permanent record.

Work process: When a patient is admitted a nurse completes a nursing assessment and care plan within 24 hours. The outcomes of nursing care are documented on the problem list, care plan and progress report during the course of the patient's admission.

Further discussion on the Nursing Process is presented in *Chapter 6 Nursing Care Standards*.

12. Routine Observation Chart

Function: To record the vital signs of each specific patient during the hospital stay.

Location: Bed-side clip board during the patient's stay, but must ultimately be included in the patient's MR as part of the permanent record.

Work process: When vital sign measurements are needed, the observation sheet will be put in the bedside clip board. The nurse will record all vital sign measurements on this form. When one sheet is finished, a new blank sheet will be put on top of the finished sheet. When the patient is discharged, all the forms will be put in the MR.

13. Medication Administration Record

Function: To record all medications ordered and administered to a patient.

Location: Bed-side clip board during the patient's stay, but must ultimately be included in the patient's MR as part of the permanent record.

Work process: When medication is ordered for an inpatient the name of the medication, route of administration, dosage and frequency of administration should be documented on the medication administration record and signed by the transcriber. When the medication is administered, the nurse should sign the appropriate box on the form.

14. IV Fluid and Additive Administration Record

Function: The record should detail all specific infusions, including rate of drops and duration of infusions while the patient is confined.

Location: Bed-side clip board during the patient's stay, but must ultimately be included in the patient's MR as part of the permanent record.

Work process: When medication or IV fluid is ordered for an in-patient the name of the IV fluid and rate of infusion should be documented on the IV fluid administration record. The name and dosage of any additives should also be documented. When the IV infusion is given, the start time and end time of the each bag of fluid should be documented and signed by the responsible nurse.

15. Fluid Balance Chart

Function: To record all fluid inputs and outputs for patients at risk of fluid overload or dehydration.

Location: Bed-side clip board during the patient's stay, but must ultimately be included in the patient's MR as part of the permanent record.

Work process: All fluid inputs both oral and intravenous and all outputs including urine and other outputs such as blood loss should be documented on the chart by the nurse. At the end of every 24 hours the balance is calculated as 'total input' minus 'total output'.

16. Discharge summary

Function: An instruction sheet to summarize all needed information for the patient upon discharge.

Location: One copy in the MR and one copy to patient.

Work process: Discharging physician will fill out the discharge summary that includes a summary of the patient's diagnosis, treatment and investigations and any instructions following discharge (for example medications, wound care, diet, activity and follow-up appointments). The form will be kept in the MR for hospital record and a copy will be given to the patient to take home.

17. Death report (if relevant)

Function: In the event that a patient dies, to document patient's health records, care received and cause of death.

Location: MR

Work process: After death the attending physician should complete a death report. If a post-mortem examination is required the death summary should be completed AFTER the results of the post-mortem examination are known.

18. Referral and Feedback Form (if relevant)

Function: To document patient history at the hospital and to provide reason for referral

Location: One copy in the MR and one copy to patient.

Work process: If it is necessary to refer a patient to another facility the attending clinician should complete a referral request, indicating the reason for referral, summary of the patient history and examination and the results of any investigations conducted.

3.2.6 Correcting Medical Record Data

If any data contained within a MR requires correction, the following rules should apply:

- No erasure or other obliteration should be made.
- Incorrect data should be lined out with a single line.
- The date of correction, the signature and profession of the person making the correction, the correct information, and the reason for the correction should be added.

3.3 Handling of Medical Records

A comprehensive MR management system encompasses the handling of the MR from the time of patient registration, during active care delivery, through patient discharge, and ongoing filing/storage of the MR, until removal/destruction of old MRs from storage. The flow of MRs/charts is important to

ensure a balance between availability of clinical information and patient confidentiality. A well-designed system minimizes the loss of MRs.

3.3.1 Tracking the location of Medical Records

A MR location tracking system should be established in order to find MRs. The system varies depending on whether or not a paper-based or computerized patient registration system is used. Manual Paper-Based System: A check in/out log book should be used by Medical Record Room staff. Entries on the log should include the following information:

MRN	Date checked out	Signature of person checking out	MR taken to	Date returned

On a daily basis, assigned MR staff should refer to the log book and ensure that all MRs are returned to the card room. The only exception is for admitted inpatients whose treatment is ongoing. This step is important, as it prevents loss and misuse of MRs. In addition, when a MR is removed, one can put in its place a tracer card, which is a card the size of the MR, on which is written the patient name, the MRN, where the MR is going, and the date it was removed from the file. This can help track where records are outside the Medical Records Room. When not in use the tracer card should be stored in the back of the MR. A sample tracer card is included in Appendix A, Item 4.

Computer-Based System: In a computerized patient registration system, a MR tracking feature should allow for an easy and effective method to locate MRs.

3.3.2 Who should handle Medical Records?

Only authorized personnel should have access to MRs, and only on a "need to know basis." The Medical Records Department should only be accessed by selected employees who have been designed by hospital management to handle MRs and who have received MR training. When other hospital employees need access to MRs, a request should be made to the MR staff. Patients should never handle MRs without staff assistance.

Hospitals should develop strict procedures based on these principles and ensure that all staff members are properly informed and trained for adherence.

3.3.3 Archiving Medical Records

Inactive files (i.e., MRs with no clinical activities for a pre-defined period of time (i.e., 2 years) may be archived by MR staff in order to regain shelving space. Individual hospitals should establish an archiving policy.

When archiving, these files should be numerically stored in a separate area, according to their MRNs. The corresponding MPI index card of the patient should be labeled "archived." NEVER create another file numbering system for archived files.

If archived files needed to be retrieved, the same MR retrieving mechanism should be used.

3.3.4 Medical Records at Discharge

The MR of discharged or deceased patients should be returned to the Medical Record Case Team within 24 hours of discharge. The Medical Record Case Team should review the MR to see if all forms have been properly signed, particularly the discharge summary. If they are not signed, the MR Department should alert the physician on record or case team leader to complete and sign the discharge summary.

3.3.5 Destruction of Inactive Medical Records

The FMOH "Hospital Patients/Clients/Records Retention Schedule" guideline details the length of time a MR is retained in inactive status. In general, a facility is required to retain a MR for up to 10 years after the patient's last episode of care at that facility. After the pre-defined retention period, the MR should be destroyed by burning, shredding or another method that is certain to maintain the patient's confidentiality. Destruction of the medical record should also be supervised by the head of the MR department.

If medical records are destroyed the following key information should be maintained permanently:

- patient's full name and date of birth;
- admission and discharge dates;
- name of the attending doctor(s);
- diseases treated and operations performed; and
- a discharge summary for each admission if more than one.

A note should be included with the retained documents stating that the records have been destroyed according to the retention policy.

The MR Department should establish a folder to collate the information above for all MRs that are destroyed.

3.3.6 Removal of Medical Records from the Hospital

MRs should be removed from the facility only upon an order from a federal or regional jurisdiction. The hospital should establish its own policy regarding MR removal, and should comply with federal and regional health policies.

If a patient seeks health care from another hospital and has consented to the release of his/her clinical information to the new hospital, only a photocopy should be given to the requesting hospital. The original MR should never be transferred out of the hospital.

3.3.7 Confidentiality

MRs should be maintained in the strictest confidence, as they contain personal and private information about patients, including their health status, personal family and contact information. MRs should be stored in a secure area, and there should be clear policies regarding confidentiality and the release of patient information.

The content of a MR should only be used for providing patient care or in the course of supporting patient care activities (for example evaluation of services, clinical audit etc.). Access to the content of

MRs should be granted only to personnel who are undertaking the above activities. Other supporting staff who are granted access to MRs but are not involved in delivering patient care (e.g., porters, runners) should not read and/or disclose the content of the records.

All employees should sign a 'Code of Conduct' that includes a statement regarding the confidentiality of patient information. (See Section 3.10.1 of *Chapter 11 Human Resource Management*).

3.4 Basic requirements for Establishing a Medical Record Management System

Table 1 describes the items required for a well-functioning MR management system.

Required Item	Ideal Setting	Possible Substitute
1) Space		
Central Filing Space*	Central files for MRs should be adjacent to the registration area with barriers necessary to impede or prevent access by unauthorized personnel. Filing space should be provided for at least $3-7$ years accumulation of records.	-
Work space for registration	Work stations set up according to nature of work, ideally in triage areas or as close as possible	Any adequate work space
Office for MR staff	Office for use by MR staff for sorting MRs, keeping records awaiting completion and filing, making out slip cards, stamping free patient papers and other documents, etc.	
Archive space	Separate archive room that is easily accessible by MR staff.	Designated shelves for archiving purposes
Supply / storage room	Separate room that is clean and can be used for storing forms, supplies, etc.	Any space in the MR Department can be used for storage
2) Equipment		l
Photocopier	Necessary for immediately producing copies of records for transfer files or legal reasons	Any means of producing copies
Word processor for report and legal documents	Computer	Work processor/type writer
Printer	-	-
MPI file cabinets	Vertical file cabinets for filing index cards	Long index card boxes
Shelves for filingOpen unit shelves permit increased visibility and faster handling of records, and they require less floor space. Aisles should be at least 36 inches wide. Each filing unit should be labeled with the medical record numbers of the medical records filed in that filin		Drawer unit cabinets

 Table 1
 Items Required for a Medical Record Management System

Required Item	Ideal Setting	Possible Substitute
	unit; and each filing shelf should be labeled with the range of numbers of medical records filed on that particular shelf. Guides should be placed at regular intervals.	
3) Supplies		
MPI Files	Paper-based MPI	Paper-based index cards
Binders for filing statistical reports	Durable binders	Folders
MR folders	Durable folders with dividers to separate sections of documents and fasteners to hold loose papers. The file folders used with open shelf filing must have side tabs/visible spines for viewing MRN for identification.	Durable folders with fasteners
Stationeries	Complete sets of stationary at various locations within the Department	One complete set in the dept
Clip boards for in- patients	For temporarily providing easy access to observation charts, medication administration records, etc. during in-patient stay. The clipboards should be tied to each bed.	-
Durable binders (2 rings/3 rings) for in- patients	For holding the contents of MR during inpatient care, to provide easy access and frequent addition of new sheets. Preferably with dividers to separate each section.	Folders

Table 2 Optional Items for a Medical Record Management System

Optional Item	Details		
1) Space			
Offices	For use by Medical Records Department staff		
2) Equipment			
Shredder	Used for destroying copies of documents no longer necessary		
Carts	Used for transporting MRs from one location to another		
Safety ladder / Step stool	Used by staff to obtain MRs located on upper shelves within card / archive rooms		
Computer	Used if an electronic registration system is used		
3) Supplies	·		
Rubber stamps / Year stickers	Rubber stamps imprinted with a year on it, in a chronological order may be purchased if folders are pre-printed.		
	Year stickers may be an alternative method. Both can be used for labeling files.		

* Central Filing Space

It is critical that plenty of space is available for filing medical records, and that the file area is clean, tidy and has good light. Medical records are a health record from birth to death; hence, a lot of space will be required to store medical records.

In the majority of cases, healthcare institutions in Ethiopia possess a one room Medical Record Department. Depending on the availability of rooms and expected annual load of patients per the facility, preparations should be made to allocate enough space for the storage of MRs. Incomplete medical records should be kept in a separate location in the department rather than integrated with those completed medical records. An incomplete record area facilitates ease in retrieval for completing records. When there is not enough room in the MRD to store all medical records for the defined retention period, it is necessary to locate alternative storage. Optimally the storage should be in the facility to facilitate retrieval. When an alternative storage space is needed, the space selected must be secure and must protect the records from damage, loss or destruction.

3.5 Human Resources for the Medical Records Department

All personnel that work in the Medical Records Department should be qualified to conduct their jobs, which require reading, keyboarding, and organizational skills. Depending on the size of the facility and volume of patients, the number of personnel working in the Medical Records Department will vary. However, there should be enough staff to cover the following duties, particularly during the prime hours:

- Patient registration
- Authorization of free and credit services
- Development and maintenance of the MPI
- Retrieving and filing MRs
- Delivering files to various locations of the hospital
- Recording chart location
- Collection of MRs from individual service units
- Checking and ensuring completion of MRs after discharge or death
- Filing reports generated by the Medical Records Department
- Handling of medico-legal issues relating to the release of patient information and other legal issues.

All MR personnel should undergo MR orientation and subsequent annual training on all MR policies.

3.6 Medico-legal Issues and Procedures

As the central documentation of the patient's visit to a health care facility, a patient's medical record is considered the property of the healthcare facility. The personal data contained in the medical record is considered confidential communication and the property of the patient. As such there are certain measures that must be taken to ensure the security of patient records while also complying with requests for release of patient data for medico-legal cases.

3.6.1 Patient Consent for Release of Records

Unless the patient has given written consent to release information from his or her medical record, the information contained in it can only be released to a court by subpoena or a court order. No information concerning a patient should be released to another person without the written consent of the patient or the patient's legal guardian. If a patient is under the age of 14 years or otherwise subject to a guardianship order, any consent for access to information should be given in writing by the patient's parents or legal guardian. If the patient lacks the capacity to provide genuine consent then the written consent must be obtained from the person's legal guardian. In the case of a patient who has died, the written consent to access information from the patient's medical record should be provided by the next of kin shown on the medical records.

3.6.2 Procedures for Releasing Patient Data

Information contained in a medical record may be accessed for a number of medicolegal issues. Listed below are types cases for which medical records may be requested.

- Insurance Cases
- Worker's Compensation
- Personal Injury Claims
- Malpractice Claims
- Will Cases
- Criminal Cases
- Mental Competency

When a request for a medical record is received from a lawyer, the request should be registered and date of receipt of request recorded by the healthcare facility administration and forwarded to the MR Administrator for processing. The MR Department should confirm that the patient has given consent for the release of information.

The information requested is identified and the attending doctor asked to write a report. In many health care facilities a pre-designed form may be use or if a discharge summary is already in the medical record, it is checked and if it includes all the requested information a copy is made.

If the actual medical record is needed, the lawyer must produce a court order of subpoena to enable the release of the medical record.

3.6.3 Responding to Subpoena or Court Order Request

If a subpoena or court order is served it must be obeyed. On receipt of a subpoena the clerk records the date and time the subpoena was received and records in a log book the date and time the medical record is due in court. The Clerk should notify the attending doctor and healthcare facility administration that a subpoena has been received for the release of the medical record to court.

The Clerk should locate the medical record and create a tracer card to indicate that the MR has been removed. The Clerk should check that all necessary information, as specified in the subpoena, is in the medical record and that it is complete. In some countries the original medical record is not sent to

court. If a photocopy is permissible as evidence in court all forms are photocopied and numbered and the photocopy sent in place of the original. If a copy is made a note needs to be recorded in the medical record indicating that a copy exists and will need to be destroyed on return from court. Some healthcare facility's send the original and keep a photocopy on file. When the original medical record is returned to file the copy is removed from file and destroyed.

The medical record is placed in a large envelope addressed to the clerk of the court (or specified person) with the receipt attached to the front. The tracer on file is changed to indicate that the medical record was sent to the court and the date it was sent. The medical record should be forwarded under adequate security to the clerk of the court named in the subpoena and the signed receipt obtained from the person accepting delivery. Adequate security should involve hand delivery of the medical record from the healthcare facility or health centre direct to the clerk of the court by an employee of the healthcare facility or health centre or by a courier service.

On return from court the medical record is checked to ensure that all pages (forms) are present. The file is returned to its appropriate place and the tracer removed. As mentioned previously if a photocopy has been made it must be checked as for the original and then destroyed.

More detailed guidance on the policies concerning medico-legal issues and procedures can be found in the Federal Ministry of Health HMIS Medical Records Training Manual, 2008, chapter 3, Pp. 34-40.

Section 4 Implementation Checklist and Indicators

4.1 Assessment Tool for Operational Standards

In order to determine if the Operational Standards of Medical Records Management have been met by the hospital an assessment tool has been developed which describes criteria for the attainment of a Standard and a method of assessment. This tool can be used by hospital management or by an external body such as the RHB or FMOH to measure attainment of each Operational Standard. The tool is presented in Appendix E of *Chapter 13 Monitoring and Reporting*.

4.2 Implementation Checklist

The following Table can be used as a tool to record whether the main recommendations outlined above have been implemented by the hospital. This tool is not meant to measure attainment of each Operational Standard, but rather to provide a checklist to record implementation activities.

		Yes	No
1.	There is one registration unit for all services offered at the hospital.		
2.	There is a Master Patient Index.		
3.	A patient record numbering system exists in which each patient is given a unique medical record number.		
4.	Forms are printed and available to document inpatient and outpatient care given at the hospital.		
5.	Patient record confidentiality and handling are defined in medical records guidelines.		
6.	Medical records staff are skilled in medical records management.		
7.	Trainings and/or orientations are given to medical records staff on medical records management.		

 Table 3.
 Medical Record Management Checklist

4.3 Indicators

In addition, the following indicators may be monitored on a regular basis to assess the effectiveness/outcomes of implementation of the recommendations provided in this chapter.

S/N	Indicators	Formula	Frequency	Comments
1.	% of medical records lost	Randomly sample 50 MRNs from the MPI and check to see if the medical record (MR) is in the medical records room. A MR is considered lost if it is not found in the card room and there is no tracer card indicating where the medical record can be found. Calculate the total number of cards not found/50*100	Quarterly	
2.	% of inpatient medical records with completed discharge summary	Total number of inpatient medical records with a discharge summary/total number of inpatient medical records*100	Quarterly	
3.	Number of complaints received against Medical Records Department/Case Team	Total number of complaints against the against Medical Records Department/Case Team	Quarterly	
4.	a) Number of complaints upheldb) % of complaints upheld	 a) Total number of MR complaints upheld b) Total number of MR complaints upheld/Total number of MR complaints filed*100 	Quarterly	

 Table 4.
 Medical Record Management Indicators

Source Documents

- 1. Federal Democratic Republic of Ethiopia Ministry of Health. (2008, June). *Health Management Information System (HMIS). Medical Records Training Manual.*
- 2. Federal Democratic Republic of Ethiopia. (2007). *Hospitals Patients /Clients Records Retention Schedule*.
- World Health Organization. (2002). *Medical Records Manual: A Guide for Developing Countries*. Revised and updated 2006. Manila: Regional Office for the Western Pacific. Retrieved from: http://www.wpro.who.int/NR/rdonlyres/7FB74A3F-34F6-4C46-A9F0-1F0D52D04254/0/MedicalRecordsManual.pdf.

Appendices

Appendix A Template of Medical Records Department Forms

Item 1: Master Patient Index Card

"[Name of Facility]"					
Master Pat	Master Patient Index Card				
		×	K		
የህክምና ካርድ ‹	ቁጥር		የተመዘንቡበት	ኮ ቀን	
Medical Record Number:			Date Of Registration(DD/MM/YY)		
ስም የአባት ስም					
Patient's Name:		Father's Name:			
የአይት ስም			9		
Grand Father's	Name:		Sex:	ΠF	ΔM
የልደት፡	ቀን	ወር	9/9 ¹⁰		ዕድሜ
Date Of Birth	Day	Month	Year		Age:
<u>አ</u> ድራሻ	ክልል	ወ	ረዳ	ቀበሶ	b
Address:	Region	W	'oreda	Keb	ele
<i>ት</i> ዋ			የቤት ቁጥር		
Gott:			House Num	ber:	

Item 2: Service card (Front & Back)

የአንልግሎት <i>መታወቂያ</i> ካርድ SERVICE IDENTIFICATION CARD		
የጤና ድርጅቱ ስም Facility Name		
በጤና ድርጅቱ የተመዘገቡበት ቀን Date Of Registration		
የህክምና ካርድ ቁጥር Medical Record Number		
ስም <i>ዕድማ</i> ፆ Name Age Sex		

ወረዳ/ክፍስ-ከተማ Woreda/Subcity	
ቀበሉ Kebele	
የቤት ቁዋር House No.	

Item 3: Appointment card (Front & Back)

የቀጠሮ መስጫ ካርድ APPOINTMENT CARD
የጤና ድርጅቱ ስም Facility Name
ስም Name
የህክምና ካርድ ቁጥር Medical Record Number

የቀጠሮ ቀን DATE	ቀጠሮ የስጠው አንልግሎት ክፍል Appointment with service					

Item 4: Hospital Tracer Card

Tracer card										
Facilit MRN ; Patien	y Name: #: nt's Name									
#		Department/Person MR is sent to	Receiver's Signature	Date						
<u> </u>										

Appendix B Template of forms that are included in a Medical Record

Item 1: Hospital Patient Information Demographic Sheet

PATIENT INFORMATION										
MRN:	Patient's na	ame:				Sex:		Registrati	on date:	
						🗆 F	Μ	1	1	
				Phone no.:						
						()	-		
City/Town:		Woreda:		K	Kebe	ele:		House no:		
Emergency contact information:										
Contact's Name:			_							
Telephone	Number:			_						
INTEGRATE	INTEGRATED FOLDER SUMMARY SHEET									
---	---------------------------------	--	--	------	--					
(One line per visit – not for clinical notes)										
MRN #: Patient's Name:										
Date (DD/MM/YY)	Service*	Diagnosis / Complication or Service Detail **	Serial number in service registration book	Cost						

* Write the department providing service: IPD, OPD, ANC, FP, EPI, etc

** OPD / IPD Service – write diagnosis
FP, ANC, PNC – write complication, if any
EPI – write antigen given

Item 3: Admission and Discharge Card (Front)

ሆስፒ ል HOSPITAL		የሒሳብ <i>ማ</i> ስ ወቂ <i>ያ</i> ቁጥር CASH SHEET NO		
የ <i>ሕ</i>	አመምተኞች መቀበያ ካ DMISSION ር ΔΙ	ርድ RD		
<u>~</u> የህክምና ካርድ ቁጥር				
Medical Record Number (MRN)				
ስም	የአባት (ስም		
Name የአ <i>የ</i> ት ስም	Father	's Name	_	
Grand Father's Name	Sex			
አድራሻ ክልል	ወረዳ/ክፍስ-ከተ	ay		
Address: Region	Woreda/Subo	city		
<u>የ</u> ዋ ር ፡፡ "	ቀበሌ Kabala			
ይዕጠ የቤታ ቁጥር	Kebele			
House Number				
የክፍሱ ቁጥር	_	የአል <i>ጋ</i> ቁጥር		
Ward No		Bed No	_	
ቢንባ የሕመሙ ሁኔ Admission Disgnosis				
Admission Diagnosis የተረጋገጠው ሕመሙ				
Discharge Diagnosis				
ከሆስፒ ል ሲወጣ የነበረው ሁኔ				
Condition on discharge	<i>a</i> n 9	መብ አል መር ውርጅት እእሉ		
በህወወው ድና/ተበጮፖ Improved	ዋ°ተ Dead	ወደ ቤባ ጤካ ድርድፕ ፕልቦ Referred		
Improved	Dead	Keleneu		
ከሐኪም ፈቃድ ውጭ በንዛ ፈቃዱ ሄ	ዶ ጠፍቶ			
Left against Medical Advice	Absconde	d		
ሆስፒ ል የንባበት ቀን	የተቀበለው ሐኪም	° ፊርማ		
Date of admission	Signature of Ad	Imitting Dr		
Date of Discharge	Discharged by			
የመኝ ክፍል ላፊዋ ነርስ ፊርማ ለመግባቱ	f sector f	የመኝ ክፍል ሳፊዋ ነርስ ፊርማ ስወ	ውጣቱ	
Sign. Of Ward Nurse for Admission	8	Sign. Of Ward Nurse for Discharge	!	
የዳሬክተሩ ፊርግ በመግባቱ (አበፌሳጊ ስሆን) Director's Sian. For Admission (if reauin	ed)	ስመውጣቱ (አበዱሳጊ ስሆን) For Discharge (if required)		
				1
			የኢት/ብር	ሣ
የተኛበት ቀን ብዛት የአ	ንድ ቀን ክፍየ ብር		Birr	Cts.
Number of days admitted Ar	nount per day in bir	r		
የኤክስሬይ ምርመራ ሒሳብ				
For X-Ray Examination የመድሣንት ሐስብ				
For Medicine				
የኦፕራሲዮን ሒሳብ				
For Operation የለበራቶር ሐ ሰብ				
For Laboratory				
ልዩ ልዩ አንልፃሎት ሒሳብ				
For Various Services		ተከፋይ		
		Total Payment		
		በ <i>መያ</i> ዣ አስቀድሞ የተከፈስ Dopositod		
የሬጅስትራሩ ፊርማ		Deposited		-
Signature of Registrar				
		ተመባበ Amount to be Reimbursed		
		ተጨማሪ ክፍያ		1
		Amount to be paid		
የሒ <i>ሣ</i> ብ ሹም <i>ሬርማ</i>				
Signed by The Chief Accountant				

Item 3: Admission and Discharge Card (Back side)

ስሕክምናው ሂሣብ ተጠያቂ <u>FINANCIAL RESPONSIBILITY</u>					
የንንዝብ ክፋይ ስም Name of Individual R	esponsible for Bill				
የሥራ ቦ		የስልክ ቁጥር			
Occupation	ወ/ የ/ክፍል ክታማ	Tel የለት ሐምር			
Kebele	_ Woreda/Subcity	House No	Tel		
የዝምድናው ዓይነት	ወደ ሆስፒ	ል ያመጣው			
Relationship	Brought to	o Hospital by			
ስሜ ክላይ የተባለፀው ክላያ I, the above named p Hospitalization.	ይ የተጠየቀውን ንንዝብ በሙሉ የመክፈ erson, accept full responsibility	ል ሳፊነት ንዳስብኝ በፊርማዬ አ for payment of the charges i	ሬ <i>ጋ</i> ግጣስሁ። ncurred during this period of		
		ፊርማ			
Signature					

Item 4: History and Physical Examination Assessment

History and Physical Examination Assessment				
Name:			Ward:	
MRN:			Bed Number:	
Date of Admission:				
Presenting Complaint:	:			
History of Presenting	Complaint:			
Past Medical History:				
Drug History:				
Family History:				
Personal/Social Histor	ry:			
	PHYSICAL E	XAMINATIO	Ν	
General Appearance:				
Vital Signs: Te	emp:	BP:	Pulse:	Resp:
HEENT:				
Glands:				
Chest:				
CVS:				
Abdomen:				
Genito-Urinary:				
Musculo-Skeletal:				
Skin:				
Central Nervous Syste	em:			

Motor:				
Sensory:				
IMPRESSION:				
DIFFERENTIA	L DIAGNOSIS:			
PLAN OF ACTI	PLAN OF ACTION (investigations, treatments and medication ordered):			
	· · · · · · · · · · · · · · · · · · ·			
Name of physi	cian:	Signature:		
Date of assess	ment:	Time of assessment:		

Item 5: Hospital Progress Note

HOSPITAL PROGRESS NOTE			
Name:	OPD		
MRN:	IPD Ward: Bed Number:		
Date &	Progress Note		
Time			
-			

Item 6: Consultation Request Form

CONSULTATION REQUEST FORM			
Patient Name: MRN: Consultation requested by: Signature:	OPD IPD Ward: Bed No: Position/Designation: Date of request:		
Type of consultation needed:			
Reason for consultation:			
Consultation report:			
Consulting Physician Name:	Signature:		
Specialty:	Date:		

Item 7: Consent Form

CONSENT FORM				
MRN #:				
Patient's Name:				
1. Name of proposed procedure or course of treatment (include brief explanation of medical terms are not clear):				
2. Statement of health professional (to be completed by health professional with appropriate knowledge of proposed procedure):				
I have explained the procedure to the patient. In particular I have explained:				
The intended benefits:				
Any extra procedures which may become necessary during the procedure:				
Blood transfusion				
Other procedure (please specify)				
I have also discussed what the procedure is likely to involve, the benefits and risks of any available alternative treatments (including no treatment) and any particular concerns of this patient.				
This procedure will involve:				
General and/or regional anaesthesia				
3 For famales of reproductive age (if relevant):				
During the operation it may be necessary to take an X-ray to assist the surgeon with the procedure. It is important that X-Rays should be avoided if there is a possibility of pregnancy.				
Date of Last Menstrual Period:				
Is there a possibility of the patient being pregnant? Yes No				
If yes, can this procedure be deferred or does the clinical urgency override the risk to the pregnancy?				
Yes, the procedure should be deferred No, the procedure must be performed				
Signed: Date:				
Name: Job title:				

Do ask if you have further concerns. We are here to help you. You have the right to change your mind at any time, including after you sign this form. You may ask for a relative or a friend or a nurse to be present whilst the procedure is being explained and consent obtained.			
Please tick boxes to indicate that you have understood an	d agreed to the statements below:		
I agree to the procedure or course of treatment describe	I agree to the procedure or course of treatment described on this form.		
I understand that you cannot give me a guarantee that a however have appropriate experience.	I understand that you cannot give me a guarantee that a particular person will perform the procedure. The person will however have appropriate experience.		
I agree that any procedure in addition to those described my life or to prevent serious harm to my health.	on this form will only be carried out if it is necessary to save		
I have been told about additional procedures that may become necessary during my treatment. I have listed below any procedures which I do not wish to be carried out without further discussion.			
I acknowledge that the nature and purpose of the foregoing procedures and the risks associated with the procedure have been explained to me and I have been given the opportunity to ask questions.			
Patient's signature:	Date:		
Name (print):			
If the patient is unable to sign, but has indicated his or her conser	it, a witness should sign below:		
Signature:	Date:		
Name (print):			

Item 8: Physician Order Sheet

PHYSICIAN ORDER SHEET						
Name:	Name: Ward:					
MRN:				Bed Number:		
Date	Time	Order	Physician Signature	Transcriber's signature (if relevant)	Date and Time order completed	Signature

Item 9: Haematology Order and Report Form

HAEMATOLOGY ORDER AND REPORT FORM				
Name:		OPD		
MRN:		IPD	IPD Ward: Bed Nun	
Age:	Sex:			
Clinical history:		I		
Test ordere	d	Result		Reference
		colle/mm	3	colle/mm ³
IOTAI LBL	+ ;;-	Cens/mm		
Dillerenua				0/6
	 	70		0/
Eosinonhil		/0		/0
Rasonhil	<u> </u>	/0		//
Mononhil	<u> </u>	/0		/0
	<u> </u>	G/dl		C/di
	-+ ⊢ +-			0/0L
	<u> </u>	<u></u>		/0
		Pa		Pa
		ry Pa		ry Pa
	-+ ≓ +-	ry cells/mm	,3	ry
	-+		<u> </u>	
Platelet Count		X 10°		X 10°
ESK	- -	mm/nr		mm/nr
Bleeding time				
	- -			
Coagulation time	_ ⊢ -			
P.T.1.				
Fibrinogen	<u></u>			
Coomb's test	-+ 岩 +=			
CD4 (absolute)	- <u> </u> -			
Other (describe):	─ ┼╴┺╍┛ ╶┼╴			
Ordered by:	-	I	Sample colle	ected by:
Date of order:			Date of colle	ection:
Time of order			Time of coll	ection:
	[
Lab tech comments:				
I				
Name of lab tech:		Signature	:	
Date of analysis:		Time of c	completion:	
Result checked/approved b	oy:			

CLINICAL CHEMISTRY ORDER AND REPORT FORM OPD Name: IPD Ward: **Bed Number:** MRN: Age: Sex: **Clinical history: Test ordered** Result Reference SGOT IU/L IU/L SGPT IU/L IU/L ALP IU/L IU/L AST IU/L IU/L Sodium MEQ/dL MEQ/dL Potassium MEQ/dL MEQ/dL Calcium _____ mg/dl mg/dl Creatinine mg/dl mg/dl Bilirubin direct mg/dl mg/dl Bilirubin total mg/dl mg/dl Blood urea nitrogen mg/dl mg/dl **Total Protein** G/dL G/dL Albumin G/dL G/dL Uric Acid Fasting Blood Glucose mg/dL mg/dL Random Blood Glucose mg/dL mg/dL ___ Amylase U/L U/L Triglycerides mg/dL mg/dL Cholesterol mg/dL mg/dL Other (describe): Ordered by: Sample collected by: _____ Date of collection: _____ Date of order: Time of order Time of collection: Lab tech comments: Name of lab tech: Signature: Date of analysis: Time of completion: _____ Result checked/approved by:

Item 10: Clinical Chemistry Order and Report Form

Item 11: Serology Order and Report Form

SEROLOGY ORDER AND REPORT				
Name:		OPD		
MRN:		IPD Ward: Bed Number:		
Age:	Sex:			
Clinical history:				
Test orde	red	Result		
HIV serology rapid test				
HIV serology by EIA				
Cryptococcal Ag				
Hepatitis B				
Hepatitis C				
TPPA/TPHA/RPR				
Syphilis				
Pregnancy test (HCG)				
Other (describe):				
Ordered by:		Sample collected by:		
Date of order:		Date of collection:		
Time of order		Time of collection:		
Lab tech comments:				
Name of lab tech:		Signature:		
Date of analysis:		I me of completion:		
Result checked/approved	by:			
	-			

Item 12: Microbiology Order and Report Form

MICROBIOLOGY O	RDER AND REPORT FORM
Name:	OPD
MRN:	IPD Ward: Bed Number:
Age: Sex:	
Clinical history:	
Sample type/site:	
Test ordered	Result
AFB smear	
India Ink Stain	
Gram Stain	
Microbiology smear	
C+S 🗖	
Wet mount - direct microscopy	
Other (describe):	
VDRL 🗖	
Skin scraping	
Skin snip	
Other (describe below):	
Ordered by:	Sample collected by:
Date of order:	Date of collection:
Time of order	Time of collection:
Lab tech comments:	
Name of lab tech	Signature
Date of analysis	Signature
Result checked/approved by:	

	STOOL ANALYSIS ORDER AND REPORT FORM							
Name:		OPD						
MRN:		IPD Ward:	Bed Number:					
Age:	Sex:							
Clinical history:								
	Result							
Consistency		_						
Occult blood		_						
Cells		_						
Ova or parasite		_						
Other		_						
Ordered by:		Sample collected by: _						
Date of order:		Date of collection:						
Time of order		Time of collection:						
Lab tech comments:								
Newselfield								
tech:	Signat	ure:						
Date of analysis:	Signat Time o	of completion:						
Result checked/approved	l by:							

Item 13: Stool Analysis Order and Report Form

	URINE TEST ORD	ER AND REF	PORT FORM	
Name:		OPD		
MRN:		IPD	Ward:	Bed Number:
Age:	Sex:			
Clinical history:				
	Result			
Colour				
Appearance				
Protein				
Glucose				
рН				
Blood				
Ketones				
Bilirubin				
Pregnancy test (HCG)				
Other(describe below):				
Ordered by:			Sample collected by	
Date of order:			Date of collection: _	
Time of order			Time of collection: _	
Lab tech comments:				
Name of lab tack.		Cianatura		
Date of analysis		Time of com	alation	
Result checked/approved	by:			

Item 14: Urine Test Order and Report Form

Item 15: Radiology/Ultrasound Order and Report Form

R	ADIOLOGY/ULTRASOUN	ND ORDER	AND REPORT FOR	RM	
Name:		OPD			
MRN:		IPD	Ward:	Bed Number:	
Age:	Sex:				
Investigation (s) request	ed:				
Summary of clinical ni	story,relevant clinical fin			s:	
Requesting physician:		Signature:			
Date of request:		Time of request:			
Name of reporter: Signature	d by trained radiologist/ultra	sonographer . 	ir availadie.		
Designation/Position:		Date	of report:		
NB: The X ray film or L review and interpretat	Iltrasound pictures shoul ion if no radiologist/ultra	d also be se asonograph	nt to the requestiner is available.	ng physician for	

Item 16: Pathology Order and Report Form

	PATHOLOGY ORD	PORT FO	RM			
Name:		OPD				
MRN:		IPD		Ward:		Bed Number:
Age:	Sex:	Date s	specim	en collect	ed:	
Specimen type and site:		Time			a du	
Investigation (s) regu	ested:	Times	specin	ien conec	led:	
Summary of clinical bi	story relevant clinical fin	dinas a	nd in	vostigati	on recult	
Summary of chinical m		uniys a	mu m	vestigati	Jii result	5.
Dogwosting physician		Cianal				
Requesting physician:		Signa	lure:			
Date of request:		Time o	of req	uest:		
Report:						
Name of reporter:						
Signature						
Decimentia - (Deciti			Data			
Designation/Position:			Date	of report		

Item 17: Routine Observation Sheet



Item 18: Medication Administration Record

Name: MRN: Ward:

nosis:						Allerg	λ		>	ard:	Bed:	
Medication	Medication	s	Time to dive	Sinnatura of	Date							
Date (Name, dose, route, freq)	(Name, dose, route, freq)		one time each line	Transcriber	Given by							
							_					
							_					

Item 19: IV fluid and Additive Administration Record

Diad	nosis:			Allerav:						
#	Date	IV Fluid (Name, Volume, Rate)	Additives	Discontinue date	Date of start	Time of start	Mixed, checked, given by	Time completed	Completed by	
										1
										<u> </u>

Item 20: Fluid Balance Chart

	FLUID BALANCE CHART										
					Please Corr	plete or Affix	Label				
MRN:							Ward:				
Name							Bed No.:				
							l				
Date:											
Previou	s days bala	nce (+ or -)								
			INTAKE					OUTPL	Л		Total Fluid
			Intra-	Intra-	Total			Others			Balance
Time	Oral		Venous	Venous	Intake	Urine				Total Output	(ml/24hr)
01.00											
02.00											
03.00											
04.00											
05.00						1					
06.00											
07.00											
08.00											
09.00											
10.00	-										
11.00											
12.00											
13.00											
14.00											
15.00											
16.00						-					
17.00											
18.00											
20.00											
20.00											
21.00						<u> </u>					
22.00											
23.00											
24.00											
Total											
				TOTAL		+ OR -			TOTAL		

Print Name:	
Signature:	
Date and time completion:	

Item 21: Hospital Discharge Summary Sheet

HOSPITA	L DISCH	ARGE SUMMARY SHEET
Name:		MRN:
Ward:		Date of admission:
Bed number:		Date of discharge:
Hospital Course:		
Diagnosis/Diagnoses:		
Diagnostic procedures and laboratory find	ings:	
Condition on discharge:		
Cured Improved	No change	Worse Left against medical advice
Instructions for home:		
Diet:		
Activity:		
Specific care needs:		
Sick leave recommended (if relevant):		
Medications:		
Drug: Dosa	age:	Frequency:
1.		
2.		
3.		
4.		
Follow up care:		
Appointment date:	Place:	To be seen by:
1.		-
2.		
Form completed by:		
Designation/Position:		Patient/Care giver name:
Signature:		Signature:
Date:		Date:
One copy of form should be given to the pat	ient or care	giver and a second copy should be filed in the patient's Medical
		Record.

Item 22: Post Mortem Request Form

	POST MORTE	M REQUEST FORM	1	
Section A: Identification	1			
MRN:		Name of deceased:		
Age:		Date of Death: /	/	
Sex:				
Occupation:				
Address:-				
Region: Zone:	Woreda/Sub-city:	Kebele:	House No.:	Tel:
Brief history of the dece	ased:			
Physical examination fir	ndings:			
Possible cause(s) of dea	th:			
Reason for Referral:				
Referring Institution:				
Requesting Physician:				
Name:	Signature:			Date: / /
★Responsible professional r	must fill and send the following no	ote to requesting institu	ution	
*****	* * * * * * * * *	«	<	* * * * *
		· · · · · · · · · · · · · · · · · · ·	Index No.	
To (Requesting Instituti	ion):			
Dead body received by:				
Name:	Position: S	ignature:	Date: /	/ Time:

Item 23: Death Report

	DEAT	H REPORT	
Health Facility:		Region:	City:
Deceased Name:	ļ	Age (Year):	Sex:
Date of admission:	Date / Month / Year	Time	Hrs : Min
Date of death :	Date / Month / Year	Time	Hrs : Min
(Cause Of Death	Approximate	Interval Between Onset And Death
I. Disease or condition	leading to death*: -		
Due to (as consequence	e or)		
a)			
b)			
Antecedent cause: Morbid cause, stating: - Due to (a	conditions, if any, giving rise to th s a consequence or)	le above	
c)			
d)			
* This does not mean the i that caused death.	node of dying, e.g. heart failure, i	respiratory failure. it means	the disease, injury or complication
II. Other significant con	ditions contributing to the de	ath, but not related to t	he disease or condition causing it
Management/Treatmen	t given :		
	5		
Consider Collecting the	following Information		
III. If the deceased is a	female, was she:		
Not pregnant			
Dregnant at the time of	of death (Approximate doctation		
	(stage of labour	\	
		_)	
IV. If the deceased is a	newdorn:	1	
□ Still birth □ De	ath after birth	Weight: g	Not Known
Reported by (Dr./ Mr/	Ms):	Profes	sion :
Signat	ture:	I	Date : / /
Approved	l by:	Medical Dire	ector:

Item 24: Sample Referral and Feedback Form

Section 1: Patient Details (to be completed by Referral Unit)		
Name:		
MRN:		
Date of birth/Age:	Next of kin name:	
Address:	Next of kin address:	
Telephone number:	Next of kin telephone number:	
Section 2: Administrative Details (to be completed	eted by Referral Unit)	
Name of Referring Unit:	Name of Receiving Unit:	
Name of Liaison Officer:	Name of Liaison Officer:	
Contact Telephone Number:	Contact Telephone Number:	
Date referral made:	Date referral received (to be completed by Receiving Unit):	
Section 3:Referring Clinician Information (to	be completed by Referral Unit)	
Name of Referring Clinician:	Name of Consultant (if relevant):	
Profession/Qualifications:	Address:	
Registration number:	Telephone number:	
Address:		
Telephone number:		
Signature:		
Section 4: Clinical Information (to be complete	d by Referral Unit)	
Reason for referral:		
Dasic filstory and statement of the problem.		
Results of investigations performed:		
Treatments given:		
Current medication:		
Social/psychological factors:		
Known allergies:		
Any other relevant information:		
Section 5: Feedback information (to be comple	eted by Receiving Unit)	
Summary of history:		
Physical examination:		
Investigation results:		
Diagnosis:		
Treatment given:		
Management plan/advise:		
Follow up appointment date (if given):		
Any other relevant information:		
Section 6: Receiving Clinician Information (to	be completed by Receiving Unit)	
Name of Receiving Clinician:	Name of Consultant (if relevant)	
Profession/Qualifications:		
Registration number	Telenhone number	
Address		
Telephone number:		
Signature:		



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Abbreviations

ADR	Adverse drug reaction
AR	Analytic reagent
DACA	Drug Administration and Control Authority
DSM	Drug supply management
DTC	Drug and Therapeutics Committee
FCC	Food chemical codex
FEFO	First expiry, First out
FMHACA	Food, Medicine and Healthcare Administration Control Authority
LILO	Last in, Last out
PFSA	Pharmaceuticals Fund and Supply Agency
PMP	Patient medication profile card
STGs	Standard treatment guidelines

Section 1 Introduction

Pharmaceutical services are an essential component of hospital care. Effective pharmaceutical services promote the safe, rational and cost-effective use of drugs thus maximizing health gain and minimizing risk to patients. A well-organized pharmaceutical service ensures the continuous availability of all pharmaceuticals that are required for patient care. At the same time, an effective pharmaceutical service should be able to respond to sudden increases in drug demand, ensuring that adequate supplies are available to deal with any emergencies that arise.

Within the Ethiopian Health Service a number of reforms are currently taking place that affect hospital pharmaceutical services. Such reforms include Business Process Re-engineering for hospitals, strengthening of the Pharmaceutical Supply Chain, Financial Reform and the creation of a new regulatory body for pharmaceuticals and services [the Food, Medicines and Healthcare Administration and Control Authority (FMHACA)]. A brief summary of these reforms and the implications for hospital pharmaceutical services are presented in Box A.

The standards and guidance set in this chapter are designed to align with and support hospital pharmaceutical services to meet the demands of these national reform programs.

Box A Selected National Reform Programmes that Impact on Pharmaceutical Services

A) Business Process Re-engineering for Hospitals:

Aim: To enhance the patient experience, ensuring the smooth flow of patients between services and minimize patient waiting times.

Process: Hospital Services will be organized into 3 main case teams: Outpatient Case Team, Inpatient Case Team and Emergency Case Team. Each Case Team will be led by a Service Director (Director of Outpatient Services, Director of Inpatient Services and Director of Emergency Services). Pharmaceutical (and Laboratory) services should be organized into these Case Teams. The relevant Service Director has overall accountability for pharmaceutical services within his/her Case Team.

B) Pharmaceuticals Logistics Master Plan

Aim: To ensure the uninterrupted supply of essential, quality and cost-effective pharmaceuticals at all health facilities.

Process: The Pharmaceutical Fund and Supply Agency (PFSA) has been created to coordinate national drug supply, drug storage and delivery to facilities. Public hospitals should preferentially purchase pharmaceuticals from PFSA. Standardized order and reporting formats have been developed and these should be used by hospital pharmaceutical services.

C) Food, Medicines and Healthcare Administration and Control Authority (formerly DACA) Aim: To ensure public safety by setting standards and a regulatory framework for:

- Health service delivery (premises, services, personnel)
- Pharmaceuticals, and
- Food Safety

Process: The FMHACA has the authority to regulate all pharmaceuticals, and including suppliers. FMHACA will set a national drug list and will also set minimum standards for hospital premises and services. Hospital Pharmaceutical Services should only purchase pharmaceuticals that are included in the national drug list, and should only purchase from suppliers that are licensed by FMHACA.

D) Financial Reform

Aim: To enhance hospital autonomy, efficiency and accountability thus promoting service improvements and maximizing health gain.

Process: Hospital governing boards have been created and Chief Executive Officers appointed to manage facility operations. Hospitals have the authority to raise and retain revenue, which can be used to improve services. Hospitals may raise income from a variety of sources including the sale of pharmaceuticals and the establishment of private wings. All patients are expected to pay for medical care with the exception of those receiving 'exempt services' (as set out in Federal and Regional Legislation) and those with 'fee waiver' certificates. Additionally, social and community health insurance schemes are being developed. Hospitals must have mechanisms to record all pharmaceuticals that are dispensed under 'fee waived' and insurance schemes so that reimbursement can be claimed from the appropriate body.

Section 2 Operational Standards for Pharmacy Services

- 1. The hospital has a Drug and Therapeutics Committee (DTC) which implements measures to promote the rational and cost-effective use of medicines.
- 2. The hospital has a Medicines Formulary listing all pharmaceuticals that can be used in the facility. The Formulary is reviewed and updated annually.
- 3. The hospital has outpatient, inpatient, emergency pharmacies and a central medical store each directed by a registered pharmacist.
- 4. The hospital ensures that all types of drug transactions and patient-medication related information are properly recorded and documented.
- 5. The hospital has Standard Operating Procedures (SOPs) for all compounding procedures carried out.
- 6. The hospital provides access to drug information to both health care providers and patients in order to optimize drug use.
- 7. The hospital has policies and procedures for identifying and managing drug use problems, including: monitoring adverse drug reactions, prescription monitoring and drug utilization monitoring.
- 8. The hospital has a drug procurement policy approved by the DTC that describes methods of quantification, prioritization, drug selection, supplier selection and ordering of pharmaceutical supplies and is in line with national guidance.
- 9. The hospital has a paper-based or computer-based inventory management system to reduce the frequency of stock-outs, wastage, over supply and drug expiry.
- 10. The hospital conducts a physical inventory of all pharmaceuticals in the store and each dispensing unit at a minimum once a year.
- 11. The hospital ensures proper and safe disposal of pharmaceutical wastes and expired drugs.
- 12. The hospital has adequate personnel, equipment, premises and facilities required to store pharmaceutical supplies and carry out compounding, dispensing, and counselling services.

Section 3 Implementation Guidance

3.1 Drug and Therapeutics Committee

Each hospital should establish a Drug and Therapeutics Committee (DTC) to promote the safe, rational and cost-effective use of medicines

3.1.1 Membership of DTC

The DTC should be multidisciplinary including, as a minimum:

- Chief Clinical Officer, or equivalent (Chairperson)
- Senior Pharmacist (Secretary)
- A representative from each Case Team
- A representative clinician from each major specialty (internal medicine, surgery, paediatrics, obstetrics and gynaecology etc)
- Senior nurse representative
- Representative from hospital finance department
- Representative from other services as deemed necessary

All DTC members, especially the chair and secretary, should be given sufficient time for their DTC functions, and this should be included in their job descriptions.

Other non-voting, non-executive members may be invited to attend DTC meetings to discuss issues that require their particular expertise.

3.1.2 Procedures of DTC meetings

The DTC should meet at a minimum every two months, or more often as the need arises. Minutes should be kept of all DTC meetings. The agenda, supplementary materials and minutes of the previous meeting should be prepared by the secretary and distributed to members for review in sufficient time before the meeting. These documents should be kept as permanent records of the hospital and should be circulated to hospital senior management and all clinical Case Teams. All DTC recommendations should be disseminated to the medical staff and other concerned parties and authorities in the hospital. The DTC should cooperate and share experiences with other hospital committees and regional or national DTCs.

Sub-committees of the DTC may be formed to address specific issues as the need arises (for example a policy on the use of antimicrobials etc).

3.1.3 Roles and responsibilities of the DTC

1. To develop and maintain the hospital formulary

All hospitals should have a Hospital Formulary listing all pharmaceuticals that can be used in the facility.

A participatory process should be followed to develop the Formulary involving clinical, laboratory, diagnostic imaging and finance personnel.

The selection of pharmaceuticals for the Formulary should be based on:

- the national drug list (List of Drugs for Ethiopia)
- the Federal Ministry of Health's Essential Health Services package,
- the National Standard Treatment Guidelines (STGs)
- the local pattern of disease

During preparation of the formulary emphasis should be placed on:

- drug description using generic names
- dosage form, strength and package size in basic units (for example: Amoxicillin 500mg, capsule, 100 per pack)
- inclusion of a limited number of drugs to improve drug availability, adherence to treatment, focused prescribing, and to simplify supply management

The Formulary should be reviewed and updated at least annually. The ABC method described in Appendix A is a useful tool for reviewing the drugs within a Hospital Formulary.

2. To develop standard clinical/treatment guidelines

Standard clinical/treatment guidelines (STGs) promote rational drug use and provide a benchmark of optimum treatment for the monitoring and audit of drug use. The DTC should implement national STGs for use in their own hospital. Hospitals should develop their own STGs for common clinical conditions that are not covered by national STGs. A participatory process should be followed to develop STGs involving clinical, laboratory and diagnostic imaging personnel.

3. To develop policies and guidelines for managing formulary and non-formulary items

Such policies and guidelines include:

- Policies/guidelines for the selection, quantification, procurement and distribution of pharmaceuticals. Policies/guidelines for generic substitution and therapeutic interchange.
- Policies/guidelines on the use of specific medications for example narcotics, chemotherapeutic agents, highly expensive medications, etc.

4. To establish mechanisms to identify and address drug use problems

The DTC should establish a policy and procedures for identifying and managing drug use problems including, as a minimum:

- Monitoring adverse drug reactions (see Section 3.4.1)
- Prescription monitoring (See Section 3.4.2)
- Drug utilization monitoring (See Section 3.4.3)
- Antimicrobial prescribing and use

Additionally, if resources are available the surveillance of antimicrobial resistance may also be undertaken.

Strategies should be established to correct any drug related problems identified. Such interventions may include:

- Educational programs and in-service training,
- Use of standard treatment guidelines and formularies, and
- Prescribing restrictions, etc.
5. To establish and oversee the Drug Information Service

Each hospital should establish a drug information service that provides information and advice to health professionals, patients and the public. For further discussion please see Section 3.3 below.

6. To develop an annual action plan

The DTC should prepare an annual action plan, describing the main tasks to be undertaken in the year with corresponding budget requirements to cover areas such as trainings, printing etc.

3.2 Hospital Pharmaceutical Services

3.2.1 Clinical Pharmaceutical Services

Clinical pharmacy services are patient-oriented services developed to promote the rational use of medicines, and more specifically, to maximize therapeutic benefits (optimize treatment outcomes), minimize risk, reduce cost, and support patient choice and decisions there by ensuring the safe, effective and economic use of drug treatment in individual patients. To achieve this, clinical pharmacists should get information on medication histories, perform medication reviews, attend ward rounds, provide recommendations on drug selection and follow-up, and provide counselling to patients and health care providers. Clinical pharmacists will therefore have the following functions:

- Provide advice to doctors, nurses and other health care workers on the clinical use of medicines, economic drug utilization and safety,
- Offer direct patient care services through, for example, medication history-taking, medicines education and advice, and
- Offer hospital managers, including clinical managers, appropriate advice and support to enable them to make informed decision with respect to medicines policy, procedures and guidelines designed to ensure safety, effectiveness and economy in medicines use.

3.2.2 Organization and Management of Pharmaceutical Services

Pharmacy services should be provided as part of the Inpatient Case Team, Outpatient Case Team and Emergency Room Case Team. (See section 3.2.7 for further guidance on emergency pharmaceutical services). Each of these three services should have a dispensing unit, patient counselling areas and cashier services. Each Case Team should have one or more pharmacists who provide specific advice and support to the Case Team when needed. The pharmacy personnel should promote the rational and safe use of drugs and should ensure that all medication prescribed by the Case Team is included within the hospital Drug Formulary and is in accordance with Standard Treatment Guidelines. Any discrepancies should be discussed with the prescriber. Occasionally it is necessary to prescribe nonformulary medication and/or to deviate from treatment guidelines. Such circumstances should be discussed between the pharmacist and Case Team/prescriber and should be documented in the patient's medical record. Additionally, as part of the Case Team the pharmacist should identify which patients would benefit from an individual Pharmaceutical Care Plan (see Section 3.2.6).

The relevant pharmacy personnel may attend Case Team meetings, ward rounds or outpatient clinics (especially for patients with chronic diseases). It will not be necessary for the pharmacy personnel to

attend every case team meeting, ward round or clinical consultation. However, the frequency with which the pharmacy personnel meets with the case team and/or participates in client contacts must be sufficient to ensure that the pharmacist has a full appreciation of the clinical context in which advice on the use of medications is given.

Pharmacy personnel should counsel patients in relation to drugs prescribed and should ensure the detection and reporting of adverse drug reactions among patients managed by their respective Case Team. The Service Director (Inpatient Service Director etc) is accountable for pharmaceutical services and personnel within his/her Case Team.

Pharmaceutical staff can also provide health education to patients in the OPD, on wards or through community outreach.

3.2.3 Dispensing and Medication Use Counselling

Dispensing involves six main steps:

- 1. The interpretation and evaluation of a prescription
- 2. The selection, manipulation or compounding of the medicine
- 3. The labelling and supply of the medicine in an appropriate container
- 4. The provision of information and instructions to a patient
- 5. Recording the transaction
- 6. Filing the prescription

All steps in the dispensing process may be performed by a pharmacist. All steps, with the exception of the interpretation and evaluation of a prescription, may also be performed by pharmacist's assistants (druggists/pharmacy technicians) under the supervision of a pharmacist. All dispensing procedures, whether performed by a pharmacist, pharmacy technician/ druggist, must be carefully checked for accuracy and completeness by a responsible pharmacist.

Step 1 The interpretation and evaluation of a prescription

Dispensers must make sure that prescriptions are legible, legal, complete and correct. Orders received by word of mouth or through telephone should later be endorsed by the prescriber and be documented in writing. Receipt of the prescription and confirmation of the integrity of the communication should follow standard procedures for:

- a) Identifying the patient, the prescriber and the entity responsible for payment (as applicable);
- b) Ensuring the legality/authenticity of the prescription;
- c) Interpreting the type of treatment and the prescriber's intentions;
- d) Identifying the medicine, and checking the pharmaceutical/ dosage form, strength, appropriate dosage, presentation, method of administration and duration of treatment;
- e) Informing the patient of the benefits and implications of the substitution for a branded medicine of an interchangeable multi-source medicine.
- f) Helping the patient to resolve the problem when the prescription cannot be dispensed;

The pharmacist should assess the prescription to ensure the optimal use of the medicine with respect to:

a) therapeutic aspects

- i. the safety of the medicine,
- ii. possible contra-indications,
- iii. drug/drug interactions,
- iv. drug/food interaction,
- v. drug/disease interactions, and
- vi. treatment duplications.
- b) appropriateness for the individual and the indication for which the medication is prescribed.
- c) cost of medicine and availability of cheaper alternatives.

Any problems identified should be discussed with the prescriber and a solution should be worked out in consultation with the prescriber and patient.

Step 2 The selection, manipulation or compounding of the medicine

Patient-ready packs/pre-packed medicines may be used if available. Counting should be done on a clean counting tray. If necessary, compounding of extemporaneous preparations may be necessary. This should be carried out following Standard Operating Procedures in a designated compounding room (see section 3.2.4 below).

Step 3 The labelling and supply of the medicine in an appropriate container

The containers used for dispensing must be appropriate for the product dispensed. All containers intended for medicinal products must be protected and kept free from contamination.

All medicines to be dispensed should be labelled and the labels should be unambiguous, clear, legible and indelible. If possible lettering should be printed. The following information must be indicated on the label:

- the generic name of the product or each active ingredient, where applicable,
- the strength, dose, frequency of administration and total quantity,
- expiry date,
- prescriber's name,
- the name of the person for whom the drugs are dispensed,
- the directions for use,
- the name and business address of the dispenser,
- date of dispensing, and
- special precautions as applicable.

Step 4 The provision of information and instructions to a patient

All drugs should be dispensed with adequate and appropriate information and counselling. Information must be structured to meet the needs of individual patients and questions and answers should be used to check the patient's understanding. Written information should be provided to supplement verbal communication as appropriate. Counselling should ensure that the patient has an unequivocal understanding of the instructions for use, and any distinct characteristics or requirements of the medicine. Counselling should cover matters that will enhance or optimize medicine therapy and should include:

- Name and description of the medicine used,
- Intended use of the medicine and expected action,
- Dosage form, dose, route of administration,
- duration of therapy with emphasis given to completing the entire course, e.g. antibiotics,
- expected time to see a response of the medication and instructions on what to do if the medicine appears not to have the desired effect,
- the time the drug should be taken in relation to other drugs, food, life style interactions etc,
- clear instructions on measurement and administration of medicine (for example liquid, aerosol, topical preparations or suppositories). If necessary a demonstration such as opening and closing containers or using an aerosol may be necessary,
- Techniques for self-monitoring of medication therapy,
- Action to be taken in the event of a dose not being taken,
- explanation of harmless effects of the medication such as urine discoloration,
- Common severe side or adverse effects or interactions and therapeutic interactions that may be encountered, including their avoidance and the action that required if they occur,
- storage instructions,
- advice regarding keeping medicines out of reach and sight of children, and clarification on the consequences of sharing medication or keeping extra doses at home, and
- Prescription repeat information.

Step 5 Recording the transaction

Prescriptions should be recorded and documented as proof of transaction between the patient and the pharmacy professional. Prescriptions can therefore be traced back if any need arises.

All dispensing units should have a standardized Prescription Registration Book (PRB) for recording every pharmaceutical issued to a patient. A computerized dispensing and registration system may also be used, but should always be supported by paper back up. An example PRB is presented in Appendix B. The registration book should be completed at the time of dispensing or at the close of the working day.

The prescription registration book should be used both when prescriptions are retained in the pharmacy and when they are returned to the patient.

For a prescription which is returned to a patient because all the items in the original prescription could not be filled, the drugs that have been dispensed from the pharmacy should be copied on a blank prescription and the prescription should be filed appropriately. On the original prescription, which is retained by the patient, the word "dispensed" should be stamped adjacent to those items which have been dispensed.

For prescriptions which are to be refilled on a later date, the dispensing information should be entered into the registration book before returning the prescription to the patient. The official seal of the pharmacy, name and signature of the dispenser, the date of dispensing and the next refill date should be written on the back of the prescription.

Step 6 Prescription filing

Each prescription should be signed and accountability accepted by the pharmacist or other authorized person for the correctness of the dispensing of the medicine and confirming that the medicine was supplied.

- 1. At the close of each day all dispensed prescriptions should be organized into normal or special (e.g. Narcotic drugs) prescriptions and filed.
- 2. Prescriptions should be filed sequentially by day in a single container/carton for each month. The container should be labelled with the month and year .
- 3. Containers should be arranged on a monthly basis.
- 4. Normal prescriptions should be filed securely for two years and special prescriptions for 5 years.

Prescriptions, patient and medication related records and information should be documented and kept in a secure place that is easily accessible only to the authorized personnel.

3.2.4 Compounding of Non-sterile Extemporaneous Preparations

Compounding involves the preparation, mixing, assembling, packaging, and labelling of a drug or device in accordance with a licensed practitioner's prescription. This may include the reconstitution or manipulation of commercial products. Compounding should only be undertaken by capable, qualified and authorized personnel who have been trained for the type of compounding conducted.

Standard Operating Procedures (SOPs) should be established for all compounding procedures carried out by the pharmacy department. An SOP should include:

- the name, strength and dosage form of the preparation compounded,
- all ingredients and the quantities needed,
- equipment needed for preparation,
- mixing instructions including:
 - order of mixing
 - o mixing temperature
 - \circ duration of mixing
- beyond-use date,
- the packaging or container to be used for dispensing,
- storage requirements,
- labelling instructions,

• quality control procedures (e.g. measurement of the degree of weight variation between capsules; checking the adequacy of mixing, odour, colour, consistency, clarity or pH of preparation as appropriate).

A list of equipment and materials for compounding is presented in Appendix C. Further details on the compounding process are described in Appendix D.

A Compounding Record should be kept of all compounding activities. The record should list:

- the name and strength of the compounded preparation,
- the formulation record reference for the preparation,
- the sources and lot numbers of ingredients,
- the total number of dosage units compounded,
- the name of the person(s) who prepared and approved the preparation,
- the date of preparation,
- the assigned beyond-use date,
- the prescription number, and
- the results of quality control procedures (e.g. the weight range of filled capsules).

Sample Format for Recording of the Compounding Process (Compounding Sheet) and Compounding Prescription Registration Book are presented in Appendix E and F, respectively.

To ensure the safety and quality of compounded preparations SOPs should be strictly followed, and the compounder should check and recheck each step of the preparation process to guarantee that each weight or measurement is correct as stated in the SOP. Specific quality control measures for each procedure should be described in the SOP.

3.2.5 Patient Medication Profile Card

All patients with a chronic illness should have a patient medication profile card (PMP). The PMP should be updated by the dispensing pharmacist whenever drugs are dispensed to the patient.

The PMP can be in hard copy or computerized with hard copy back up and should contain the following information:

- a) Name of the health institution,
- b) Patient medical record number,
- c) The full name, sex, age and weight of the patient,
- d) The address of the patient and next of kin (if appropriate),
- e) Principle diagnosis/diagnoses and any concomitant diseases,
- f) History of adverse drug reactions,
- g) A list of all medicines (prescription as well as non-prescription) used by the patient,
- h) Reason for any changes made in the regimen of the patient,
- i) Name or initial of prescriber and prescription number,
- j) Dispensing and / or prescription date,
- k) Appointment / Refill date, and
- 1) Signature of the dispenser.

PMPs should be filed sequentially by medical record number or alphabetically by patient name in the dispensing unit.

When a patient presents to the pharmacy for a refill the pharmacist must assess the patient for signs of compliance, effectiveness and safety of the therapy. The pharmacist should identify areas for therapeutic modification and should refer to the prescriber when appropriate.

A sample PMP is presented in Appendix G.

3.2.6 Pharmaceutical Care Plan

A pharmaceutical care plan should be considered for selected inpatients and outpatients including:

- Those with multiple conditions/diseases,
- Those whose age, weight or clinical state may affect drug absorption or disposition, alter dosage requirements or predispose the patient to adverse reactions or drug toxicity,
- Patients taking medicines known to have a high risk of toxicity and a narrow therapeutic index,
- Patients taking medicines which may interact,
- Patients taking an investigational medicine,
- Patients whose therapy is changed frequently, and
- Patients receiving IV therapy.

The pharmaceutical care plan defines treatment goals, determines appropriate interventions and helps to assess whether the patient's needs have been met. It also defines responsibilities for the pharmacist and patient.

The first step in developing a pharmaceutical care plan is to assess the patient, with particular attention to:

- General health and activity status,
- Past medical history,
- Medication history,
- Social history,
- Diet and exercise history,
- History of present illness, and
- Economic situation (self-pay, insured or 'fee waived' status).

Information on the above can be obtained directly from the patient or carers, from the patient's medical record or from other clinical staff (nurses or physicians).

The plan should address each of the patient's diseases or conditions, taking into consideration the cost and/or complexity of therapy and patient adherence. The plan should be developed in consultation with the patient and the Case Team or clinician responsible for the care of the patient. In developing the plan the pharmacy staff member should ensure that the patient is well informed on:

• the various pros and cons (cost, side effects etc) of the treatment options,

- instances where one option may be more beneficial based on the pharmacy staff member's professional judgment,
- The disease and the therapy/medications described in the plan, and
- The essential elements of the plan, including the patient's responsibilities.

The pharmacist is responsible for monitoring the patient's progress in achieving the outcomes specified in the pharmaceutical care plan. Progress should be documented in the care plan and any necessary changes to the plan should be coordinated with the patient and his/her other healthcare providers as appropriate.

A final evaluation should be undertaken by the pharmacist to determine whether the actions and interventions of the care plan have achieved the desired outcomes. This can be done in person or by follow-up telephone contact depending on the circumstances.

3.2.7 Emergency Pharmacy Services

According to the current health sector reforms, emergency pharmacy service is one of the basic health care services to be provided under the emergency service unit of a hospital.

Emergency pharmacy service should be directed by a registered pharmacist who is accountable to the emergency unit of the hospital. Services should be available 24 hours a day.

The responsible pharmacist shall take the duty to coordinate and prepare emergency pharmaceuticals list (A sample list is provided in Appendix H) and ambulance kits for the hospital and he/she has to exert all the necessary efforts to ensure continuous availability of pharmaceuticals for the emergency unit and hospital ambulances.

Orders received by word of mouth or through telephone during an emergency should later be endorsed by the prescriber and be documented in writing within 48 hours of the order. The quantity prescribed should be limited to emergency period only.

The emergency pharmacy, in addition to supply of pharmaceuticals, shall ensure safe and correct use of medications as medication error is significantly high in this service area.

3.3 Drug Information Service

All hospitals should provide a drug information service for health professionals, patients and members of the public. The service generally responds to patient-oriented drug problems received from clinical staff or patients. However, the drug information service can also provide education and training to health professionals and/or the public regarding appropriate and safe drug use.

A drug information centre (DIC) should be established in each hospital. The Centre should have sufficient space with appropriate furniture and equipment including a dedicated telephone with answering machine, filing cabinets, printer and computer, preferably with internet access. The DIC should contain a current collection of reference materials such as books, journals, drug profiles,

formularies and manufacturer's information. A list of possible resource materials is presented in Appendix I.

The DIC should be open during normal pharmacy hours and should be staffed by appropriately skilled personnel who are trained in the provision of drug information.

To guide operations of the unit, SOPs should be established for:

- receiving, researching, answering, referencing, logging and storing medicine information queries,
- consulting specialists or other DICs for handling enquiries that are beyond the expertise of the unit,
- a patient counselling service, and
- reporting adverse drug reactions (see Section 3.4.1).

A filing system should be in place for information such as drug profiles, manufacturers' literature, drug protocols, drug trial protocols, and hospital policies. The system should be indexed and organized systematically. Information should be regularly updated and all contents should be reviewed annually.

3.4 Monitoring of Drug Use Problems

The hospital should develop and implement a policy for monitoring drug use and to identify drug use problems that includes, as a minimum:

- Monitoring adverse drug reactions
- Monitoring of prescriptions
- Drug utilization monitoring
 - Indicator study methods
 - Aggregate data methods
 - Drug use evaluation methods

The policy should assign responsible personnel for each of the activities, and should specify the frequency with which studies are conducted and the process by which findings/reports are presented to the DTC.

3.4.1 Monitoring and reporting of adverse drug reactions

The side effects or adverse reactions to medicines may range from relatively mild to, in rare cases, serious and life threatening. The detection of side effects and adverse reactions is important on an individual basis to optimize patient care and prevent harm. Additionally, the detection of ADRs is an important element of post market surveillance, by which health providers report ADRs to the appropriate higher authority so that problems not detected in the pre-marketing phase of drug use may be detected and any necessary action taken.

Vigilance is required to detect ADRs. Individuals susceptible to an ADR include:

- those with multiple diseases,
- those on multiple drug therapy,
- geriatric or paediatric patients,
- those receiving medicines that are known to be associated with serious adverse effects,
- those receiving drugs with a low therapeutic index or potential for multiple interactions,
- those with organ impairment that may alter drug pharmacokinetics, and
- those who have had a previous ADR.

A standardized form should be used to record and report ADRs. This should include:

- Patient name, sex, age, medical record number
- Clinical diagnosis
- Current medication
- History of previous ADR if any
- Details of adverse reaction
- Causality assessment
- Recommendations given

A sample is presented in Appendix J.

An ADR focal person should be appointed by the DTC. He/she is responsible to:

- ensure that all health professionals are involved in detecting, assessing, managing and reporting potential ADRs
- ensure that ADR report forms are readily available in all clinical areas and that health professionals are familiar with the form and how to complete it
- receive ADR report forms from clinical staff
- investigate potential ADRs
- analyze ADR data and compile reports
- provide regular reports to the DTC/and Hospital Management on ADRs in the facility
- report all ADRs to the Regulatory Body

The DTC should receive regular reports from the ADR focal person and make any necessary decisions regarding the use of the drug in the facility. Where necessary the hospital formulary should be amended to take account of detected ADRs.

Suspected ADRS should be investigated and managed as follows:

- 1. Assess suspected ADR with respect to:
 - a) *Patient details*: age, gender, organ function, height, weight; diagnosis and other relevant comorbidities prior to reaction; previous exposure to suspected drug(s) or related drug(s).

- b) *Medicine details*: non-prescription drugs, alternative treatments, recently ceased medicines; name, dose, route of administration, manufacturer, batch; date and time commenced; date and time discontinued (if applicable); indication.
- c) *Comprehensive adverse reaction details*: description of the reaction; time of onset and duration of reaction; complications and sequelae; treatment and outcome of treatment; relevant investigation results or autopsy report.
- 2. Perform causality assessment to assess likelihood of the drug causing the observed reaction.

A literature review may be undertaken to assess the likelihood that a suspected ADR was caused by a particular drug and/or the advice of other health professionals may be sought.

The ADR should be classified as:

- Certain: a clear temporal association is established between medicine administration and the reaction; and/or the results of investigations confirm that there is a relationship between the administration of the medicine and the reaction; and/or the reaction recurs upon re-exposure to the drug; and/or the reaction is commonly known to occur with suspected drug;
- **Probable**: the reaction is known to occur with the suspected drug, and there is a possible temporal association between the reaction and medicine administration; and/or the reaction resolves or improves upon withdrawal of the suspected medicine and other medicine therapy remains unchanged; and/or an uncommon clinical event occurs in the absence of other potentially causative factors;
- **Possible**: an alternative explanation for the reaction exists; and/or more than one medicine is suspected; and/or recovery follows withdrawal of more than one drug; and/or the temporal association between the reaction and administration of the medicine is unclear; or
- **Doubtful**: another cause is more likely to have accounted for the clinical event, e.g. underlying disease.
- 3. Make recommendations on treatment options, including possible alternative treatments taking into consideration:
 - the likelihood of the suspected drug(s) having caused the reaction,
 - the clinical significance of the reaction,
 - the condition of the patient,
 - the requirement for therapy,
 - the risks and benefits associated with continuing therapy,
 - the relative efficacy and safety of other therapeutic options, and
 - the prophylactic use of other medicines to prevent future adverse reactions.
- 4. Document the ADR and provide follow up advice:

All ADRs should be clearly highlighted in the patient's case notes. Any patient who has experienced an ADR should receive advice about the drug and reaction, should be advised to avoid the drug in the future and should be given an 'alert card' that states the drug involved and nature of the reaction. He/she should be advised to show this card at any future clinical consultation to prevent the same drug being prescribed again.

The ADR reporting form provided by the regulatory authority should be completed and returned as per the guidance provided.

3.4.2 Prescription Monitoring

Prescriptions issued by each Case Team should be regularly monitored to identify problems or opportunities for optimizing treatment. The monitoring schedule should be set at a frequency suitable for the patient mix and prescribing practice of the Case Team. The DTC should establish a policy that outlines the responsible person (s), the process of and frequency with which prescription monitoring will be conducted for each Case Team.

Patients and their medicine therapy should be monitored for:

- Legality, legibility and completeness of prescription
- Relative efficacy of the medication for the clinical indication
- Compliance with the hospital formulary or applicable treatment guidelines
- The appropriate dose and route of administration
- The appropriate duration of therapy
- Possible altered kinetics of drug absorption, distribution, metabolism or excretion which may affect therapy
- Significant drug interactions
- Possible drug/disease incompatibilities
- Drug/laboratory test interference
- Duplication of pharmacologically similar drugs
- Adverse drug reactions (ADRs) or drug toxicity
- Problems relating to intravenous administration, including potential incompatibilities, medicine stability, volume of intravenous fluid for medicine administration and rate of administration
- Administration errors and omissions
- Patient compliance

Potential problems identified should be discussed with the prescriber, with advice given on alternative treatments. A pharmaceutical care plan may be developed to resolve any problems identified (see Section 3.2.6).

3.4.3 Drug Utilization Monitoring

The purpose of drug utilization monitoring is to assess the overall drug utilization pattern of the hospital and identify problem areas for intervention and the impact of interventions. Two main methods may be used:

- Indicator study methods (prescribing, patient care and facility indicators); and
- Drug use evaluation (DUE) methods.

a) Indicator study methods:

In Indicator studies a selected indicator is set and performance against this indicator is measured. Indicators can be developed to assess prescribing, patient care or facility practices. Table 1 presents possible indicators that could be used for an Indicator Study.

Table 1.	Selected indicators	to assess	nrescribing.	natient	care and	facility	nractices
rabic r.	Sciected multators	10 455055	preserioning,	patient	care and	lacinty	practices

Prescribing Indicators	Patient Care Indicators	Facility Indicators
 Average number of medicines per encounter % of medicines prescribed by generic name % of encounters with an antibiotic prescribed % of encounters with an injection prescribed % of medicines prescribed which are from the essential medicines list or formulary list 	 Average consultation time Average dispensing times % of medicines actually dispensed % of medicines that are adequately labelled % of patients who know how to take their medicines 	 Availability of essential medicine list or formulary Availability of key set of indicator medicines Availability of standard treatment guideline (STG)

Steps to be taken when conducted an indicator use study include:

- Determine objectives of study,
- Define indicators and data collection procedures,
- Determine study design and sampling methods,
- Pilot test,
- Train data collectors,
- Collect data as per the time line,
- Compile and analyze data,
- Prepare report and recommendations based on findings of study,
- Present report and recommendations to DTC and relevant hospital staff, and
- Implement recommendations arising from study, repeat study to assess impact.

b) Drug Use Evaluation (DUE) methods

'Drug Use Evaluation' studies can be undertaken to measure the use of a specific drug and/or adherence to standard treatment guidelines (STGs). DUE studies are particularly important to investigate:

- Perceived overuse or underuse of medications,
- Problems identified by indicator studies,
- High numbers of ADRs,
- Excessive amounts of non-formulary medicines used,
- Use of high-costs medicines when less expensive alternatives exist, and
- Use of excessive numbers of medicines within a therapeutic category.

Steps to be undertaken in conducting a DUE study include:

Step 1: Define appropriate medicine use (for example medicine use described in national or local STGs)

Step 2: Audit actual prescribing practice against the set criteria

Step 3: Analyze data, prepare report and recommendations based on findings

Step 4: Present report and recommendations to DTC and relevant staff

Step 5: Implement recommendations arising from study, repeat study to assess impact

Problems identified by Indicator Study or DUE studies may be further investigated using qualitative methods further described in *Chapter 12: Quality Management;* section 3.2.1.

3.5 Drug Supply Management

Effective drug supply management ensures the uninterrupted availability of quality, approved, safe and effective pharmaceuticals. Drug supply management involves six basic functions: selection, quantification, procurement, storage, distribution and use. The Hospital should have a pharmacist for overall drug supply management, a pharmacy technician for store manager and a data clerk to enter data.

3.5.1 Selection

All hospitals should have a Hospital Formulary that lists all pharmaceuticals that can be used in the hospital. The Formulary should be approved by the DTC and be based on the List of Drugs for Ethiopia/National Formulary. The Formulary is the basis for drug selection and procurement.

3.5.2 Quantification

After the Formulary is prepared, the quantity of each product required by the hospital for a given period of time should be determined. To guide this process, a Quantification Policy should be developed and approved by the DTC. The Quantification Policy should indicate:

- The methodology to be used for quantification
- Techniques for cost analysis and prioritization for periods when funds are insufficient (see Box B)
- The annual schedule for quantification

Box B VEN Analysis

If funds are limited, **VEN** analysis is a method to prioritize for medicine purchase. This analysis is used to identify high-priority medicines for procurement and low-priority medicines that the DTC should analyze carefully for deletion from the formulary. VEN stands for:

V = Vital: Potentially lifesaving and crucial to providing basic health services

E = Essential: Effective against less severe but significant illness, not vital

N = Non essential: Effective for minor illnesses but have high cost and low therapeutic advantage

Steps for conducting a VEN analysis are as follows:

- *Step 1.* Classify all medicine on the list as V, E, or N
- *Step 2.* Analyze the "N" items. Where possible, reduce quantities to purchase or eliminate them.
- Step 3. Identify and limit therapeutic duplications.
- Step 4. Reconsider proposed purchase quantities.
- *Step 5*. Find additional funds if needed or possible.

Any quantification method should aide in :

- Setting the maximum, minimum and reorder stock levels
- Identifying what to quantify (develop drug list)
- Considering the impact of lead time
- Adjusting for service growth and losses due to wastage and theft
- Estimating total procurement cost
- Adjusting and reconciling final quantities

Two main methods for quantification are:

- consumption methods;
- morbidity methods;

Method	Uses	Essential Data	Limitations
Consumption	 First choice for procurement forecasts, given reliable data Most reliable predictor of future consumption 	 Reliable inventory records Records of supplier lead time Projected drug costs 	 Must have accurate consumption data Can perpetuate irrational use
Morbidity	 Estimating need in new programs or disaster assistance Comparing use with theoretical needs Developing and justifying budgets 	 Data on population and patient attendances Actual or projected incidence of health problems Standard treatments (ideal, actual) Projected drug costs 	 Morbidity data not available for all diseases Standard treatments may not really be used

Table 2. Comparison of Quantification Methods

Every quantification method should address at least the following:

- Plan/schedule for quantification
- Review of the minimum, maximum, and order interval set for each pharmaceutical (primarily for products supplied by private suppliers).
- Identify which pharmaceuticals are to be quantified
- Consider the impact of procurement lead time
- Adjust for service growth (program effort) and estimated losses due to wastage and/or theft
- Estimate total procurement quantities and cost
- Adjust and reconcile final quantities and cost according to funding and other factors

3.5.2.1 Consumption Method

The *Consumption Method* is the most reliable predictor of future consumption therefore this method is the preferred option for quantifying the requirements for pharmaceuticals. Since the Consumption Method relies on accurate records of past drug consumption each hospital should have a reliable system to track drugs from the store to each dispensing unit and to the patient. Daily drug consumption at different outlets of the hospital should be recorded, compiled and analyzed for the appropriate supply and use of pharmaceuticals.

This Consumption Method is most suitable when there is:

- a representative pattern of morbidity and patient attendances
- an acceptable pattern of rational prescribing
- adequate and uninterrupted drug supply
- complete and accurate data on stock-on-hand and issues/consumption, and
- data on waste and losses

Box C Quantification Steps Using the Consumption Method

Step 1: Prepare list of pharmaceuticals to be quantified
Step 2: Determine the period of time to be reviewed for consumption
Step 3: Enter consumption data for each pharmaceutical
Step 4: Calculate average monthly consumption
Step 5: Calculate the quantity of each drug required for the next procurement period
Step 6: Adjust for expected changes in consumption patterns
Step 7: Adjust for safety stock requirements and estimated losses
Step 8: Estimate costs for each pharmaceutical and total costs
Step 9: Compare total costs with budget and make adjustments

3.5.2.2 Morbidity method

This method uses morbidity data to determine the quantity of pharmaceuticals required. It may be the most appropriate method of quantifying drug requirements when:

- consumption data are incomplete or not available
- prescribing patterns are not cost effective
- budget is unlikely to be sufficient to meet estimated requirements, and
- health facilities or services are new

Box D Quantification Steps using the Morbidity Method

Step 1: Specify the list of health problems

- Step 2: Establish standard or average treatments for each health problem
- Step 3: Establish the list of drugs to be quantified
- Step 4: Collect morbidity data for each problem
- Step 5: Calculate the number of treatment episodes for each health problem
- Step 6: Calculate the quantity of drugs for each health problem
- Step 7: Combine the estimates for each drug from the various health problems into a master procurement list
- Step 8: Adjust quantities to cover other health problems
- Step 9: Adjust for current stock position and expected losses
- Step 10: Estimate costs for each drug and total cost
- Step 11: Compare total costs with budget and make adjustments

The Chief Clinical Officer (or equivalent) should review and approve all forecasts/quantifications prior to procurement.

3.5.3 Procurement

A designated pharmacist (drug supply management officer) should be responsible for the pharmaceutical aspects of the purchase of all pharmaceuticals. A Procurement Policy, approved by the

DTC should be established. General principles and procedures that should be addressed in the procurement policy include:

- procurement by generic name
- procurement limited to products specified in the Hospital Formulary
- procurement in bulk
- procurement based on quantification and available funds
- flexibility to respond to emergency situations
- compatibility with the regional and national laws
- product quality assurance
 - The pharmacist must not purchase any medicinal product where the pharmacist has any reason to doubt its safety, quality or efficacy.
 - The pharmacist must ensure that both the supplier and the source of any medicine purchased are reputable and registered by the regulatory body.
- supplier selection: PFSA or private
- contract terms (delivery time, payment terms etc)
- batch recall of pharmaceuticals, when necessary
- audit and monitoring of the procurement process

Additionally, the Procurement Policy should:

- a) indicate how an order should be placed to the PFSA.
- b) indicate procedures for procuring pharmaceuticals that are not available through PFSA.

The responsible pharmacist is accountable for:

- adherence to delivery schedules, contract or purchasing agreements
- the maintenance of up-to-date price records to ensure that the most favourable prices are obtained
- establishing and maintaining adequate records of purchases for inventory control and satisfaction of legal requirements.
- establishment and maintenance of a system for reporting errors and withdrawing defective products

Order placement and receiving of pharmaceuticals should be made using official and serially numbered vouchers. There must be only a small number of authorized signatories. Telephone orders must be confirmed in writing immediately.

3.5.3.1 Procurement through PFSA

Hospitals should procure preferentially through PFSA. A contract agreement should be entered between PFSA and the hospital that describes, as a minimum:

- routine ordering and reporting processes
- emergency ordering
- payment terms
- processes for handling discrepancies, damages and losses

- stock related information to be delivered to PFSA
- supply status related information to be delivered to hospitals

For most essential pharmaceuticals, the hospital should adopt the national system for resupply (formats, inventory control procedures, delivery schedules, etc.), in cooperation with the Pharmaceutical Fund and Supply Agency.

3.5.3.2 Procurement through Private Suppliers

If pharmaceuticals are not available to through PFSA, they should be purchased from private suppliers. Purchases should only be made from private suppliers that are registered with FMHACA. To improve efficiency and minimize costs one year contracts are preferred, with quarterly or bimonthly deliveries.

3.5.4 Stores Management

Storage is the safekeeping of pharmaceuticals to protect the shelf life of products and avoid damage, expiry, and theft.

A pharmacist must be assigned for the overall management of pharmaceuticals for the hospital and including oversight of the medical store and a data clerk. A designated pharmacy technician should be responsible for the storage of all pharmaceuticals.

All drugs and medical supplies should be stored in a designated area with security measures to restrict access to authorized personnel only. All pharmaceuticals from suppliers should be delivered directly to the central medical store where they will be registered, stored and issued to dispensing units.

Since drugs and medical supplies may be damaged by improper storage it is essential that the central medical store has adequate control of sanitation, temperature, light, ventilation and humidity. Box E describes measures to ensure adequate temperature and humidity control. Guidelines for the storage of pharmaceuticals are presented in Table 3 and Box F.

All storage areas, including those in the various dispensing units, should be inspected regularly to ensure that:

- Pharmaceuticals are stored and handled in accordance with the pharmaceutical manufacturer's requirements and regulatory standards.
- Proper storage conditions are maintained for all pharmaceuticals requiring special conditions, such as cold storage, high security (controlled substances), radio-pharmaceuticals, and medical gases.
- Expired or obsolete pharmaceuticals are stored separately.
- Stock levels are adequate to ensure a continuous supply of ready-to-use pharmaceuticals at all times, especially the essential drugs as defined by the latest edition of the formulary.
- Flammable substances are stored separately and in an appropriate manner.
- Disinfectants, chemicals, and preparations for external use are stored separately from pharmaceuticals.

Box E Temperature & Humidity Control for Pharmaceutical Products

- 1. The store should be designed store to moderate internal temperatures. The use of trees for shade and shelter, correct building orientation for natural lighting and ventilation, and appropriate building materials can moderate internal temperature.
- 2. Ceilings should be at least 3m high to allow adequate ventilation.
- 3. The following procedures can be implemented to moderate the temperature inside the store.
 - In hot, dry climates, good construction and night time ventilation can maintain daytime temperatures several degrees below ambient. In hot, humid climates, effective cross-ventilation is required.
 - In cold climate areas the storage buildings should be well insulated.
- 4. Moisture sensitive products should be stored at a relative humidity less than 60%. For this purpose:-
 - It is advisable to open the windows or air vents of the store room to allow air circulation. Ensure that all windows have screens to keep out insects and birds before opening.
 - Put boxes on pallets and ensure that there is sufficient space between the pallets and the walls of the store room for proper air circulation.
 - Never open a new container unless necessary.
 - Use ceiling mounted ventilator or standing fans as appropriate.
 - Installing Air Conditioners (AC) when the need arises.
 - Depending on the climate condition and the financial capacity of the hospital, installation of a dehumidifier can also be considered.
- 5. Some drugs are photosensitive and can be damaged if exposed to direct sunlight. To protect products from sunlight:
 - Shade the windows or use curtains, if they are in direct sunlight.
 - Keep products intact in cartons.
 - Maintain trees on the premises around the facility to help provide shade.
- 6. Heat affects many products. Ointments and creams that can easily melt and heat can cause degradation. The above stated points about sunlight and humidity control will also help protect such products from heat. It is important to have a thermometer in various parts of the pharmacy/store to monitor temperature.

Acti	vities	Justification			
1.	Store pharmaceuticals in a dry, well- lit, well- ventilated storeroom - away from direct sunlight. Temperatures in the storeroom should not exceed 25°C.	Extreme heat and exposure to direct sunlight can degrade pharmaceuticals and dramatically shorten shelf life. Direct sunlight raises the temperature of the product and can reduce its shelf life or may damage the product by other mechanisms.			
2.	Clean and disinfect the storeroom regularly. Keep food and drink out of the storeroom.	Pests are less attracted to the storeroom if it is regularly cleaned and disinfected. The outside of the store should also be kept clean, and any garbage should be stored in covered containers. Water should not be allowed to stagnate near the building. Would should be varnished or painted to discourage pests. If possible, a regular schedule for extermination will also help eliminate pests.			
3.	Protect storeroom from water and moisture.	Moisture can destroy both supplies and their packaging. If the packaging is damaged, the product is still unacceptable to the patient even when the pharmaceutical is not damaged.			
4.	Keep fire safety equipment available, accessible, and functional, and train employees to use it.	Stopping a fire before it spreads can save expensive supplies and the storage facility. The right equipment should be available; water is able to put out paper fires, but is ineffective on electrical and chemical fires. Place well-maintained fire extinguishers at suitable positions in the storeroom. If a fire extinguisher is not available, keep sand or soil in a bucket nearby.			
5.	Store latex products away from electric motors and fluorescent lights.	Latex products can be damaged if they are directly exposed to fluorescent lights and electric motors. Electric motors and fluorescent lights create the chemical ozone which can rapidly deteriorate latex products. Keep latex products in paper boxes and cartons.			
6.	Maintain cold storage, including a cold chain, as required.	Cold storage (2 to 8 degrees Celsius or 36 to 46 degrees Fahrenheit) is essential for maintaining the shelf life of certain pharmaceuticals. These items are irrevocably damaged if the cold chain is broken. If electricity is unreliable, the use of cylindered gas or kerosene-powered refrigeration is recommended. Many drugs require storage below 25 °C. There may also be products that should be stored at a temperature below 0°C and hence the required storage condition should be maintained for these products.			
7.	Limit storage area access to authorized personnel. Drugs which need an access-controlled environment such as narcotics, psychotropic, etc should be stored under lock and key separate from the rest of stock preferably a locked wire cage within the storage facility or a lockable cabinet.	To prevent theft and pilferage, lock the storeroom and/or limit access to personnel other than authorized staff, and track the movement of pharmaceuticals.			

Table 3.Guidelines for Storage of Pharmaceuticals

8.	Stack cartons at least 10 cm off the floor, 30 cm away from the wall and other stacks, and no more than 2.5m high.	Pallets keep the products off the floor so they are less susceptible to pests, water and dirt damage. Stack pallets 30 cm away from the walls and each other to promote air circulation and to ease movement of stock, cleaning and inspection. Do not stack cartons more than 2.5m as the weight of the products may crush the cartons at the bottom. This will reduce potential injury to warehouse personnel. If cartons are particularly heavy, stack cartons less than 2.5m. Where feasible, strong well-organized shelving is preferred.
9	Store medical supplies away from	Exposure to insecticides and other chemicals may affect the shelf life
).	insecticides, chemicals, old files, office supplies and other materials.	of pharmaceuticals. Old files and office supplies may get in the way and reduce space for medical supplies or make them less accessible. "De-junking" the storeroom regularly makes more space for storage.
10.	Store flammable products separately from other products. Take appropriate safety precautions. Storage areas and cabinets should be clearly marked to indicate that they contain highly flammable liquids and should display the international hazard symbol. Corrosive or oxidant products, laboratory chemicals and reagents should be stored away from flammables, ideally in a separate steel cabinet to prevent leakage.	Some medical procedures use flammable products, such as alcohol, cylindered gas, or mineral spirits. Such products should be stored in the coolest possible place, away from electrical appliances and other products and near a fire extinguisher.
11.	Store pharmaceuticals to facilitate FEFO procedures and stock management.	FEFO (First Expiry, First Out) is a method of managing drugs in a storage facility where the drugs are managed by their expiry date. Drugs that will expire first are issued first, regardless of when they were received at the health facility.
12.	Store drugs in their original shipping cartons. Arrange cartons with arrows pointing up, and with identification labels, expiry dates, and manufacturing dates clearly visible.	Drugs should not be opened to repackage them. Store supplies in their original shipping cartons. Items should be stored according to manufacturer's instructions on the cartons; this includes paying attention to the direction of the arrows. Identification labels make it easier to follow FEFO, and make it easier to select the right product.
12	Separate unusable pharmaceuticals	Do not dispense expired drugs to the notients. Designate a constate
13.	from usable pharmaceuticals and dispose of damaged or expired products without delay.	part of the storeroom for damaged and expired goods.

Box F Pharmaceuticals Requiring Cold Storage

- Thermo-labile medicines must be kept in a refrigerator.
- The refrigerator should only be used for storing pharmaceuticals.
- The refrigerator should not be overloaded and stock should be kept in an orderly manner.
- The door of the refrigerator should close tightly.
- Uninterrupted power supply must be ensured.
- The temperature of the refrigerator should be maintained between 2°C and 8°C.
- The temperature of the refrigerator must be monitored and charted twice daily.
- A WHO approved dial thermometer or alcohol or mercury thermometer should be used. The thermometer must be hung from the middle shelf of the refrigerator.
- If the power is off for any length of time, the refrigerator should not be opened until the power supply is restored.
- The cold chain must be maintained when the refrigerator is cleaned. Cooler boxes should be used to maintain the cold chain.
- The following procedures should be followed when the refrigerator is cleaned:
 - i) The inside of the refrigerator should be cleaned with an appropriate cleansing solution and wiped dry.
 - ii) The door gasket should be cleaned, especially along the bottom edge on upright units.
 - iii) The freezing compartment should be defrosted if there is more than 10 mm of ice on the evaporator.
 - iv) The condenser coil on the back of the refrigerator should be cleaned and dust removed from the compressor.

3.5.5 Inventory Management

For most essential pharmaceuticals, the hospital should adopt the national system for pharmaceutical management and resupply (formats, recording, reporting, ordering, inventory control procedures, delivery schedules, etc.) in cooperation with the Pharmaceutical Fund and Supply Agency (PFSA).

All pharmaceuticals handled in the hospital should be stored and dispensed following the standard coding system. Until a national coding system is set by PFSA, hospitals should devise their own method. Pharmaceuticals must be organized utilizing a system that allows for easy identification of all pharmaceuticals, which ensures the safety of all pharmacy team staff, and which utilizes:

- First Expiry First Out principles
- Alphabetical, pharmacological, pharmaceutical orders, or high/low usage systems, or a logical combination of one or more of these methods
- Flood method/system

3.5.5.1 Stock and Shelf Numbering

A **Stock Number System** is used to facilitate the inventory management process through creating a systematic arrangement of all stocks in the central medical store. In case of computerization, it helps to have a fast item tracking system for each type of product category. Each item should have a unique stock number as an identifier. There are many ways of creating a stock number. In a complex and very large facility, a typical stock number may be structured as twelve alphanumeric characters. However,

in our settings, eight alphanumeric characters can be adequate. For instance, GI-100-001 can be used as a stock number for a drug in gastrointestinal tract category.

Inventory coding should be done in accordance with the following procedures.

- Take product category alphabets from the national drug list of Ethiopia. Example, GI for drugs used to treat gastrointestinal problems.
- Take sub-category number from the national drug list of Ethiopia. Example:
 - 100 for Antacid agents
 - 200 for Anti-ulcer agents
- List all the drugs under each sub-category alphabetically using generic name and provide three digit numbers. Example:

Pro	oducts under sub-category antacid agents (100)	Products under sub-category anti- ulcer agents (200)		
1.	001 for Aluminium hydroxide + Magnesium trisilicate	1.	001 for Cimetidine 400mg tablet	
	susspension 310mg+620mg in 5ml	2.	002 for Ranitidine 300mg tablet	
2.	002 for Aluminium hydroxide mixture 320mg/5ml			
3.	003 for Aluminium hydroxide suspension 360mg/5ml			

Sample Template for Developing Eight Digit Stock Numbers

Product Category	Sub-Category		Product Item	Stock Number
	Antacid Agents		Aluminium hydroxide + Magnesium trisilicate susspension 310mg+620mg in 5ml (001) Aluminium hydroxide mixture	GI-100-001 GI-100-002
Gastrointestinal (GI)	(100)		320mg/5ml (002)	
			Aluminium hydroxide suspension 360mg/5ml (003)	GI-100-003
	Antulcer Age	ents	Cemitidine 400mg tablet (001)	GI-200-001
	(200)		Ranitidine 300mg tablet (002)	GI-200-002

Note:

- 1. In cases when a product has been registered in more than one sub-category, give code using the category where it appears first in the latest national drug list of Ethiopia
- 2. In situations where a new drug is added to the formulary list assign its stock number as described above by disregarding the alphabetic order.

Establishing Shelf Numbers: the pharmacy personnel should follow procedures listed below in order to assign shelf numbers in the central medical store.

- Apply six digit numeric characters for shelf numbering i.e 100-001. The first three digits represent the rows and the next three digits represent the columns.
- The first box of the first row from the top takes a shelf number 100 and the first box of the first column from the top takes a shelf number 001 and its number at the end becomes 100-001.
- Accordingly, all boxes inside the store shelve will have unique shelf number. A practical shelve template with shelf number is presented below.
- These numbers should be indicated on bin cards for each drug.

100-001	100-002	100-003	100-004	100-005
200-001	200-001 200-002		200-003 200-004	
300-001	300-002	300-003	300-004	300-005

Template for numbering stock shelves

3.5.5.2 Inventory Control System

The purpose of an inventory control system is to maintain appropriate stock levels to meet the needs of patients. A well designed inventory control system informs personnel when and how much of a commodity to order and helps to reduce shortages, oversupply, and expiry of commodities.

Effective inventory management is underpinned by a Logistics Management Information System (LMIS). An LMIS is a computerized database for inventory management that records all drug transactions and connects all levels of the supply chain.

The purpose of LMIS is to support the management of all pharmaceuticals by collecting, organizing and reporting information to other levels in the system.

Three essential data items that must be captured by the LMIS are:

- 1. Stock on Hand: Quantities of *usable stock* available at a given point in time
- 2. Consumption Data: The quantity of health commodities used during a time period or reporting period (or a proxy of consumption calculated from issues data)
- 3. Losses/Adjustments: Losses are the quantities removed from stock for any reason other than the provision of services to patients or the transfer of commodities to another facility (e.g. expiry, loss, theft, or damage). Losses are recorded as negative (-) numbers. Adjustments are quantities of a product received from any source other a regular supplier, or issued to another facility outside the regular procedures. An adjustment may also be a correction due to an error in mathematics. An adjustment may be a negative (-) or positive (+) number.

An effective inventory control system has 3 key elements:

- 1. The *maximum months of stock* is the largest amount of each pharmaceutical a facility should hold in the store at any one time. If a facility has more than the maximum for a commodity, it is 'overstocked' and risks having commodities expire before they are used.
- 2. The *minimum months of stock* is the approximate level of the 'stock on hand' at the time of the expected arrival of the next delivery from the supplier.

3. The *emergency order point* is the level where the risk of stocking out is likely, but there is still time to receive an emergency delivery to avoid the stock-out.

To help maintain adequate stock levels, the *maximum months of stock, minimum months of stock* and an *emergency order point* will be regularly established within the new national system. These levels are largely determined by the order interval (length of time from order to order) and the safety stock requirements.

For commodities procured from private suppliers, it may be necessary to set different minimums and maximums to reflect different delivery schedules.

Standardized forms for inventory management are described below:

1. Bin Card (See Appendix K)

A Bin Card should be prepared for each product in the Pharmaceutical Store. The Bin Card should be kept with the product inside the store. All transactions of the product to or from the store should be recorded on the Bin Card. The Bin Card should also include a column for the loss/adjustment of stock and a column for the stock balance. The stock balance should be updated after each and every transaction or adjustment.

2. Stock Record Card (See Appendix L)

The Stock Card is similar to the Bin Card but is used to track stock based on issuing and receiving orders. The Stock Card should be kept in the Store Manager's Office. Whenever Stock Cards are updated the totals should be checked against those on the Bin Card and any discrepancies should be investigated.

A combined Bin/Stock Card System provides a measure of internal control that helps to minimize leakages of stock due to theft or loss.

Paper based or electronic Stock Cards can be used. If an electronic system is installed there should be regular back up of data.

3. Internal Facility Report, Issue and Receipt Voucher (IFRIR) (See Appendix M):

The IFRIR Voucher is used to report the internal transfer of items between the hospital pharmaceutical store and Dispensing Units. The IFRIR also calculates the quantity of each item that should be provided to the Dispensing Unit to reach maximum stock levels. A copy of the IFRIR is given in Appendix H.

4. Facility Combined Report and Requisition Form (FCRRF) (See Appendix N)

The FCRRF is used to order health commodities from PFSA. Orders should be placed every second month. The quantity to be ordered is calculated as follows:

Quantity requested = quantity issued from the store room in the previous reporting period x 2 minus stock on hand.

An example FCRRF is presented in Appendix I. All requisitions/orders shall carry a unique order number so that they can be official documents (replacing MOFED Models 19 to 22). If an order is placed to PFSA by telephone this should immediately be confirmed in writing.

5. Record for Returning Unusable Commodities (RRUC) (See Appendix O):

The RRUC form is used to track the transfer of supplies back to PFSA. The form should be submitted to PFSA every second month.

The recommended inventory control system for the new national system is a Forced Ordering Maximum/ Minimum inventory control system. This means that all facilities are required to report on a fixed schedule, and PFSA is expected to supply on a fixed schedule. Facilities will place orders to return their stock levels to the maximum determined for each pharmaceutical. All products are resupplied each time a report and order is completed/sent to PFSA. In emergencies, an emergency order can be placed.

3.5.5.3 Physical Inventory (Physical Count)

A Physical Inventory (also called Physical Count) is an actual count of each commodity in stock at any given time. A Physical Inventory should be done regularly in the store and each dispensing unit, at a minimum of once per year. If the facilty decides the Physical Inventory could be done every two months to coincide with PFSA's planned delivery schedule. Bin Cards and Stock Record Cards should be updated at the end of each physical count.

Each facility should establish an SOP providing details on how the Physical Inventory should be conducted. Box G below provides is a checklist that can be used prior to initiating a physical inventory:

Box G Preparation for Physical Inventory

- Set a date for the physical count. Select the physical count team. Participants should be selected from the facility.
- Do not issue pharmaceuticals during the physical count or count receipts on the day of the physical count, except in an emergency. Receipts during the physical count will be recorded on the *Bin Cards* and the *Stock Record Cards* the following day and counted in the next physical count.
- Make sure that the *Bin Cards* and the *Stock Record Cards* for the pharmaceuticals are updated to the day of the physical count. If the *Bin Cards* and the *Stock Record Cards* are not completed, complete them.
- Prepare the store, making sure all cartons are neatly stacked and partial cartons are clearly visible.
- Reorganize pharmaceuticals by FEFO before counting. Mark expiry dates clearly, with large, dark numbers, on each box or carton. This step should have been taken during routine receipt and management of supplies.
- Visually inspect pharmaceuticals as you organize them for counting.
- Separate any expired or damaged supplies.
- Be sure to have the *Bin Cards* and the *Stock Record Cards* for each pharmaceutical to be counted.
- Register all drugs in full description (name, dosage form, strength, brand, code number, and unit price and expiry date) in the inventory sheet.
- Crosscheck the list in the inventory sheet against drugs on the shelves

3.5.5.4 Receiving

Receiving is an important input to proper inventory management, as commodities must be assessed and accepted (quality), paid for (cash or credit), and installed into the inventory of the store. Key priorities in the receiving process include:

- Visual inspection of the boxes to be received (to check quality and possible damage)
- Matching of the quantities issues/delivered by the supplier with the voucher/shipping documents and the actual amounts received/delivered.
- Documentation of the amounts received for each item.
- Managing the financial aspects of the receiving transaction.
- Placement of the new commodities into the inventory using the stock cards / computer and the bin cards (according to the hospital's policies and procedures).

For PFSA Products:

Products ordered from PFSA using the FCRRF will be delivered to hospitals every second month. At the time of delivery, PFSA trucks will wait while the products are counted and assessed in order to obtain proof of delivery and to take note of any discrepancies with the shipment.

Pharmaceuticals will be delivered with an Issue Voucher from PFSA which includes a column for receiving at the facility, or a copy of the original FCRRF.

For Non - PFSA Products:

All purchase orders with suppliers other than PFSA should include an agreed delivery schedule. At the time of delivery, the truck should wait while products are counted and assessed in order to obtain proof of delivery and to take note of any discrepancies with the shipment.

3.5.5.5 Facility Financial Issues

PFSA or other suppliers should be paid for the delivery of health commodities using one of three different options:

- Advance: Pharmaceutical budget allocations are made to PFSA on an annual basis by the health facility. As pharmaceuticals are ordered from and delivered by PFSA, the cost is deducted from the facility's 'account'.
- Cash and Carry: PFSA will be paid for the commodities at the time of delivery to the facility. Most hospitals are expected to use this method of payment.
- Credit: As far as possible hospitals should avoid obtaining pharmaceutical supplies on credit. Sufficient budget should be allocated (using raised revenue if necessary) to purchase pharmaceutical supplies. Hospitals may, with the approval of MOFED/BOFED, decide to operate a separate bank account for pharmaceutical supplies to ensure that funds are available and are not used for other purposes. If any supplies are obtained on credit then payment should be made as soon as funds become available.

3.5.6 Distribution

Pharmaceuticals should be managed centrally by the hospital Central Medical Store. All products should be received into the hospital Central Medical Store, and most of commodities should be stored there until they are issued to the various dispensing units within the facility. The distribution of pharmaceuticals within a hospital (from the store to any of the various dispensing units) should be directed by a pharmacist.

Pharmacy Dispensing Units should be established within Outpatient Services, Inpatient Services and Emergency Services. Pharmaceutical supplies will also be distributed to the hospital laboratories (outpatient, inpatient and emergency) and radiology unit.

Each dispensing unit should have an agreed list of stock items including the maximum quantity to be stored in the dispensing unit. Stock levels in the 'cabinet/storage area' of each dispensing unit should be kept to a minimum, preferably less than one month. The stock list of each Dispensing Unit should be determined by the relevant Service Director (Inpatient, Outpatient, Emergency Services etc) and should be approved by the DTC. Each Dispensing Unit should maintain Bin Cards for all pharmaceuticals in the unit.

SOPs, approved by the DTC, should be established for:

- Obtaining supplies from the Central Medical Store
- Action to be taken in the case of incomplete documentation or other queries
- Return of expired, damaged, leftover and empty packs from the dispensing units to the Central Store

The Central Medical Store manager should establish a resupply schedule for each of the dispensing units, generally between one week to one month. Each dispensing unit should have a designated day to receive its resupply (for example every Monday for weekly supply or the first Monday of every month for monthly supply). On that day, the dispensing unit staff should complete their part of the Internal Facility Report, Issue and Receipt Voucher (see Appendix M). The Central Medical Store Manager will use this information to determine the resupply quantities needed to serve clients until the next scheduled resupply day. For example, every Monday (on a weekly basis), the service provider reports data to the Central Medical Store, and the store resupplies enough product to serve clients until the next week (the dispensing unit will also keep a small safety stock). This system ensures that the dispensing units are not overworked with pharmaceutical management responsibilities, and the quantities issued to the dispensing units from the Central Medical Store reflect actual consumption by clients. It also spreads out the workload of the store across the week.

3.5.6.1 Resupply Options

Low volume dispensing units (for example MCH, TB/Leprosy etc): Dispensing units that dispense a low volume of drugs may use Bin Cards to record drug transactions. Such units should have a 'cabinet' of drugs that is stocked with sufficient supplies for the reporting and resupply period (weekly, every two weeks or monthly). At the start of each day drugs can be taken from the 'cabinet' and placed in the consultation rooms where patients are seen. Drugs are dispensed to patients directly from the consultation room. At the end of the day any unused drugs are returned to the 'cabinet'. All transactions from and to the 'cabinet' should be recorded on the Bin Card. Losses and Adjustments should also be recorded on the Bin Card when they are made/discovered. At the end of the reporting period, the dispensing unit should complete its part of the Internal Facility Report and Resupply Form using information contained on the Bin Cards.

<u>High volume dispensing units</u> (for example OPD/IPD/Emergency pharmacy dispensaries): Dispensing units that dispense a high volume of drugs should establish a Prescription Registration Book (PRB) that records every pharmaceutical issued to a patient. An example PRB is presented in Appendix B. At the end of the reporting period the consumption data should be aggregated from the PRB using a Consumption Summary Sheet (see Appendix P). The Dispensing Unit should also complete a Losses/Adjustment Tracking Sheet (Appendix Q) for the reporting period. This data, together with stock-on-hand balances from the previous reporting period should be used to complete the Dispensing Unit part of the Internal Facility Report and Resupply Form.

The Store Manager/Pharmacy Head should ensure that adequate control and monitoring procedures are in place for all commodities kept by the dispensing units within the hospital. He/she should occasionally visit and verify the stock-on-hand in the dispensing unit before issuing. The Store Manager/Pharmacy Head has the right to delay issuing to a particular dispensing unit if proper procedures have not been followed; however, problems should be resolved immediately so as not to risk stock-outs in that dispensing unit.

3.6 Pharmaceutical Waste Management

Pharmaceuticals which are eligible for disposal include the following:

- All expired/damaged pharmaceuticals,
- All unsealed syrups or eye drops (expired or unexpired),
- All cold chain products not stored as per manufacturers' recommendations (e.g.: insulin, hormones, gamma globulins and vaccines),
- All bulk or loose tablets and capsules with containers which are not sealed, properly labelled or within broken blister pack, and
- All unsealed or damaged tubes of creams, ointments, lotions and related products.

Each hospital should establish a pharmaceutical disposal committee comprised of representatives from pharmacy, finance/audit, and sanitation services to ensure the proper disposal of pharmaceutical wastes in accordance with the country laws.

Each hospital should establish an SOP for the management of pharmaceutical waste. The SOP should include the schedule, methods, materials and equipment required for disposal and the responsible person. The SOP should be approved by the hospital DTC. Disposal of pharmaceutical wastes should be supported by proper documentation, including the price of the products, for audit and other legal requirements.

Basic steps to be adhered for the disposal of pharmaceutical wastes are:

- *Step 1:* Pharmaceuticals that are expired/damaged or unfit for use should be counted, recorded and placed segregated from the other pharmaceuticals in the hospitals.
- *Step 2:* List of pharmaceuticals expired or unfit for use should be submitted to the responsible body for disposal.
- *Step 3:* The pharmaceuticals should be sorted out based on the pharmaceutical dosage form and chosen disposal method.
- *Step 4:* The pharmaceuticals should be disposed of in accordance with the appropriate method and in the presence of delegates from the responsible body.
- *Step 5:* Signed and stamped certificate of disposal format should be issued by the authorized body entitled to dispose the drugs.
- *Step 6:* Adjustments for each disposed drug should be made in the available inventory management system.

Pharmaceutical waste should be sorted by optimal disposal method and prepared for disposal with supportive documents. Hospital pharmacy and cleaning staff should be trained/ well informed about the potential risks of hazardous pharmaceutical wastes and their management. Cleaners and others handling hazardous pharmaceutical wastes should wear protective devices such as apron, plastic shoes, gloves, head gears, eye glasses, and goggles.

The following disposal methods can be applied:

General Disposal Methods:

- **Return to donor or manufacturer:** Whenever practical, the possibility of returning unusable drugs for safe disposal by the manufacturer/donor should be explored; particularly for drugs which present disposal problems, such as anti-neoplastics.
- Waste immobilization/encapsulation: This involves immobilizing pharmaceutical wastes in a solid block within a plastic or steel drum filled to 75% capacity. The remaining space should be filled and sealed with cement or cement/lime mixture and water in proportions 15:15:5 by weight. The sealed drums are then placed at the base of a land fill and are covered with fresh municipal solid waste.
- Landfill: Place the expired or 'unfit for use' pharmaceuticals directly into a land disposal and cover it with municipal waste to prevent scavenging. It should be noted that discarding in open, uncontrolled dumps with insufficient isolation from water courses can lead to pollution.
- Sewer: Some liquid pharmaceuticals, e.g. syrups and intravenous fluids, can be diluted with water and flushed into the sewers in small quantities over a period of time without serious public health or environmental effect. Fast flowing water courses may likewise be used to flush small quantities of well-diluted liquid pharmaceuticals or antiseptics. In this case, disposal should be done in consultation with the hospital sanitarian/environmental health specialist.

Traces of pharmaceuticals and other chemicals from the compounding and sterile preparation (if applicable) can be discharged directly into the sewerage system; however, the construction of a small underground neutralization pit to periodically check the pH of the effluent before discharging to the nearby municipal drainage system, in consultation with the appropriate regulatory bodies, is recommended.

- **Burning in open containers:** Pharmaceuticals should **not** be disposed by burning at low temperature in open containers, as toxic pollutants may be released into the air. Paper and cardboard packaging, if they are not to be recycled, may be burnt but polyvinyl chloride must not be. It is strongly recommended that only very small quantities must be disposed in this way.
- Incineration: Expired solid form of pharmaceuticals are burned using a two chamber incinerator that operates at a minimum temperature of 850° C.

Product specific disposal methods:

1. Solids, semisolids and powders:

- Medium temperature incineration should be applied for solid forms.
 - If there is no incinerator, encapsulation of the drugs before discharge to a land fill is necessary.
 - Solids, semisolids and powders should be removed from their outer packages but should remain in their packaging.
 - $\circ\,$ The disposed drugs then should be covered by municipal waste immediately to prevent scavenging.
- Pharmaceuticals classed as biodegradable organic material in the solid or semisolid form such as vitamins, can also be disposed of in a landfill.

2. Liquids

- Pharmaceuticals that can be classified as readily biodegradable organic materials such as liquid vitamins can be diluted and flushed into a sewer. Harmless solutions of different concentrations of certain salts, amino acids, lipids or glucose may also be disposed of in sewers.
- Small quantities of other liquid pharmaceuticals which are not controlled drugs, antineoplastics or anti-infective can also be flushed into sewers.

3. Ampoules

- These should be crushed on a hard impermeable surface (e.g. concrete or in a metal drum) and the crushed glass should be swept up, placed in a container, sealed and disposed of in a land fill.
- Ampoules should not be burnt or incinerated as they will explode, possibly causing injury to operators and damage to the incinerator by melting and clogging.

4. Anti-infectives

- Anti-infective drugs should not be discarded in an untreated form. Generally they are best incinerated and if this is not possible they can be encapsulated.
- Liquid anti-infective may be diluted in water, left for two weeks and disposed to the sewer.
- Controlled substances should be rendered unusable, by encapsulation or inertization, and then dispersed among the municipal solid waste in a land fill or incinerated.

5. Antineoplastics

- These drugs should be segregated from other pharmaceuticals and kept separately in clearly marked containers.
- They should be returned to the supplier if contract supports; otherwise, they should be destroyed in a high temperature incinerator of at least 1200 °C.
- Antineoplastics should never be disposed of in a land fill without encapsulation or inertization. They should never be disposed into sewers and water courses.
- Work teams handling these drugs should avoid crushing cartons or removing the product from its packages.

6. Aerosol canisters

- Disposable aerosol canisters and inhalers should not be burnt or incinerated, as high temperatures may cause them to explode, possibly causing injury to operators and /or damage to the incinerator.
- Provided they do not contain poisonous substances, they should be disposed of in a landfill dispersed among municipal solid wastes.
- Disposal of radiographic waste.

7. Waste types not to be incinerated

- Pressurized gas containers.
- Large amounts of reactive chemical waste.
- Silver salts and photographic or radiographic wastes.

- Halogenated plastic such as polyvinyl chloride (PVC), which is mostly used for I.V. fluids container.
- Waste with high mercury or cadmium content; such as broken thermometers, used batteries, and lead-lined wooden panels.
- Sealed ampoules or ampoules containing heavy metals.

For further guidance on waste management, including management of hazardous material spills refer to *Chapter 7 Infection Prevention*.

3.7 Pharmacy Billing

The provisions of Health Care Finance Reform Legislation enable hospitals to raise and retain revenue. The sale of pharmaceutical products is an important source of hospital income. With the exception of exempted health programs (immunization, TB, ART and the like) pharmaceuticals can be sold at a price that covers the actual cost of the medicine plus a service charge. Clear and uniform procedures should be established for setting the sale price of each commodity and for recording sales transactions.

The sale price of each pharmaceutical should be entered on the IFRIR form by the Central medical store. Each dispensing unit should sell pharmaceuticals at the stated price. All pharmaceuticals should be dispensed/sold using a standard sales ticket designed for the purpose.

3.8 **Premises, Equipment and Facilities**

The hospital should have sufficient space for the storage, compounding, counselling and dispensing of drugs and for the conduct of related administrative activities. A dispensing unit, counselling area, cashier services (with or without compounding facilities) should be established in each main service area (Inpatient Services, Outpatient Services and Emergency Services). The pharmaceutical products and quantities of each that are maintained in each dispensing unit should be approved by the hospital Drug and Therapeutics Committee (see section 3.3 of *Chapter 2 Patient Flow* for the minimum contents of the Emergency Services Dispensing Unit).

Counselling areas should be arranged to ensure reasonable privacy and minimize background noise.

All areas where pharmaceutical services are provided (for example dispensing units, central medical store etc) should be clearly labelled. Access should be controlled to ensure that only authorized personnel enter the premises and that only designated personnel have access to keys. A procedure should be established to ensure access to pharmacy premises in an emergency situation.

All equipment used for compounding, distribution and administration of medication should be regularly calibrated and maintained according to manufacturer's requirements. The need for continuous electrical supply should be determined and all critical items of equipment (for example refrigerators) should be protected by individual UPS devices and should be connected to the hospital back-up power supply (generator or alternative). All compounding and dispensing rooms should have

a sink with hot and cold running water. There should be sufficient computers within each service area for the functions carried out. Ideally, telephones should also be available within each services area.

The main medical store should be accessible to vehicles to allow the easy delivery of supplies. Where possible, the central medical store should be located by itself on a separate area to enhance security and minimize human and vehicle congestion.

Section 4 Implementation Checklist and Indicators

4.1 Assessment Tool for Operational Standards

In order to determine if the Operational Standards for Pharmacy Services have been met by the hospital an assessment tool has been developed which describes criteria for the attainment of a Standard and a method of assessment. This tool can be used by hospital management or by an external body such as the RHB or FMOH to measure attainment of each Operational Standard. The tool is presented in Appendix E of *Chapter 13 Monitoring and Reporting*.

4.2 Implementation Checklist

The following Table can be used as a tool to record whether the main recommendations outlined above have been implemented by the hospital. This tool is not meant to measure attainment of each Operational Standard, but rather to provide a checklist to record implementation activities.

		Yes	No
1.	A Drug and Therapeutics Committee has been established.		
2.	Terms of reference for the Drug and Therapeutics Committee are defined.		
3.	A Medicines Formulary is created and is shared with staff.		
4.	Pharmacy services are integrated in the emergency, outpatient and inpatient case teams.		
5.	There are SOPs to describe different compounding procedures.		
6.	A Drug Information Centre is established to provide drug information to staff and patients alike.		
7.	Procedures are established to receive, investigate adverse drug reactions.		
8.	Procedures are established to monitor prescriptions and drug utilization		
9.	There is a drug procurement policy.		
10.	An inventory management system to manage drug supply and distribution is established.		
11.	There is process to dispose of expired drugs.		
12.	Adequate personnel to provide pharmacy services are in place.		
13.	Facilities and equipment needed to provide pharmacy services are in place.		

Table 4.Pharmacy Services Checklist

4.3 Indicators

In addition, the following indicators may be monitored on a regular basis to assess the effectiveness/outcomes of implementation of the recommendations provided in this chapter.

S/N	Indicators	Formula	Frequen	Comments
1.	Percentage availability of tracer drugs at hospital drug store	$\frac{\sum \text{tracer drugs } x \sum \text{months available}}{\sum \text{tracer drugs } x \sum \text{total number of months in time period}} x100$	Quarterly	HMIS
2.	Average stock out duration for tracer drugs at drug store	\sum of stock out days of tracer drugs throughout reporting period/total number of tracer drugs	Quarterly	HMIS
3.	Actual drug expenditure as % of budget allocated to drugs	Actual expenditure on drugs /total budget allocated to drugs *100	Quarterly	
4.	Drug expenditure from PFSA as proportion of total drug expenditure	Actual expenditure on drugs from PFSA /total expenditure on drugs *100	Quarterly	
5.	Inventory accuracy rate	Total number of items where stock record count equals physical stock count /total number of items counted * 100	Quarterly	
6.	Inventory turnover rate	Total value of items distributed /Total value of stock available during the period * 100	Quarterly	
7.	Percentage of prescriptions compounded per month	Total number of compounding completed per month /total number of compounding prescriptions per month	Quarterly	
8.	 a) Number of ADR reported to ADR Focal Person b) % of prescriptions issued 	 a) Total number of ADR reported to ADR focal person within the reporting period b) Number of ADR reported to ADR focal person within the reporting period /total number of prescriptions issued within the reporting period *100 	Quarterly	
9.	 a) Number of ADRs classified as 'certain' or 'probable' following investigation b) % of ADRs classified as 'certain' or 'probable' following investigation 	 a) Total number of ADR classified as 'certain' or 'probable' following investigation b) Total number of ADR classified as 'certain' or 'probable' following investigation / total number of ADR reported during reporting period *100 	Quarterly	
10.	a) Number of ADR reported to DACA	a) Total number of ADRs reported to DACA	Quarterly	
	b) % of ADRs reported to ADR Focal Person	b) Total number of ADRs reported to DACA within reporting period/ Total number of ADR reported to ADR focal person within the reporting period		
11.	a) Number of prescriptions that contain a non-formulary item	 a) Total number of prescriptions that contain a non-formulary item written during reporting period; 	Quarterly	
	b) As % of all prescriptions	 b) Total number of prescriptions that contain a non-formulary item written during reporting period/ Total number of prescriptions written during reporting period*100 		

Table 5.Pharmacy Services Indicators
12.	Number of drug information requests filled	Total number of drug information request filled	Quarterly	
13.	a) Expired drug stock value	a) \sum (number of expired drugs <i>x</i> price of that drug)	Quarterly	
	b) % of total inventory value	b) Σ (number of expired drugs*price of that drug)/ (Σ drugs in inventory at time of evaluation*price of drug at time of evaluation)		
14.	 a) Value of items lost; items lost is defined as pharmaceuticals expired, damaged, and lost in the reporting period b) % of total inventory value 	 a) ∑ of number of pharmaceuticals lost * price of pharmaceutical b) ∑ of number of pharmaceuticals lost * price/ ∑ pharmaceuticals in inventory at time of evaluation * price 	Quarterly	
15.	Proportion of drug budget out of the total recurrent budget	Proportion of budget allocated to drugs/total recurrent budget * 100	Quarterly	HMIS
16.	Attrition rate of pharmacy staff	Number of pharmacy staff leaving/total number of pharmacy staff at beginning of reporting period * 100	Quarterly	HMIS
17.	 a) Cumulative number of pharmacy staff who have undergone in-service training b) Cumulative proportion of pharmacy staff who have received in service training 	 a) Total number of pharmacy staff trained from beginning of year until end of reporting period b) Cumulative number of staff who received training/total number of staff at beginning of period *100 	Quarterly	HMIS
18.	 a) Cumulative number of pharmacy staff who have undergone performance evaluation b) Cumulative proportion of pharmacy staff who have undergone performance evaluation 	 a) Total number of pharmacy staff who have undergone performance evaluation from beginning of year until end of reporting period b) Cumulative number of staff who have undergone performance evaluation /total number of staff at beginning of period *100 	Quarterly	
19.	In patient satisfaction survey : % of respondents who answer 'always or usually' to the following questions "Before giving you any new medication, how often did staff describe possible side effects in a way you could understand?"	Total number of inpatients who respond 'always or usually' to the questions listed/ Total number of inpatients respondents.	Biannual	Survey tool presented in Appendix F of Chapter 12 Quality Management
20.	Out patient satisfaction survey : % of respondents who answer 'yes' to the following questions "The staff described the medications possible side effects in a way I could understand?"	Total number of outpatients who respond 'yes' to the questions listed / Total number of outpatients respondents	Biannual	Survey tool presented in Appendix F of Chapter 12 Quality Management

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Appendices

Appendix A ABC Method for Reviewing Hospital Formulary

ABC analysis is a method for determining and comparing pharmaceutical costs within the formulary system. It follows the Pareto principle "separating the vital few from the trivial many". ABC Analysis can be explained in terms of budget consumed and number of drugs in the budget list as follows:

Category	Percentage of Budget Shar	re Percentage of Drugs
"A" Drugs	70-80%	10-20%
"B" Drugs	15-20%	10-20%
"C" Drugs	5-10%	60-80%
"A" medicine	es:	
• High p	percentage of funds spent on la	rge-volume or high-cost items
• Greate	est potential for savings	
• Greate	est potential for identifying exp	ensive medicines that are overused
"B" medicine	es:	
• Moder	ate cost and moderate number	of items; important items
"C" medicine	es:	
• Small	amount of funds spent on the n	najority of the inventory

Applications of ABC analysis:

- Measures the degree to which actual consumption reflects public health needs and morbidity
- Reduces inventory levels and costs by arranging for more frequent purchase or delivery of smaller quantities of class A items
- Seeks major cost reductions by finding lower prices on class A items
- Reduces inventory of items that have limited use in the system, but costs the system large amounts of money
- Provides information for choosing the most cost-effective alternatives and finding opportunities for therapeutic substitution
- Gathers information for pharmacoeconomic analysis

• Steps in performing ABC analysis:

Step 1. List all items purchased and enter the unit cost.

Step 2. Enter consumption quantities for each item.

Step 3. Calculate the value of consumption for each item.

Step 4. Sort the list in descending order by total value.

Step 5. Calculate the percentage of total value represented by each item.

Step 6. Calculate the cumulative percentage of total value for each item.

Step 7. Choose cut-off points for A, B, and C.

Note: The results of ABC should be reconciled with that of VEN.

			Patient In	format	tion				Description o	f Drug Dis	pensed			Name or Initial of
	P													Dispenser
	esc												Total	
	ript		,				:					(Qty	
	tior		Name				Medical				Ĺ	. Qty	(Page/	
S.N.	n No	Date	or Patient	Sex	Age	Weight	kecord No.	Diagnosis	Drug Name	Strength	Dosage Form	IN BU	<u>BU</u>	
))		Minor UTI	D)				
			XXX	F	42	65	2222	Infection	Amoxicillin	500mg	Capsule	30	60	
									Paracetamol	500mg	Tablet	10	10	
ļ			үүү	Μ	40	55	111	Upper RTI	Amoxicillin	500mg	Capsule	30		
									Ibuprofen	200mg	Capsule	20	20	
ļ														

Appendix B Sample Prescription Registration Book (PRB)

Appendix C List of Equipment and Materials for Compounding in Hospitals

SN	Equipment/material	Description
1.	Working bench	Level, smooth, impervious, free of cracks and crevices and non- shedding; covered with protector sheets of plastic, rubber or absorbable paper when appropriate.
2.	Mortar and pestle	250 ml capacity or more; glass type and porcelain type
3.	Water distiller	Stainless steel of 20 litre capacity or more
4.	Water bath	Stainless steel of 4 openings or more
5.	Electrical hotplate	Various Sizes and Features
6.	Evaporating dish	Stainless steel (glazed inside) and porcelain type; with/without handling
7.	Spatula	Stainless steel and plastic type, flexible and non-flexible, different blade lengths.
8.	Gloves	disposable, non-sterile
9.	Glass rod	Different length and thicknesses
10.	Wash bottle	250ml capacity, polyethylene
11.	Funnel	Glass type and plastic type (polyethylene)
12.	Beakers	Glass type; different capacity
13.	Volumetric flask	Glass type; different capacity
14.	Balances	Prescription, torsion, triple beam, electronic; capacities of not less than 300 gm; sensitivity of not less than 0.1 mg.
15.	Ointment tile	Glass type
16.	Micropipettes	Glass type; different capacities (less than 1ml); with pipette bulb
17.	Pipettes	Glass type; different capacities (1ml-100ml); with pipette bulb
18.	Cylindrical graduate	Glass and plastic type; different capacity
19.	Conical graduate	Glass and plastic type; different capacity
20.	Weighing dishes	Plastic, aluminium, stainless steel type
21.	Weighing paper	Normal paper; grease-proof for semisolids
22.	Thermometers	Fridge and wall thermometer
23.	Scientific calculator	

A. General Procedures for Compounding

- 1. Receive, validate and interpret the prescription as per the Standard Operating Procedures (SOP) for dispensing.
- 2. Ensure that the compounding area, equipments and containers are ready for the process and don't compromise the quality of the final product.
- 3. Calculate the quantity of each ingredient accurately.
- 4. Weigh and measure the ingredients necessary for compounding of the product as per the procedures for weighing and measuring, respectively.
- 5. Compound the preparation following the appropriate procedure.
- 6. Transfer to the final container, if it is not prepared in the final container, and make up to volume, if necessary.
- 7. Close the container and shake well as appropriate.
- 8. Assign beyond-use date for the preparation.
- 9. Prepare and attach a proper label on the product container.
- 10. Clean all the equipments used for the compounding process and return to their original place.
- 11. Clean the working table.
- 12. Record the compounding process on the Compounding Sheet.
- 13. Dispense the product to the patient with proper counselling.
- 14. Record the prescription on the Compounding Prescription Registration Book.

B. **Procedures for Weighing**

- 1. Select a balance with appropriate capacity and sensitivity.
- 2. If weighing a solid material which requires being size reduced (ground) or sieved, always ensure that this is carried out before weighing.
- 3. Ensure that the balance is clean, dry and working properly.
- 4. Put the balance on a level, non-vibrating and clean table.
- 5. Adjust the balance, put the container for the material to be weighed and weigh it (to deduct from the final total weight) or use auto-zero to cancel its weight. Grease-proof papers should be used for weighing of semisolids.
- 6. Read carefully the label of the material to be weighed (check name, strength, expiry date).
- 7. Check the appearance and any sign of stability problems.
- 8. Add the material to be weighed on to the container using spatula until the correct weight is obtained, close the container and return to the original place.
- 9. Carefully remove the weighed material and transfer to the suitable container
- 10. Clean the balance and its accessories.
- 11. Return the balance and its accessories to the original place.
- 12. Clean the working table.

C. Procedures for Measuring Liquids

- 1. Make sure the availability of appropriate graduated measure (cylindrical graduate, conical graduate, pipette, syringe, and dropper) depending on the viscosity and quantity of the liquid to be weighed.
- 2. Select a clean and dry graduated measure of appropriate size.
- 3. Read the label of the liquid carefully (check name, strength, expiry date)
- 4. Check the appearance and any sign of stability problems.
- 5. Pour the liquid into the measure until the desired volume is obtained.
- 6. In case of measuring more than one liquid, hold the cap of the container in your hand, preferably between the fourth finger and the palm of the hand, so that the possibility of exchange of closures ending up with cross-contamination is minimized.
- 7. Transfer the liquid from the measure.
- 8. Allow to drain for sufficient time. Viscous liquids need more time as compared to aqueous, alcoholic and hydroalcholic liquids which can drain within 30 seconds.
- 9. Clean the measure and replace to its original place.
- 10. Clean the working table.

D. **Procedures for Preparing Solutions**

- 1. Select the appropriate container.
- 2. Use freshly boiled and cooled purified water (if water is part of the formulation).
- 3. Calibrate (tare) the bottle, when accurate transfer of the preparation to the final container is difficult.
- 4. Weigh and measure the ingredients accurately.
- 5. Dissolve the ingredients in the appropriate solvent.
- 6. Volatile components should be added at the end of the process and after cooling (if heat is to be used).
- 7. Transfer to the final container, if it is not prepared in the final container, and make up to volume by using the solvent.
- 8. Close the bottle and shake well
- 9. Prepare and attach a label
- 10. Clean all the equipments used for the compounding process and return to their original place.
- 11. Clean the working table.
- 12. Fill the compounding Sheet.
- 13. Dispense the product to the patient with proper counselling.
- 14. Record the prescription on the Compounding Prescription Registration Book.

1. Stability and Beyond-use Dating

a. Compounding pharmacists should avoid ingredients and conditions that could result in excessive physical deterioration or chemical decomposition of drug preparations, especially when compounding.

- b. The beyond-use date is the date after which a compounded preparation is not to be used and is determined from the date the preparation is compounded. Because compounded preparations are intended for administration immediately or following short-term storage, their beyond-use dates is assigned based on criteria different from those applied to assigning expiration dates to manufactured drug products.
- c. Compounders should consult and apply drug-specific and general stability documentation and literature when available, and should consider the nature of the drug and its degradation mechanism, the container in which it is packaged, the expected storage conditions, and the intended duration of therapy when assigning a beyond-use date.
- d. At all steps in the compounding, dispensing, and storage process, the compounder should observe the compounded drug preparation for signs of instability. However, excessive chemical degradation and other drug concentration loss due to reactions may be invisible more often than they are visible.
- e. In the absence of stability information that is applicable to a specific drug and preparation, the following maximum beyond-use dates are recommended for non-sterile compounded drug preparations that are packaged in tight, light-resistant containers and stored at controlled room temperature unless otherwise indicated.

For Non-aqueous Liquids and Solid Formulations:

Where the Manufactured Drug Product is the Source of Active Ingredient— The beyonduse date is not later than 25% of the time remaining until the product's expiration date or 6 months, whichever is earlier.

Where a USP or BP Substance is the Source of Active Ingredient— The beyond-use date is not later than 6 months.

For Water-Containing Formulations (prepared from ingredients in solid form):

The beyond-use date is not later than 14days for liquid preparations when stored at cold temperatures between 2° and $8^{\circ}(36^{\circ}$ and 46° F).

For All Other Formulations:

The beyond-use date is not later than the intended duration of therapy or 30 days, whichever is earlier. These beyond-use date limits may be exceeded when there is supporting valid scientific stability information that is directly applicable to the specific preparation (i.e., the same drug concentration range, pH, recipients, vehicle, water content, etc.).

2.Labelling

Compounded products must be labelled according to regulatory requirements. In addition, labels of these products should also include names of any preservatives used. This

information may be useful for avoiding sensitivity reactions in susceptible individuals and for explaining differences in flavour where the preservatives vary.

When non-pharmacopoeia products are prepared, the labels should document the complete list of ingredients and their amounts/proportions for future reference by other pharmacists and health professionals.

The pharmacist should examine the product for correct labelling after completion of the compounding process. Labels on compounded products for individual patient should have a minimum of the following information:

- Patient's name
- Name of the compounder
- Name and address of the compounding institution
- A complete list of ingredients and preparation name
- Strength
- Quantity of each ingredients
- Directions for use
- Date of preparation
- Beyond-use date
- Storage condition
- Batch number

3.Packaging

Compounded preparations should be packaged in containers meeting standard requirements. The container used depends on the physical and chemical properties of the compounded preparation. Container–drug interaction should be considered with substances such as phenolic compounds and sorptive materials (e.g., polypeptides and proteins). The containers and container closures should also be made of clean materials that are neither reactive, additive, nor absorptive. The containers and closures shall be of suitable material so as not to alter the quality, strength, or purity of the compounded drug.

Appendix E Format for Recording of the Compounding Process (Compounding Sheet)

Name of the dispensary/health institution ______

Date _

Batch number/control number_____

Batch quantity _____

Description of ingredients				Name or initials of
Description of high culents				the person in charge
Name	Source	Batch number	Quantity	
Description of the steps of the	ne preparation			
Devend was Dates				
Vield [.]				
11010				
Loss:				
Reason for loss:		••••••		
Prepared by: Name		Signature_	date	
End control before release o	f the product			
Parameters		Comment		
Approved by: Name		Signat	ure	Date

	Name or Initials of the	dispenser										
	Con num	trol iber										
	Qty disp	ensed										
aration		Quantity										
Description of the prep	Ingredients	Name & strength										
	Diagnosis (ICD) Code	No.										
		Card N <u>o</u>										
	Wt	t.(kg)										
	Ag	ge										
	Sez	X										
Patient identifiers		Name of the Patient										
;	s z	-										

Appendix F Compounding Prescription Registration Book

_
Card
Profile
Medication
Patient
Appendix G

PATIENT MEDICATION PROFILE CARD

Name of Health Institution:

		_	tegimen or other										t of Signature				
		ceased	in R										Date Nexi	Visi			
		$\Box D\epsilon$	Change		scription								Other Drugs				
		dn-m	n for	·ks	De										Quantity		
		o Follc	Reaso	remar	Date										Brand		
		Lost t												e	Strength		
		l-out 🛛	eases		uo									Drug Three	Drug Name		
		sferree	int Dis		scripti										Quantity		
] Tran	comita		De							-			Brand		
		at ⊑	Conc		Date										Strength		
		ive treatmen	e Effects											Drug Two	Drug Name		
tion	Illnes	On act	or Side		u								ъ		Quantity		
ormat	ronic	us: 🗆 (ADR o		criptic								pense		Brand		
al Inf	of Ch	nt Stat	ry of ≀		Des							-	gs Dis	One	Strength		
Clinic	Type	Curre	Histo		Date								Drug	Drug	Drug Nam		
			IS						m's:	1	I		er	Pr	esc. No.		
		-	yea		on Start:			ient	port Persc			tion	Prescrib	In	itial		
			Age: _		Wt. 6 Kg			Outpat	Sup			forma	In/O	utpa	tient (I/O)		
nation					ted:							ng In	Weig	ght i	n Kg		
Inforn			Male		Star	ļ	Source:	ent	atient's			ispensi	Reasor for Vis	St	art		
Patient	Card No	Name:	Sex:	Female	Date		Patient S	Inpatie	d s	qres	pΑ	Drug Di	Date				

Appendix H Sample List of Emergency Drugs

S.N	Name of the Drug	Dosage Form and Strength
1.	Acetylcystene	Powder
2.	Activated Charcoal	Powder 25G, 50G, Suspension
3.	Adrenaline (Epinephrine)	Injection, 1mg/ml, 1:1000 solution
4.	Acetazolamide	Tablet, 250mg
5.	Aminophylline	Injection, 25mg/ml in 10-ml ampoule
6.	Atenolol	Injection, 5mg /ml
7.	Atropine Sulphate	Injection, 0.6mg in 1-ml ampoule
8.	Adenosine	Injection, 3mg/ml
9.	BAL (Dimercaprol)	Injection, 50mg/ml
10.	Calcium Gluconate	Injection, 10%
11.	Chlorpromazine	Injection, 25mg/ml in 2-ml vial
12.	Dexamethasone	Injection, 4mg/ml in 2ml ampoule
13.	Digoxin	Injection, 0.25mg/ml in 2ml ampoule
14.	Diazepam	Injection, 5mg/ml in 2ml vial
15.	Dobutamine	Injection, 12.5mg/ml in 20ml ampoule
16.	Dopamine	Injection, 40mg/ml in 5ml ampoule
17.	Frusemide	Injection, 10mg/ml in 2ml ampoule
18.	Glyceryl Trinitrate	Sublingual tablet, 0.5mg
19.	Heparin	Injection, 5000 Units/vial
20.	Haloperidol	Injection, 5mg/ml in 1ml ampoule
21.	Hysocine n-butylbromide	Injection, 20mg/ml in 1ml ampoule
22.	Hydrocortisone	Powder for Injection, 100mg
23.	Insulin (Soluble)	Injection,40IU/ml in 10ml vial
24.	Ipecauanha	Syrup
25.	Isoprenaline	Injection, 20mcg/ml
26.	Isosorbide dinitrate	Subligual tablet, 5mg
		5%Dextrose, 540ml
		10%Dextrose, 540ml
27.	Intravenous Fluids (IV fluids)	5%Dextrose with sodium chloride, 540ml
		Ringer lactate, 540ml
		0 9% Sodium Chloride, 540ml
28.	Ipratopium Bromide	Aerosol Inhalation
29.	Ketamine	Injection, 10mg/ml, 50mg/ml in 10 ml vial
30.	Lignocaine	Injection, 1%, 25 in 30 ml vial; Gel 2%;
31.	Lignocaine(Xylocard)	Injection, 21.3mg/ml in 50ml vial
32.	Mannitol	Injection, 20% in 300ml vial
33.	Magnesium Sulphate	Injection, 50%, 10ml (5gm ampoule)
34.	Methyl-ergometrine	Injection 0.2mg/ml in 1 ml ampoule
35.	Metoclopramide	Injection, 5mg/ml in 2ml ampoule
36.	Morphine	Injection, 10mg/ml in 2-ml ampoule
37.	Naloxone	Injection, 0.4mg/ml in 1 ml ampoule
38.	Noradernaline(norepinephrine)	Injection,1mg/ml in 1 ml ampoule
39	Nitroprusside	Injection - 50mg

Sample List of Emergency Drugs

40.	Nifedipine	Capsule, 5mg
41.	Oxygen	
42.	Oxytocin	Injection, 5units /ml in 1ml ampoule
43.	Paracetamol	Injection, 150mg/ml in 2ml ampoule
44.	Pethidine	Injection, 50mg/ml in 1 and 2 ml ampoule
45.	Pheniramine maleate	Injection, 22.75 mg/ml in 2ml ampoule
46.	Phenobarbitone	Injection, 200mg/ml in 1ml ampoule
47.	Phenytoin sodium	Injection, 50mg/ml in 5 ml ampoule
48.	Pilocarpine	Eye drop, 2%, 4%
49.	Polygeline with Electrolytes	IV solution, 3.5%
50.	Polyvenum Antisnake venom	Injection
51.	Propanolol	Injection, 1 mg / ml
52.	Phytomenadione (Vit K)	Injection 10mg/ml
53.	Potassium Chloride	Injection,150mg/ml in 10ml ampoule
54.	Pralidoxime (PAM)	Injection,25mg/ml in 20ml ampoule
55.	Protamine Sulphate	Injection, 10mg/ml in 10ml ampoule
56.	Quinine Sulphate	Tablet, 200mg
57.	Ranitidine	Injection, 25mg/ml in 2ml ampoule
58.	Salbutamol	Respiratory solution, 5mg/ml in 15ml vial
59.	Silver sulphadiazine	cream 1%
60.	Sodium bi-carbonate	Injection, 75mg/ml in 10ml ampoule
61.	Sodium Stibogluconate	Injection, 100mg/ml
62.	Streptokinase	Injection, 1.5 million IU
63.	Tetanus Toxoide	Injection, 0.5ml
64.	Thiopentone	Injection,0.5gm 1gm per ampoule
65.	Verapamil (Isoptin)	Injection, 2.5mg/ml in 2ml ampoule
66.	Suxamethonium	Injection 50mg/ml - 2ml ampoule or 10ml vial
	(Succinylcholine chloride)	
67.	Ephidrine	Injection 30mg/ml - 1ml ampoule
68.	Hydrallazine	Injection, 20mg/ml – vial
69.	Paraldehyde	injection, 5ml
70.	25% Dextrose	Injection
71.	Amiodarone	Injection 50mg/ml, tablet 100mg
72.	Ipratopium Bromide (Respiratory	Nebulizer
	Solution)	

Appendix I Suggested Contents of Drug Information Centre Library

- Martindale : The extra Pharmacopoeia. Reynolds JEF, ed.
- MIMS Monthly
- AHFS Drug Information. McEvoy GK, ed.
- USP DI. Vol 1: Drug Information for the Health Care Provider
- USP DI. Vol 2: Advice for the Patient
- Drug Interactions. Stockley IH. *or* Drug Interactions and Updates. Hansten PD, Horn JR. *or* Drug Interaction Facts. Tatro DS, ed.
- Handbook of Injectable Drugs. Trissel, ed. Or Guide to Parenteral Admixtures. King JC
- Poisoning and Overdose. Olson KR, ed.
- Meyler's Side Effects of Drugs. Dukes MNG, ed.
- Samford Guidelines for the Use of Antibiotics
- Goodman and Gilman's The Pharmacological Basis of Therapeutics. Gilman AG, Goodman LS, Rall TW, Murad F, eds.
- BNF
- Harrison's Principles of Internal Medicine. Braunwald E, Isselbacher KJ, Petersdorf RG, et al or
- Oxford textbook of Medicine. Weatherall DJ, Ledingham JGG, Warrell DA, eds.
- Medical Dictionary
- Pharmaceutical journals
- National treatment guidelines
- National drug list
- Free online journals if available

		Adverse Di	rug Reacti	on Repo	nOPIA rting Fori	<u>n</u>		
Patient Initial	-	Card No:		Age: (D	OB)	Sex:		Weight:
Ethnic Group				Substa	nce of Abu	se		
Information on Suspected	Drug/	Vaccine S	=suspected	C=Co	ncomitant	ly used dru	gs	
Drug Name (use Brand Name. indicate	s/c	oute	Dosage rm	luency	Date D	/M/Y Drug		Indication
batch no. if applicable.)	1.00	R	Dose	Free	Star	Stop	(1	
	-	(100992-017)	-177			• • • • • • • • • • • • • • • • • • •		
Land Barration in the								
endrin andrese Sendrin andrese					1290	-		
nation de la constant plevent restant de la constant						-111		and the new and
Reaction necessitated: Discontinuation of drug/s/ Prolonged Hospitalization	C Ye	es 🗆 No es 📄 No	Reactio □Y Reactio □Y	n subside DN n reappe: DN	after D/C □ NA ur after Re □ NA	C of Suspe	cted	Drug ted Drug
Reaction necessitated: Discontinuation of drug/s/ Prolonged Hospitalization Treatment of reaction:	□ Ye	es □ No es □ No	Reactio □ Y Reactio □ Y	n subside N n reappea N	after D/(□ NA Ir after Re □ NA	C of Suspe estart of Su	cted	Drug ted Drug
Reaction necessitated: Discontinuation of drug/s/ Prolonged Hospitalization Treatment of reaction: Outcome: Died due to	Advers with ou	es 🗌 No es 📄 No er reaction at sequelae	Reactio y Reactio y Died, d Recove	n subside N n reappea N rug may b red with s	e after D/(INA ur after Re NA e contribu equelae	C of Suspe	cted spect	Drug ted Drug yet recovered nown
Reaction necessitated: Discontinuation of drug/s/ Prolonged Hospitalization Treatment of reaction: Outcome: Died due to	Advers with ou	es 🗆 No es 📄 No er reaction ut sequelae	Reactio Y Reactio Y Died, d Recove renal disea	n subside DN n reappea N rug may b red with s use, liver d	e after D/(D NA Ir after Re NA e contribu equelae isease, oth	C of Suspective Start of S	cted spect Not Unk	Drug ted Drug yet recovered nown se, pregnancy, etc.
Reaction necessitated: Discontinuation of drug/s/ Prolonged Hospitalization Treatment of reaction: Outcome: Died due to Died due to Recovered Sequelae: Relevant medical condition Reported by: Name	advers with ou	es 🗆 No es 📄 No er reaction at sequelae n as allergies, Profession	Reactio	n subside N n reapper N rug may b red with s use, liver d e-ma	e after D/(I NA ur after Re NA e contribu equelae isease, oth l:	C of Suspe estart of Su itory	cted spect Not Unki disea	Drug ted Drug yet recovered nown se, pregnancy, etc.

Appendix J Sample Adverse Drug Reaction Reporting Form

Product Quality H Change of odour, Receiving expired	Problem (Colou Incomplete pa I medicines,etc)	ur change, Separating ck, Suspected contam	of components, Po ination, Poor pack	owdering / crum aging /poor labe	bling, Caking, Moulding, ling,
Trade Name (Drug)	Batch No.	Registration No.	Dosage form and strength	Expiry date	Size/ Type of container
		and to serve the			and the second second
	an este longe	income and and	harrow-	and Windowski	where the relation full
For office use only	y	1 - 1 an av	10 6 12		
Received On:			1-81	Registration I	No.
Key: D M Y D	Date Month	Year; D/C Discon	tinue Treatmen	t; Y Yes; N N	o; NA Not available
መጀመሪያ እዚህ ሳይ	አጠፍ				
			Whatto	ronort	
			wildt to	All suspe	ected reactions to drugs
				Serious :	adverse drug reactions
				Unexpec All suspe	cted therapeutic effects
				Product Treatme	Quality Problem nt failure
			NB. Dru	igs includes	
				Cor Her	rventional drugs rbal drugs
	_	U. DAGA		Tra	ditional medicines
in collaboration with .	form was prepared MSH-SPS and	I DY DACA		Me	dical supplies
the financial support j	from USAID.			Me	dicated cosmetics
ቀጥሎ እዚህ ሳይ አበ	n G .				
			የንዳይ (Busine	መልስ መስጫ ሸ ss Reply Ser	ነልግሎት ፈቃድ ቁፑር HQ2 vice Licence No. HQ2
				so repry ser	
From					Postage
					Prepaie
	anana anan				
			Drug / Regula	Administratio tory Informatio	n and Control Authori on Development and

Appendix K Sample Bin Card

Name of Health Facility:

Product Name, Strength and Dosage Form

Unit of Issue:

Date	Doc. No. (Receiving or	Received from or	Quantity				Batch No.	Expiry Date	Remarks
	Issuing)	issued to	Received	Issued	Loss/Adj	Balance			

Appendix L Sample Stock Record Card

Name of Health	Facility:					
Product Name Form:	, Strength and	Dosage				
Unit of Issue:		Locatio	:			
Maximum Level:	Stock		Emergency Point:	Order		
	Doc. No.	Received	Quantity		Price	
Date	Receiving	from or	Quantity			TAPI

_							
		Remarks					
	Twint	Date					
		rice	Cent				
	Price	Unit F	Birr				
			Balance				
			Loss/Adj				
	Received from or Issued to Received Issued		Issued				
			Received				
	Doc. No.	(Receiving	gillussi 10				
		Date					

Appendix M Internal Facility Report, Issue and Receipt Voucher (IFRIR)

Name of Dispensing Unit:

Reporting Period From:

To:

Maximum Level (ML):

		COMPLET	ED BY UNI	IT		COMPLETEL	BY STORE				
Ser. No.	Item	Stock on Hand at Start of Period	Stock on Hand at End of Period	Expired/ Damaged/ Lost	Qty. Trans.	Estimated Consumption E = A-B-C+/- D	Average Consumption	Maximum Quantity G = F * ML	Quantity Needed to Reach Max. H = G – B	Quantity Supplied	Item Price
		A	B	С	D	E	F	G	Н	Ι	J
1											
2											
3											
4											
5											
9											



Appendix M: Page 1 of 1

Appendix N Facility Combined Report and Requisition Form (FCRRF)

th lity:			Region:		Zone:	*	⁷ oreda: 			
g Peric	:pq	From:	(month/da	y/year)	To:	uom)	tth/day/ye	ar)		
			Report Par	t l					Requisition Pa	Irt
Proc	luct Description	Unit of Issue	Beginning Balance in Store	Quantity Received	Losses/ Adjustments	Ending Balance in Store	Days Out of Stock	Calculated Consumption	Maximum Stock Quantity	Quantity Ordered
		·	A	B	C	D	E	F= A + B +/- C – D	G = F * 2	H= G - D
ed be	۸۰: ا		Signature:			Date:				
d by			Signature:			Date:				

Appendix O Record for Returning Unusable Commodities (RRUC)

Date: ______ To:

(Name of Hospital or PFSA Hub)

Facility returning commodities: _____

Region: Woreda: Kebele:	
-----------------------------	--

Item Description	Unit	Quantity Returned	Reason for Return/Non- Use

Sending Certification:		
Completed by:	Signature:	Date:
Remarks:		
Carrier Certification:		
Carried by:	Signature:	Date:
Remarks:		
Receiving Facility Certification:		
Received by:	Signature:	Date:
Remarks:		

Appendix P Consumption Summary Sheet

Total 0 0 0 0 0 0 0 0 0 0 Day 10 Day 9 Day 8 Day 7 Day 6 Day 5 Consumption Summary Sheet (CSS) for Dispensaries (Only) Day 4 Day 3 Day 2 Day 1 Description bbbbbbbbb bbbbbbbbb bbbbbbbbb bbbbbbbbb bbbbbbbbb bbbbbbbbb aaaaaaaaaa ZZZZZZZ уууууу XXXXXX S.N. 10 Ś 9 ∞ 6 2 3 4 Г

	Total	0	0	0	0	0	0	0	0	0	0
	Day 20										
Day	19										
Day	18										
Day	17										
Day	16										
Day	15										
Day	14										
Day	13										
Day	12										
Day	11										
	Description	XXXXXX	уууууу	ZZZZZZZ	aaaaaaaaa	qqqqqqqqq	qqqqqqqqq	qqqqqqqqq	bbbbbbbb	b bbbbbbb	pppppppp
	S.N.	1	2	3	4	5	6	7	8	9	10

Appendix P: Page 1 of 1

Appendix Q

Losses / Adjustments Tracking Sheet for Dispensaries (Only)

Qty	Transferred (+ve/-v	(e)											
S.N.	Description	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Total	Remark
1	Xxxxx												
2	Yyyyyy												
3	ZZZZZZZ												
4	Aaaaaaaaa												
5	Bbbbbbbb												
9	Bbbbbbbb												
7	Bbbbbbbb												
8	Bbbbbbbb												
6	Bbbbbbbb												
10	Bbbbbbbb												
Otv	Lost/Damage (+ve/-	ve)											
S.N.	Description	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Total	Remark
1	Xxxxx												
2	уууууу												
3	ZZZZZZZ												
4	aaaaaaaaa												
5	bbbbbbbb												
9	bbbbbbbb												
7	bbbbbbbb												
8	bbbbbbbb												
9	bbbbbbbb												
10	bbbbbbbb												



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Appendix A	The Laboratory Network: Responsibilities of Laboratories at Different Tier Levels in
	Ethiopia

- Appendix B Sample Preventive Maintenance Log
- Appendix C Sample Corrective Maintenance Log
- Appendix D Sample SOP for Haemoglobin Estimation
- Appendix E National SOP Template
- Appendix F Sample Laboratory Risk Assessment Form
- Appendix G List of Notifiable Diseases

Tables

Table 1	Laboratory Services Checklist
Table 2	Laboratory Services Inidcators

Abbreviations

AFB	Acid Fast Bacilli
ALT	Alkaline Transferase
BPR	Business Process Re-engineering
DNA	Deoxyribonucleic acid
EHNRI	Ethiopian Health and Nutrition Research Institute
EQA	External Quality Assessment
FMHACA	Food, Medicine and Healthcare Administration and Control Authority
OHSO	Occupational Health and Safety Officer
PCR	Polymerase Chain Reaction
РІНСТ	Provider Initiated HIV Counselling and Testing
РМТСТ	Prevention of Mother to Child HIV Transmission
PPE	Personal Protective Equipment
PT/ EQA	Proficiency Testing/ External Quality Assessment/
QA	Quality Assurance
QC	Quality Control
QI	Quality Improvement
RPR	Rapid Plasma Reagin

SOPs	Standard Operating Procedures
STS	Sample Transfer Service
TPHA	Treponema Pallidum Haemagglutination
TPPA	Treponema Pallidum Particle Agglutination
UPS	Uninterruptible Power Supply

Section 1 Introduction

Laboratory services underpin the practice of modern medicine by providing information to clinicians to accurately assess the status of a patient's health, make accurate diagnoses, formulate treatment plans, and monitor the effects of treatment. Laboratories are a major source of health information for epidemiological and surveillance purposes and laboratories are often the first sites for the detection of disease outbreaks. To provide such functions laboratory data must be recorded and reported through the appropriate channels in an accurate and timely manner.

The current laboratory service in Ethiopia is organized in a structure that follows the general health care delivery system of the country, incorporating specialized, general and primary hospitals in addition to health centres and health posts. At the apex of this system, there are currently eight Regional Laboratories and a National Reference Laboratory at the Ethiopian Health and Nutrition Research Institute (EHNRI). A detailed description of the responsibilities of laboratories at different tier levels in Ethiopia is presented in Appendix A. As part of the Ethiopian laboratory network, hospitals may receive specimens for analysis from lower level facilities and may refer specimens to a higher level facility, in accordance with agreed protocols and guidelines.

This chapter sets standards and guidelines to ensure that hospital laboratories provide accurate and timely test results for individual patient care, using the referral network where appropriate, and in addition, provide data for the surveillance of population health and well being. Effective laboratory management ensures that equipment and supplies are available at all times to perform agreed tests with minimal 'down time' in service provision.

Section 2 Operational Standards for Laboratory Services

- 1. A current list of laboratory tests provided by the facility and the price of each test is accessible to all clinical staff and patients.
- 2. Laboratory management ensures that advice on examinations and the interpretation of test results is available to meet the needs and requirements of customers.
- 3. Hospital management ensures that the hospital laboratory has the necessary space, working environment, reagents, consumables, analyzers and associated equipment needed to conduct the required repertoire of tests.
- 4. Laboratory staff members monitor stocks of testing reagents and other consumables so that supplies are ordered early and in sufficient quantity to prevent stock-outs or oversupply.
- 5. The hospital Laboratory has available and follows standard operating procedures for:
 - a. Specimen management
 - b. All testing procedures
 - c. Testing algorithms
 - d. Safety procedures and waste management
 - e. The maintenance and monitoring of each piece of equipment
 - f. Quality assurance procedures

- 6. The hospital has policies and procedures in place for sample collection, transport and disposal.
- 7. The central laboratory has functional overview of all hospital laboratories (e.g. emergency room laboratory, inpatient laboratory etc).
- 8. The laboratory work environment is organized and clean at all times, with safety procedures for handling of specimens and waste material to ensure patient and staff protection from unnecessary risks at all times.
- 9. The laboratory has a health and safety manual with procedures that include: action in the event of a fire, action in the event of a major spillage of dangerous chemicals or clinical material; action in the event of an inoculation accident; reporting and monitoring of accidents and incidents; disinfection processes; decontamination of equipment; chemical handling; storage and disposal of waste.
- 10. Laboratory management establishes a policy for the management of data and information that includes:
 - safety
 - access (including level of access)
 - confidentiality and data protection
 - backup system
 - storage, archive and retrieval
 - data destruction
- 11. The laboratory has and implements a quality assurance policy that covers all aspects of laboratory functions.

Section 3 Implementation Guidance

3.1 Customer Services

3.1.1 Tests available

The Laboratory Manager, in collaboration with the Finance Department, should produce a list of all tests that are provided by the laboratory, including the fee per test. The list should be updated on an annual basis (or more often as required) and should be posted in all sample collection areas and readily available to all clinical staff and patients.

3.1.2 User manual

A user manual should be prepared by each laboratory for the benefit of clinical staff ordering diagnostic tests. The user manual should be distributed to all sample collection areas including wards, emergency room, operating room, labour and delivery, outpatient department etc.

The user manual should include:

- A list of all tests available at the laboratory and average turn-around time for each
- A list of tests that may be taken by the laboratory and referred to a higher tier for analysis, and turnaround time for each

- For each test:
 - Basis for reference range
 - Critical range notification
 - Test interference or procedure limitations
 - Sensitivity
 - Specificity
 - o Accuracy
 - Precision
 - Any other pertinent test characteristics
 - Interpretation
- Test ordering procedures
- Copy of test order form. Sample test order forms are presented in Appendix B of *Chapter 3 Medical Records Management.*
- Sample collection and sample disposal procedures

3.1.3 Clinical advice service

The laboratory should provide a service to clinical staff to assist with the interpretation of results and to advise on the need for additional tests. To achieve this laboratory staff may make comments on the result report form, either commenting on the interpretation of the results and/or suggesting additional investigations that might aid the diagnosis. Laboratory personnel should be available to answer queries from clinical staff about individual test results or the need for further investigation. Additionally, the laboratory should establish 'panic results' (i.e. a result which should be communicated immediately to the physician for urgent action) for each investigation and processes by which such results are communicated immediately to the ordering clinician.

3.1.4 Information sharing

The hospital should have a process to update clinical staff on areas such as new tests, interpreting laboratory results etc. There should also be a forum through which laboratory staff can discuss individual patient care with clinicians when necessary. Possible mechanisms include:

a) 'In house' education sessions at which all laboratory staff members who attend workshops/trainings share this knowledge with their laboratory and other clinical colleagues.

b) Clinical review meetings of all clinical staff (nurses, physicians, X-ray, lab, pharmacy) or of each clinical case team. These meetings should be a forum for presentations and discussion on general clinical issues. Laboratory staff should participate in these meetings and could use these meetings to provide clinical advice/update information about laboratory services to clinical staff.

3.1.5 Service and satisfaction

Each lab should develop a system to collect and measure data on how much the laboratory services and products satisfy the patients and clinical staff and should take steps to address any problems identified. This could be done through suggestion boxes or satisfaction surveys.

The laboratory should have a mechanism to record complaints from staff and clients. All complaints and problems reported to the laboratory as well as corrective action taken should be documented.
For further discussion on ways to ensure a patient centred service please see Sections 3.1.4 and 3.1.5 of *Chapter 12 Quality Management*.

3.2 Tests to be provided by a Hospital Laboratory

The following diagnostic tests should be provided by primary and district hospital laboratories (Level II Laboratories):

Haematology

- CBC with Automated Differential
- CBC Manual
- Blood film
- CSF Cell Counts
- CD4 (absolute)
- Type and Cross-match

Clinical Chemistry

- Chemistry Panel
 - Liver function tests (ALT, bilirubin)
 - Serum electrolytes
 - Renal function tests (creatinine, urea, nitrogen)
 - Lipid profile
 - Serum amylase
 - o Glucose
- Whole Blood Lactate

Microbiology

- AFB Smear
- India Ink Stain
- Gram Stain
- Microbiology culture and sensitivity
- Wet Mounts Direct Microscopy

Serology

- HIV Serology Rapid Test
- Cryptococcal Antigen Test
- Hepatitis B
- Hepatitis C
- TPPA/ TPHA/ RPR

Parasitology

- Malaria Rapid Test
- Malaria smear microscopy (Blood Film)

• Stool examination: Direct microscopy and concentration techniques

Urine tests

- Urine Dipstick with Microscopy
- Urine Pregnancy Rapid Test

Tertiary referral hospitals (Level III laboratories) should provide the following tests and services:

- All tests performed at Levels I and II
- Viral load (by PCR, DNA or other methods)
- Microbiology culture, identification and susceptibilities
- Blood cultures
- Complete chemistry panel
- AFB smear
- AFB culture, identification and susceptibility (first-line drugs)
- Nucleic acid PCR test (Example: HIV DNA PCR)

3.3 Blood Transfusion Service

Hospital laboratories should establish a blood bank and provide a blood transfusion service. Blood donations should be screened for pathogens—as a minimum HIV, syphilis, Hepatitis B and C. Blood should be stored securely and quality assurance measures should be in place to ensure the correct temperature for storage at all times. Refrigerators or freezers for blood storage should have an alternative power supply as a back-up in case of mains failure.

3.4 Laboratory Equipment Management

The following sections provide an overview of the management of laboratory equipment. For more detailed guidance please see *Chapter 9 Medical Equipment Management*.

3.4.1 Equipment required in a hospital laboratory

To perform the tests described in section 3.2 above hospital laboratories must, as a minimum, have the following equipment:

- Centrifuge
- 4⁰C lab refrigerator, 240V
- Biological Safety Cabinet Type 1 or Type 2
- Tachometer (to verify speed of centrifuge)
- 3D bi-directional rotator 240V, 50/60Hz
- Blood tube rocker/rotator
- Refrigerator with freezer compartment, -20° to -40° C
- Water distiller, complete with wall bracket and tubing
- 56⁰C Water bath, 15L, 240V, 50/60Hz
- Test tube agglutination viewer
- Binocular microscope
- Dry heat sterilizer
- Autoclave

- Vortex mixer
- Automated haematology analyzer
- Automated chemistry analyzer
- Coagulation analyser
- CD4 analyzer
- Cold box and ice pack
- Water distiller
- Thermometers for fridge, freezer and water bath
- Micropipettes with different volumes
- UPS

The laboratory should be connected to a back-up power supply (generator) in cases of interruption to the mains electrical supply.

Additionally, the laboratory should have a telephone(s), fax machine, sufficient computers and printers for administrative purposes and internet connection if possible.

3.4.2 Procurement of equipment

A senior laboratory technician should be a member of the Medical Equipment Committee that is responsible to approve the procurement of all medical equipment including laboratory equipment.

Prior to ordering or accepting equipment there must be a check to ensure that the laboratory has adequate room size and access for the equipment, together with an adequate electrical system, plumbing and ventilation, as required.

For all new equipment there must be an agreement with the vendor for installation, calibration, maintenance, trouble shooting, reagent supply, service and repair and training of staff for a specified time period. All new equipment should be supplied with a user manual. All procurement decisions must factor in reagent supply. There should be a sustainable supply of reagents, and as far as possible required reagents should be integrated across systems.

All donated equipment must be assessed by laboratory management before acceptance. This assessment should include the need for the item and any maintenance and reagent requirements to ensure that any necessary spare parts or reagents are readily available in the country.

3.4.3 Inventory control

Every lab should have an inventory of all equipment and instruments that includes:

- Name of manufacturer,
- Model and serial number,
- Date of purchase or acquisition,
- Purchase cost,
- Current location,
- Record of contracted maintenance, and
- Record of equipment breakdowns.

Manufacturers' manuals should be attached to, or stored beside, each instrument. Laboratory equipment should only be used by appropriately trained staff. An equipment usage log book or form can be completed by laboratory staff to indicate the duration of use and name of the person who used the equipment.

3.4.4 Equipment Maintenance

There should be a program for preventive maintenance, calibration and monitoring of equipment function that is documented and at a minimum follows manufacturer's recommendations. The Quality Assurance (QA) Officer (see section 3.11) is responsible to ensure that instruments in the laboratory are maintained properly, daily controls and calibrators are run, and maintenance logs are kept up to date.

There should be a timetable for the calibration and maintenance of each piece of equipment. Calibration should be performed every six months if specific instructions are absent.

Otherwise calibration should be performed:

- Based on the specifications of the manufacturer
- After a complete change of reagents
- Where controls show unusual trends
- After major preventive maintenance
- After replacement of critical parts
- When the procedure requires more calibration

There should be close follow up of instruments' functional abilities such as temperature of refrigerators, incubators, rotation of centrifuges etc. Log books or standard forms should be stored near or attached to the instrument and should be completed on a regular basis by the laboratory staff. Each instrument should have a named individual responsible for these checks who is assigned by the Laboratory Manager. The QA officer is responsible to review the log books or forms to ensure that the required checks have been done.

All preventive maintenance should be documented in a computer/log book and kept in each laboratory. All records of corrective actions taken, repair and services should be documented and kept in the laboratory and in the maintenance dept of the hospital. For instruments that are not functioning properly an 'OUT OF ORDER' label should be attached on an easily visible part of the instrument body until corrective maintenance is done. Instrument down time should be recorded.

Good maintenance practices minimize instrument repair costs and limit instrument downtime and workflow interruptions. There are two types of maintenance: planned preventive maintenance and corrective maintenance. For each item of equipment a log should be kept of all maintenance activities.

Only individuals who have taken appropriate training on the specific piece of equipment should undertake maintenance activities. For some equipment this will require a certified service engineer.

a) Preventive Maintenance

Periodic maintenance prior to equipment failure will prevent accidental breakdown and increase performance. Systematic Preventive Maintenance includes adjusting, calibrating, changing parts, following shut down procedures, and performing general cleaning procedures (such as blowing, rinsing, wiping, flushing). Cleaning procedures should adhere to Standard Operating Procedures that apply to each instrument.

The Operator (user) should perform daily, weekly, monthly and/or quarterly preventive maintenance for each type of equipment in the laboratory. All preventive maintenance activities should be recorded in a maintenance log for each piece of equipment. A sample Preventive Maintenance Log is presented in Appendix B.

Service engineers from the appropriate company or EHNRI should perform semi-annual or annual preventive maintenance on the larger more complex instruments. A log must be completed with copies held on site and by the service engineer.

b) Corrective Maintenance

Corrective maintenance involves equipment repair and replacement of parts. Instrument operators can perform simple corrective maintenance such as replacing blown out fuses and removing blockage from the fluidics system by using troubleshooting charts from instrument user manuals. However, most corrective maintenance must be performed by a qualified service engineer. All corrective maintenance activities should be recorded in a maintenance log for each piece of equipment. A sample Corrective Maintenance Log is presented in Appendix C.

Only engineers sent by the supplier can perform corrective maintenance on instruments still under warranty.

3.5 Control of Laboratory Reagents and Supplies

Laboratories require reagents, controls and supplies for:

- Clinical chemistry,
- Haematological tests,
- Microbiological tests,
- Serology,
- Parasitology, and
- Others.

In the procurement of reagents, the supplier should provide a certificate of suitability of the reagents for the intended test. Laboratories should only purchase reagents that have been approved by the Food Medicine and Healthcare Administration and Control Authority (FMHACA). Reagents should be stored according to manufacturer's recommendations.

All reagents and other supplies should be:

- catalogued and stored accordingly to aid retrieval,
- properly stored according to manufacturer's instructions,

- discarded when the shelf life is expired,
- labelled to indicate identification and, when applicable, significant titre strength or concentration,
- marked with date of preparation or receipt
- marked with the date opened:
 - The date that the reagent was first opened must be written on the container with a standard plastic laminated form. If reagents are dispensed from intact stock containers by dilution or any other treatment, the date of preparation as well as the duration of should be written,
- the components of reagent kits of different lot numbers should not be interchanged unless otherwise specified by the preparer.

Reagent validation and monitoring should be done prior to use.

3.5.1 Reagent and supply inventory control

Laboratory management should have control over the purchase, storage and distribution of laboratory reagents and supplies. If another department (for example finance or pharmacy) is responsible for the purchase of laboratory reagents and supplies this should be done in consultation with the Laboratory Manager and there should be a system through which the Laboratory Manager can order stock when necessary.

The laboratory should establish a control system to catalogue the purchasing and supply of reagents and supplies. This can be done through a log book or an electronic cataloguing system. Reagent name, supply on hand and expiration date of reagents and supplies should be recorded in the log book or electronic system. This will allow laboratory staff to compare the current stock in the laboratory and in the warehouse to avoid unpredicted stock out.

Laboratory reagents and supplies should be stored in a mini-store that is managed by the Laboratory Manager.

3.6 Standard Operating Procedures

Standard Operating Procedures (SOPs) are created for regularly recurring work processes that are conducted in the laboratory. This is done to ensure that activities are performed consistently and in a manner that achieves results of the highest quality, and that the laboratory is run as efficiently as possible. All laboratory staff should participate in the creation of SOPs. Each SOP should be approved by the Laboratory Manager and Quality Assurance Officer prior to implementation.

SOPs should be available for:

1. Specimen management

All SOPs for specimen management should include:

a) Action upon receipt of a sample:

Upon receipt each laboratory should check the availability of the requested test in that laboratory, including the turnaround time for results. If the service is not available, the laboratory should notify

the customer and refer the sample to a different laboratory capable of performing the request test (see section 3.7). If the service is available, the sample must be checked according to the acceptance and rejection criteria. A specimen can be rejected if:

- it is received without a request form,
- it is unlabeled, incompletely labelled or if the name on the label does not match the name on the request form,
- it is leaking,
- it is in a broken container,
- it is the wrong type of specimen for the requested test,
- it was not transported according to requirements,
- the time since collection is too long (depending on the type of test),
- it is haemolytic (depending on the type of test),
- there is insufficient volume of a specimen, or
- there is bacterial overgrowth present.

b) Documentation of sample receipt:

A log book should be used to record the receipt of samples. This should include:

- the name of the patient and identification number,
- the source of the specimen,
- the name of the submitter, and
- the date of collection.
- 2. All testing procedures:

All SOPs for individual tests should include:

- a) The full test name, including the full name of the methodology used (commonly used abbreviations should be listed at the beginning of the SOP),
- b) The types of reactions, specimens, or organisms involved in the test,
- c) Guidelines for the storage of specimens to ensure their integrity until testing is complete,
- d) The clinical reasoning for performing the test,
- e) Any calculations and formulas needed to obtain a result,
- f) The methodology used, including the limitations of procedures and reagents,
- g) Standards by which a sample is accepted or rejected,
- h) Safety issues related to that particular test,
- i) The test procedure, including:
 - A complete set of instructions
 - Detailed descriptions such as measuring units, etc.
 - How to prepare slides, solution, calibrators, control, reagents, stains, etc. for use
- j) The criteria for what to do if a test system becomes inoperable,
- k) A corrective action guideline (when necessary),
- l) Interpretation of results, including:
 - Reportable ranges
 - Critical or panic values
- m) Methods of disposal for specimens and other products used,

- n) References to relevant and pertinent materials,
- o) Criteria for the referral of specimens to and from other health facilities, and
- p) Transport requirements (e.g. cold chain) if the specimen is to be transferred to another laboratory.

A sample SOP for haemoglobin estimation is presented in Appendix D.

- a) SOPs should also be available for:
- b) Testing algorithms (The procedure for analyzing a sample that has more than one test request)
- c) The maintenance and monitoring of each piece of equipment (see section 3.4)
- d) Sample referrals and transportation (see section 3.7)
- e) Safety procedures and waste management, including proper specimen disposal (see section 3.9)
- f) Quality assurance procedures (see section 3.11)

Each SOP should be reviewed on a regular basis (for example annually). The revision level and due date for the next review should be stated on each SOP. The national SOP template, developed by EHNRI is presented in Appendix E.

3.7 Referrals and Transportation of Laboratory Samples

Within hospitals, support staff ('runners') should be used to transport samples and results between the laboratory and clinical areas. The transport between the hospital and external facilities is handled by the Sample Transfer Service (STS). The STS is a system that outlines the process of referring and transporting laboratory samples in a coordinated, timely, and effective manner. The quality of laboratory results is dependent upon the quality of the specimen received. Therefore, the STS is designed to minimize the time from when the specimen is collected to when it is delivered.

There should be an assigned contact person to oversee the referral and transport process and a trained courier (preferably a non-technical staff member) for the transportation of samples. Transport should be arranged in accordance with the SOP of each test taking into account any special requirements (e.g. maintenance of the cold chain). All relevant personnel (runners, couriers, laboratory staff and clinicians) should be trained in the collection, preservation and transport of specimens as appropriate.

The hospital should establish linkages with other facilities for the receipt and referral of samples. There should be a policy, agreed between relevant facilities, that specifies:

- The lower level facilities from which samples may be received,
- The type of samples and tests that will be conducted for lower level facilities,
- The turnaround time for each test and process by which results will be reported back to the referring facility,
- The higher level facility(s) to which samples may be referred,
- The type of samples and tests that will be conducted at the higher level facility(s), and
- The turnaround time for each test and process by which results will be reported back to the hospital.

Laboratory samples may also be received from external private health facilities. The hospital may decide to charge a higher fee for the testing of these samples.

A system should be established to track referred and received samples to ensure that no samples or results are lost and to keep a record of test results.

3.8 Organisation of Laboratory Working Environment

The physical structure of the laboratory should be of an appropriate size, location, and layout to ensure safety to staff, patients, and others. A diagram of the layout of the laboratory department should be clearly displayed on the wall of the central laboratory.

The laboratory space should be sufficient to accommodate:

- Patient registration and sample collection (if the laboratory takes samples),
- Administration and clerical functions,
- Technical functions,
- Instrument storage, and
- Refrigerators and other storage space for reagents and supplies.

All ART laboratory equipment should be integrated with the central laboratory such that laboratory equipment for HIV patients (e.g. chemistry and haematology analyzers) are also available for the use of non-HIV patients.

Ideally, laboratory samples should be collected from patients within the service area where they are receiving clinical care (e.g. in OPD, in ER, on the ward etc). The sample and test request form should be taken to the laboratory by a support staff member ('runner'). A process should be in place to ensure that all necessary testing equipment (e.g. tourniquet, blood collection tubes etc) and sample request forms are always available in all testing areas. For further discussion on the organization of Laboratory Services and sample collection, including BPR recommendations, see *Chapter 2 Patient Flow*.

If it is necessary to collect samples within the laboratory department then there must be a covered waiting area for patients, a patient reception and a sample collection room.

The laboratory test area should be well lit, have good ventilation and a minimum of two sinks – one for washing hands and the second for laboratory purposes. The central laboratory work space should be organized by the type of department/test performed (i.e. haematology, clinical chemistry, microbiology etc).

Sturdy, built-in benches with levelled tops and covered with a surface that can be disinfected (such as formica) or painted with oil based paint should be present. Benches should be at least 0.9m high and 0.5m wide. There should be an adequate number of lab stools. These should be at least 0.6m high to enable staff to sit while performing lab work. Stainless steel or plastic stools are preferable for the ease of cleaning and disinfection.

Laboratory floors should be made of materials that are resistant to acids, alkalis and salts (e.g. not wood). Alternatively the floors may be plated or painted with such materials. Ceilings should be of materials that can easily be cleaned and disinfected and should provide a continuous seal to prevent

contaminants from seeping through. Internal and external walls should be maintained in good condition.

A mini-store for reagents and supplies should be located within the laboratory department. There should be sufficient power outlets for all electrical equipment within the laboratory and the use of extension cords should be minimized. Laboratory equipment, including refrigerators, should be protected by Uninterrupted Power Supply (UPS) devices. Essential equipment should be connected to the backup power supply in the event of power failure.

Access to the laboratory should be restricted to authorized personnel. Laboratory buildings should be secured with window locks or burglar bars, door and cupboard locks as necessary. Keys should be held by authorized personnel only.

3.9 Laboratory Safety

Within the laboratory there should be someone responsible to oversee health and safety activities. The Laboratory Manager could fill this position if necessary. Responsibilities include:

- 1. To conduct regular risk assessments of laboratory premises
- 2. To maintain a safe working environment
- 3. To ensure adequate safety equipment is available at all times
- 4. To ensure the safe disposal of laboratory waste
- 5. To prepare the laboratory health and safety manual
- 6. To prepare the department-specific Major Incident Plan
- 7. To train laboratory staff on health and safety procedures
- 8. To establish mechanisms to report laboratory accidents or injuries
- 9. To ensure that remedial action is taken in response to any accidents or injuries
- 1. Risk assessment

A regular risk assessment of laboratory premises should be conducted at a minimum every quarter. A standard assessment tool should be used. A sample Laboratory Risk Assessment Form is presented in Appendix F. Based on the findings of the risk assessment appropriate steps should be taken to minimize risk.

Copies of all risk assessments and a description of remedial action taken should be maintained in the laboratory.

2. Laboratory environment

Laboratories should be adequately signed to indicate:

- Entrances to areas where bio-hazardous materials are kept,
- Fire exits and fire extinguishers,
- First aid kit,
- Eye wash station, and
- Safety shower.

Bio-hazardous materials should be stored in secure and clearly demarcated.

Walkways, doors and fire escape routes should be unobstructed at all times and all areas of the laboratory should be adequately lit.

General safety rules, such as standard precautions, should be laminated and posted in an open and visible space within the laboratory.

- 3. Safety equipment
- a) Personal Protective Equipment (PPE): this should be available in sufficient quantities for the use of laboratory staff and visitors at all times. PPE includes:
 - a. Goggles, gloves, coats and face shields
 - b. Cryogenic/heat resistant gloves
- b) First Aid Kit: there should be a first aid kit in each laboratory testing area. This should be checked and restocked weekly.
- c) Eye wash station: there should be an eye wash station in each laboratory testing area. The water should be changed weekly or after each use.
- d) Safety shower: there should be a safety shower available to all laboratory staff in the event of chemical exposure. This should be tested weekly.
- 4. Waste disposal

Laboratory waste should be regarded as 'hazardous' and disposed of accordingly. Further guidance on waste management, including the management of spills of hazardous materials is presented in Section 3.4.1.1 of *Chapter 7 Infection Prevention*.

All staff who handle laboratory waste (including those undertaking repairs of drainage systems) should follow standard infection prevention measures and wear PPE. (For further guidance on the use of PPE please see Section 3.2.2 of *Chapter 7 Infection Prevention*).

5. Laboratory Health and Safety Manual

The laboratory should have a health and safety manual that:

- a) Establishes general safety principles such as:
 - i. The implementation of 'Standard Precautions' for infection prevention (see section 3.2 of *Chapter 7 Infection Prevention*.
 - ii. The use of personal protective equipment and proper attire (e.g. close-toed shoes, clothing that minimized skin exposure, hair tied back etc)
 - iii. Prohibition of eating, drinking or smoking in the laboratory
 - iv. The use of equipment by appropriately trained personnel only
 - v. Decontamination of equipment
- b) Establishes procedures for the storage of and access to hazardous materials
- c) Establishes procedures for the disposal of laboratory waste
- d) Describes action to be taken in the event of an accident or injury such as fire, chemical spill, inoculation accident etc
- e) Reporting and monitoring of accidents and incidents
- 6. Contains emergency telephone contact numbers including the hospital Incident Commander (see Section 3.8 of *Chapter 8 Facilities Management*), senior hospital management and external agencies such as the fire brigade.

7. Major Incident Plan

The laboratory should have a copy of the hospital Major Incident Plan (see Section 3.8.5 of *Chapter 8 Facilities Management*). A department specific plan should be in place that describes the role of the laboratory and laboratory personnel in the event of a major incident.

8. Training of laboratory staff

All laboratory staff should be trained on each of the areas covered in the health and safety manual and on the hospital Major Incident Plan, including each staff member's role in a major incident.

9. Report of accidents or injuries

A standard report form should be used to record all accidents and incidents including spills of chemical or bio-hazardous materials, accidental needle stick injury etc. Reports should be submitted to the Incident Officer (refer to *Chapter 12 Quality Management; section 3.1.1*). The Incident Officer should investigate the incident in collaboration with the Laboratory Manager and take any necessary action.

3.10 Information Management

Complete and thorough information management is key to improving the efficiency and quality of laboratory services. In addition, an organized information management system allows for easy coordination between sites and helps reduce costs.

3.10.1 Document management

The following documents should be present in the laboratory:

- SOP manual
- Quality assurance manual
- Health and safety manual
- Approved laboratory test request and report forms (Samples are presented in Appendix B, *Chapter 3 Medical Records Management*)
- Laboratory registration books
- Daily test record form
- Specimen referral form
- Report form (monthly, quarterly)
- Stock inventory form
- Fridge/Freezer charts
- Equipment Maintenance Logs
- QA Charts and External QA Records
- Error logs
- Accident Logs

These documents should be organized through an established system of document and record handling, which includes:

- Document identification and version control
- Master File

- The master file should contain a copy of every version of every document, thereby serving as an archive of all previous versions of the document, including the current version.
- Master Index
 - The master index should have a list of all the documents currently in use.
 - It should contain the document name, number, version designation, effective date, and document location.
 - The master index should be changed every time a new version of a document is released.
 - The master index allows staff to ensure that they are using the appropriate version of a document.
- Document Distribution
 - The master file and master index should list the locations of all copies of a particular document.
- Document Review
 - To ensure that the latest versions of all documents are being used the Quality Assurance Officer should be responsible for overseeing the entire system, monitoring version identification, revision control, the master file, the master index, and the distribution of documents.
 - A review should be performed annually in order to ensure that all documents and procedures are up to date.

3.10.2 Record management

I. Recording and Reporting Results for Individual Patients

- a. Clinical service area
 - 1. The Patient comes to the clinical service area (emergency, outpatient and inpatient case teams etc) and a request form is written.
 - 2. A sample is drawn.
- b. Laboratory
 - 1. Sample Reception Area
 - The request form and sample are both received
 - The quality of the sample is checked
 - The data on the request form is checked
 - The sample is entered into the logbook and assigned a lab code
 - 2. Testing Lab
 - The sample is prepared and tested
 - The results are checked and validated
 - The results form is completed
 - The results form is checked
 - The results are archived
- c. Clinical service area
 - Result Data Management
 - The results are received and placed in the patient's file
 - The patient file is given to the responsible healthcare provider (e.g. nurse, physician)
 - The responsible healthcare worker tells the results to the patient

Hospitals should aim to install electronic data management systems through which laboratory tests can be ordered and results reported to the relevant clinical team. Such systems should be protected by passwords or other security mechanisms to control levels of access. When electronic systems are installed there should always be a paper back-up in place.

EHNRI is currently experimenting with an electronic nation-wide data network that will eventually be implemented in every regional laboratory, all hospital laboratories in Addis Ababa, and all major hospital laboratories across Ethiopia. Any internal systems developed or installed within hospitals must be compatible with any external systems developed.

II. Use of data for epidemiological purposes

Laboratory management should monitor investigations requested and test results to identify any notifiable disease or trends that might indicate a disease outbreak. All notifiable diseases and clusters of selected diseases should be reported to the higher authority (Woreda or Regional Health Office) using a Standard Form provided by EHNRI and in accordance with national guidelines. A list of current notifiable diseases is presented in Appendix G. The Clinical Service Director should also be informed of the occurrence of any notifiable diseases or potential disease outbreaks to determine if further action is required by the hospital.

3.11 Quality Assurance

Quality Assurance (QA) is a process of actions and tests designed to ensure that specific standards are adhered to and that laboratory testing is as accurate and efficient as possible. QA begins when the laboratory test is first requested, and ends at the point where the test results are returned to the patient's folder. When problems are identified, they should be documented and corrected in an appropriate manner.

Quality assurance should be undertaken for all tests performed by the laboratory. Both internal and external quality assurance processes can be applied. Internal QA is when the hospital itself undertakes QA activities. External QA is when an external body (such as the Regional Laboratory, EHNRI) performs QA testing of the laboratory.

A full time laboratory quality assurance officer should be assigned to oversee all laboratory QA activities. This includes the QA of all tests undertaken outside the laboratory (for example PIHCT, PMTCT). The QA Officer will be responsible to oversee all internal QA activities and to liaise with, facilitate and maintain records of all external QA activities.

3.11.1 External QA

Currently EHNRI co-ordinates external QA activities for CD4, haematology, chemistry, HIV rapid test, malaria smear and AFB smear microscopy in all public hospital laboratories in Ethiopia.

EHNRI is also providing Digital PT EQA services covering panels for clinical chemistry, haematology, serology, microbiology and parasitology tests for assessing the overall performance of laboratories.

Laboratory EQA programs are implemented in the form of:

- Proficiency panel testing
 - A number of proficiency panels are sent to a laboratory by the regional laboratories or EHNRI
 - Analysis tests are performed
 - Results are compared between labs
- Blind re-checking
 - A random selection of samples are collected from the routine work load and sent to a laboratory
 - Any errors detected reflect the reality of everyday performance in that lab
- On-site assessments

In due course external QA processes will be developed for other laboratory tests. Hospitals must comply with all national external QA requirements.

Additionally hospitals may establish external QA mechanisms with other accredited agencies or may develop inter-institutional QA processes.

3.11.2 Internal QA

Internal laboratory QA involves the following steps:

Pre-analytical

- Ensuring the correct sample is taken from the correct patient
- Ensuring sample request forms contain all relevant information
- Ensuring samples are transported appropriately
- Ensuring samples are stored appropriately prior to analysis

Analytical

- Ensuring that requested laboratory tests are performed in a timely manner and recorded
- Ensuring samples are prepared appropriately and tests conducted in accordance with SOPs
- Ensuring test results are accurate (i.e. fall within an appropriate range)
- Includes the regular monitoring of test results from the use of controls.
 - Control samples, either prepared or purchased, are analyzed with test samples to evaluate any bias in the test methods precision or results. The control samples should be treated in the same manner as the test samples.
 - All laboratories should establish an official QA procedure which includes:
 - Identification of the control being used
 - Instructions for the preparation and handling of controls
 - Frequency with which controls are run
 - How the accepted limits for controls are established
 - New limits must be determined for each new lot/shipment of control substance
 - The corrective actions taken when results do not fall within the pre-determined range
 - How QA data is to be documented and stored

- ✤ All control results and remedial actions should be recorded.
- QA data has to include a QA number, standard QA answer sheet, test result, date of testing and name of the laboratory analyst who took the test.
- What should occur if no controls are available
- The laboratory is responsible to check each new shipment of reagents, discs, stains, antisera and identification systems for positive, negative, or graded reactivity when either being prepared or opened.
- The laboratory must test staining materials for intended reactivity each day in order to ensure accuracy of results.
- The laboratory must test fluorescent stains for positive and negative reactivity each time of use.
 - Any abnormal results should be documented, reviewed, and corrected in a timely manner.

Post-analytical

- Ensuring the correct result is received by the referring clinician in a timely manner
- Ensuring the correct result is recorded in the patient medical record

Finally, QA processes must ensure that only qualified and trained personnel complete the above steps and that any problems identified by the QA system result in appropriate action. All QA processes, results found, and any corrective action should be appropriately documented.

3.12 Laboratory Staff Management

Key elements of a successful laboratory staff management plan include:

- Identification of duties performed and staff needed to perform those duties
- Assignment of duties and responsibilities to each staff person (job description)
- Creation of a rotation schedule
- Implementation of effective retention strategies for laboratory staff
 - Routine guidance

- A good working environment
 - A clean, well-organized laboratory
 - Provision of all necessary materials and equipment for testing
 - Ensuring that all of these are in working order
- o Diversity of tasks to ensure against a monotonous schedule
 - This also ensures that laboratory personnel are trained in multiple different areas
- \circ The availability of formal training and peer-to-peer knowledge sharing
 - There should be established mechanisms by which all staff who receive external training can share the information learned with their colleagues
- Standardized wages/per diems
- A fair and non-biased system for recognition and rewards
- Clear and open communication channels, opportunities to address complaints, and responsive action
- Career paths that allow the opportunities for progression and career advancement, including further training and research. Priority for career advancement should be given to those with longer lengths of service and good performance evaluations

- Regular staff meetings
- Staff performance reviews

In addition to technical staff the laboratory should have sufficient clerical staff for registration of samples, documentation of lab results and archiving of materials.

Further guidance on the above is presented in Chapter 11 Human Resource Management.

Section 4 Implementation Checklist and Indicators

4.1 Assessment Tool for Operational Standards

In order to determine if the Operational Standards of Laboratory Services have been met by the hospital an assessment tool has been developed which describes criteria for the attainment of a Standard and a method of assessment. This tool can be used by hospital management or by an external body such as the RHB or FMOH to measure attainment of each Operational Standard. The tool is presented in Appendix E of *Chapter 13 Monitoring and Reporting*.

4.2 Implementation Checklist

The following Table can be used as a tool to record whether the main recommendations outlined above have been implemented by the hospital. This tool is not meant to measure attainment of each Operational Standard, but rather to provide a checklist to record implementation activities.

		Yes	No
1.	There is a list of laboratory tests offered including the price of each test that is current.		
2.	Information is provided on the interpretation of test results or tests to staff and patients alike.		
3.	There are adequate personnel to provide laboratory services.		
4.	Facilities and equipment needed to provide laboratory services are in place.		
5.	Reagents and other supplies needed to provide laboratory services are available.		
6.	Laboratory services are integrated in the emergency, outpatient and inpatient case teams.		
7.	There is a central laboratory with functional overview of all hospital laboratories.		
8.	There is a monitoring system to manage reagent and other consumables supply.		
9.	There is an SOP for specimen management.		
10.	There are SOPs for all testing procedures.		
11.	There is an SOP for testing algorithms.		
12.	There is an SOP for waste management.		
13.	There are SOPs for maintenance and monitoring (of each item of equipment).		

 Table 1.
 Laboratory Services Checklist

14.	There is an SOP for quality assurance.	
15.	There are policies and procedures or sample collection, transport and disposal.	
16.	There is a health and safety manual that defines safety procedures.	
17.	There is a data management system.	
18.	Quality assurance procedures are developed and implemented.	

4.3 Indicators

In addition, the following indicators may be monitored on a regular basis to assess the effectiveness/outcomes of implementation of the recommendations provided in this chapter.

	Indicator	Formula	Frequency	Comment
1.	Total number of samples received by laboratory services	Total number of samples received by laboratory services (inpatient, outpatient and	Quarterly	
2.	 a) Number of samples rejected b) Proportion of laboratory samples rejected 	 emergency) during the reporting period a) Total number of samples rejected by laboratory services (inpatient, outpatient and emergency) during the reporting period) b) Total number of samples rejected by laboratory services (inpatient, outpatient and emergency) ÷ Total number of samples received (inpatient, outpatient and emergency) x 100 	Quarterly	
3.	 a) Number of samples referred into laboratory services from another facility b) Proportion of laboratory samples that were referred by another facility 	 a) Total number of samples referred into laboratory services from another facility during the reporting period b) Number of samples referred into laboratory services ÷ total number of laboratory samples x 100 	Quarterly	
4.	 a) Number of samples referred by laboratory services to another facility b) Proportion of laboratory samples that were referred to another facility 	 a) Total number of samples referred to another facility laboratory services during the reporting period b) Number of samples that were referred to another facility ÷ total number of laboratory samples x 100 	Quarterly	
5.	Average turnaround time per laboratory discipline (chemistry, haematology, urine, stool etc)	\sum turnaround time for each discipline \div number of tests conducted in that discipline	Quarterly	
6.	Test availability	[\sum tests x \sum days available] \div [\sum tests x \sum total number of days in time period] x 100	Quarterly	
7.	Average number of tests per laboratory employee per day	Total number of tests conducted ÷ [number of laboratory staff x number of working days in reporting period]	Quarterly	

 Table 2.
 Laboratory Services Indicators

8.	Attrition rate laboratory staff	Number of laboratory staff who left during reporting period ÷ total number of laboratory staff at beginning of reporting period x 100	Quarterly	HMIS
9.	Cumulative proportion of laboratory staff who received in service training	Total number of laboratory staff who received in service training from beginning of year to end of reporting period ÷ number of staff at beginning of year x 100	Quarterly	HMIS
10.	Cumulative proportion of laboratory staff who underwent performance evaluation	Total number of laboratory staff who underwent performance evaluation from beginning of year to end of reporting period ÷ number of laboratory staff at beginning of year * 100	Quarterly	
11.	Number of complaints received against laboratory services	Total number of complaints against laboratory services	Quarterly	
12.	 a) Number of complaints against laboratory services upheld b) Proportion of complaints against laboratory services upheld 	 a) Total number of complaints against the laboratory upheld b) Number of complaints upheld ÷ number of complaints received x 100 	Quarterly	

Source Documents

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Appendices

Appendix A The Laboratory Network: Responsibilities of Laboratories at Different Tier Levels in Ethiopia

A tiered laboratory network is an integrated system of laboratories organized in alignment with the public health delivery network in a country. There should be four levels of laboratories in the national network:

- 1. Level I-Primary: Health post and health center laboratories that primarily serve outpatients.
- 2. Level II- Secondary: Laboratories in intermediate referral facilities (e.g., district hospitals).
- **3.** Level III-Tertiary: Laboratories in a regional referral hospital that may be part of a regional or provincial health bureau.
- **4. Level IV-National Reference Laboratory**: The national public health reference laboratory for the country.

The tiered levels of a laboratory system and the testing performed at each level may vary depending on the population served (e.g., infants, adults), physical infrastructure, electricity, water, road conditions, and the availability of trained technical personnel in-country.

Level I Laboratories

Level I laboratories would consist of health post or health center laboratories that would primarily serve outpatients. Essential infrastructure, such as clean water, refrigeration and electricity, may or may not be available. These laboratories would serve as peripheral branches of Level II laboratories, which would be the center or hub. Health posts may refer specimens to health center laboratories. Diploma level staff at Level I laboratories would be very limited, with usually no more than one trained laboratory assistant or nurse providing services. The laboratory would offer diagnostic and monitoring services for HIV/AIDS, TB and malaria. If essential infrastructure were lacking, then the on-site test menu would be restricted to manual tests. Sites with reliable power and water would perform certain automated chemistry tests required for antiretroviral therapy (ART) monitoring. Same day performance and delivery of results must be available while the patient is present for immediate counseling, treatment and regimen modification.

When required testing exceeds the scope of services available from Level I facilities, the "parent" Level II laboratories would provide a range of consultant services, including receipt of referral specimens and patients.

Level II Laboratories

Level II laboratories would consist of district hospitals or primary hospital laboratories that perform tests beyond the capabilities of Level I facilities. Health posts may refer specimens to Health Center Laboratories under Level I. Serving inpatients; these laboratories would have dedicated laboratory space, formally trained personnel, UPS systems, and a consistent source of reagent grade water. The laboratory would be staffed by a minimum of three formally trained technologists or technicians. One staff member who has managerial skills would serve as the senior or supervisory technologist.

The Level II laboratories would have more extensive test menus for diagnoses and treatment. Consolidating testing at the district level for certain tests provides necessary volumes for automated equipment platforms. The Level II laboratories would coordinate the services of Level I laboratories in the district as well as serve as reagent and supply reservoir/back-up repositories for these laboratories. In

addition, Level II laboratories would provide the following consultant services and support for Level I laboratories:

- Managerial oversight of an outreach program of peripheral primary laboratories (World Health Organization [WHO], 2003a)
- Referral laboratory services with a more extensive test menu
- On-site quality assessment visits
- Assistance with resolving technical problems
- Data management support with a strong paper-based laboratory information system (should be part of a national system of data collection by the Ministry of Health [MOH])
- Development and implementation of quality assurance (QA) activities (including, but not limited to, QC, QI and EQA/PT)
- Periodic review of QC
- Information and training for adequate specimen collection
- Coordination of EQA
- Collection of data for assessment of quality indicators
- Approval and annual review of SOPs and policies to ensure alignment with current practices
- Assistance with development of SOPs and safety procedures
- Staff development/training, performance management, competency assessment, and retraining
- Coordination of courier/transport services
- Assistance with results reporting and record retention
- Equipment maintenance and service support including review of maintenance logs
- Follow-up on laboratory incident and accident reports
- Assessment of safety management practices

Level III Laboratories

Level III laboratories would consist of laboratories in tertiary referral facilities such as regional or provincial hospitals. These laboratories would perform a complete menu of testing for HIV/AIDS, TB and malaria as well as testing for many other diseases. Level III laboratories would complete the more sophisticated tests that Level II laboratories were not able to perform. These facilities must have dedicated laboratory space that would include a separate microbiology space, a Biosafety Level 3 designated area, and UPS systems. Reagent grade water would also be required. Formally trained, diploma level technologists who are able to meet workload demands would staff Level III laboratories. One technologist who has managerial skills would serve as the laboratory supervisor. Level III laboratories would act as laboratory resource groups for the facilities in their regions.

In addition, Level III laboratories would provide the following services:

- A more comprehensive test menu than that provided at Level II laboratories
- Coordinate laboratory services and information management with other Level III laboratories
- Perform assessments of laboratories in the region; evaluate the QA data from laboratories in the region
- Coordinate surveillance data collection from lower levels in an effort to obtain country-wide statistics
- May collect and report inter-laboratory comparisons and EQA data for the region
- Develop training programs and coordination of continuing education
- Assure adequate requisition and reporting mechanisms as well as record retention procedures
- Standardize units, methodologies and reference ranges based on national reference laboratory recommendations
- Determine the amount of patient history/clinical presentation required for tests referred to other levels
- Provide logistical and management support to their service areas

Level IV Laboratories (National Reference Laboratories)

Level IV national reference laboratories are recommended to strengthen laboratory capacity for diseases of public health concern. Ideally, they would provide linkages with clinical trials and other public health laboratories, forming integrated laboratory networks. Senior program employees, laboratory management and senior laboratory technologists/scientists would staff these laboratories. Level IV laboratories would possess the infrastructure, equipment, information systems, and logistical capabilities of sophisticated reference laboratories. In some countries lacking a unique national reference laboratory, Level III laboratories may serve as national reference laboratories.

Level IV National Reference Laboratories would:

- Perform all testing performed at the other levels
- Perform molecular and esoteric testing beyond the technical capabilities of Level III laboratories (e.g., nucleic acid assays, HIV drug resistance studies, TB drug susceptibility studies)
- Develop laboratory standards and processes for laboratory accreditation
- Develop monitoring and evaluation activities for laboratories
- Serve as the national coordinator for HIV, TB, and malaria laboratory programs
- Maintain national database of equipment and maintenance in country

- Participate in international EQA programs and develop/oversee national EQA programs
- Provide input on national laboratory policy development
- Determine what information needs to be supplied with the test result to better interpret the test
- Provide courier and logistics management support for the regions
- Develop and implement testing algorithms and reflex protocols for laboratory utilization
- Establish standards for quality management and assist with policy and procedure development
- Provide assistance with reference range validations and development of national reference ranges specific to equipment/methods used
- Coordinate the collection of surveillance data to obtain and monitor country-wide statistics
- Introduce and implement new technologies, appropriate for each level, to reflect current best practices
- Select and evaluate diagnostic tests
- Define sensitivity and specificity requirements in order to select methods that would be evaluated with a method validation plan

Appendix B Sample Preventive Maintenance Log

Equipment Type	Inventory Number
Model	Serial No.

Preventive maintenance performed:

1.	
2.	
3.	
4.	

Spare parts changed and other materials used:

No.	Item	Quantity

User comments		
Date	Signature	Date

Service engineer comments and required follow-up			
Preventive maintenance performed by Signature	Date		

Appendix C Sample Corrective Maintenance Log

Equipment type	Inventory Number
Model	Serial No.

Description of equipment failure	
Cause of equipment failure (if known)	
Part of machine / equipment to be maintained	

Corrective action				
Time required				
Spare parts replaced				
1.	2.		3.	
4.	5.		6.	
Engineer 1		Signature 1		Date
Engineer 2		Signature 2		Date

User comments		
Date	Signature	Date

Appendix D Sample SOP for Haemoglobin Estimation

Purpose:

The measurement of haemoglobin is useful for the detection of anaemia, its severity, and the patient's response to treatment as well as the quality of a donor's blood before donation.

Method

Cyanmethemoglobin method. This involves the use of Drabkins solution, which contains Potassium ferricyanide and potassium cyanide.

Principle

When whole blood is diluted 1 in 201 in Drabkins solution, it is haemolysed and the haemoglobin is oxidized to methemoglobin by the ferricyanide. The methemoglobin formed is converted to stable hemiglobicyanide by the cyanide. The absorbance of the HiCN solution is read at 540 nm and compared with that of a reference HiCN standard solution.

Sample

Whole blood mixed with EDTA or capillary blood.

Reagents

- 1) Drabkins solution
- 2) Potassium ferricyanide (hexacyanoferrate III)
- 3) Potassium cyanide
- 4) Potassium dihydrogen phosphate
- 5) Non-ionic detergent (e.g. Nonidet)
- 6) Distilled or deionised water.

This solution must be stored in an opaque brown glass container or plain glass with silver foil wrapped around it. It is pale, yellow and clear and should be discarded if turbid.

Equipment

Spectrophotometer with 540nm wavelength

Procedure

1) Measure out 0.02ml of capillary or venous blood well mixed with EDTA and dispense into 4ml of Drabkins solution.

2) Stopper the tube, mix well and let stand for 4 –5mins away from sunlight.

3) Using the 540 nm wavelength in the spectrophotometer, zero with Drabkins fluid and read the absorbance of test solution.

4) Read off the haemoglobin value from the calibration graph already prepared.

Note. Daily control tests are necessary to ensure that the Drabkins solution and spectrophometer are functioning adequately. This can be done using a control haemolysate, preserved whole blood control or use of HiCN reference standard. Also the Drabkins solution can be visibly examined for turbidity or measured against a water blank at 540 nm at which the Drabkins should give a 300 reading.

Calculation

This is done by directly reading off the value from the already prepared graph.

Avoiding errors

a) Ensure that the blood collected is well mixed

b) The Drabkins solution used must be clear and without any signs of turbidity and at room temperature before use.

c) The volume of blood collected in the pipette must be exactly 0.02ml.

d) Ensure that the cuvette surfaces are clean and dry without finger prints.

e) Avoid using unmatched or scratched cuvettes or chipped pipettes.

f) Do not allow air bubble in the solution.

Normal values

Men	14 – 16 g/dl

Women 12 - 14 g/dl

Children 11 - 13 g/dl

Appendix E National SOP Template

Department of Infectious and Non Infectious Diseases Ethiopian Health and Nutrition Research Institute Addis Ababa

TITLE:	Revision Date:
Document Number: 01	Status:
Section: Documents and Records	Page:

Purpose

Abbreviations

	Reagen	ts					
Materials							
	Reagents preparation:						
	Reagents stability and storage:						
	Supplie	es s					
<u> </u>			1				
Sample	Sample	type	Amount required	Transport and Storage	Stability		
	Limitatio	ns:					
Special Safety Precautions							
Trecautions							
	T 1. 1 .	:0					
Maintenance	Sten	<i>y necessar</i>	У				
101unitenunee	1	rection					
	2						
	3						
Prepared by:			Authorit	ty:			

NOTE: This is a CONTROLLED document for internal use only. Any documents appearing in paper form are not controlled and should be checked against the electronic version prior to use.

Department of Infectious and Non Infectious Diseases Ethiopian Health and Nutrition Research Institute Addis Ababa

TITLE:				Revision	Revision Date:			
Document Num	nber:			Status:	Status:			
Quality	Control		Level	Stability	Frequency	Preparation (y/n)		
Control						(9/11)		
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Section: Docum	nents and	Reco	ords	Page:				
	Step	Act	tion					
Procedure								
Troccure								
Coloulation								
Calculation								
Result								
Interpretation								
Expected								
Values								
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Principle								
Clinical Utility								
Reference								
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Appendix F Sample Laboratory Risk Assessment Form

Laboratory/ Department:

Name of Institution:

Inspected by: _____ Month/Year: _____

	ITEM	YES	NO
1.	LABORATORY SIGNS		
a.	Entrance to biohazardous areas clearly marked		
b.	Emergency contacts listed (First-Aid, Fire etc.)		
с.	Emergency signs posted (Fire exit. Eye wash station etc.)		
d.	Emergency telephone numbers (Fire, ambulance etc.)		
2.	SAFETY EQUIPMENT		
a.	Safety manual present/ read by all		
b.	Material Safety Data Sheets (MSDS) available		
c.	Safety Shower		
1.	Unobstructed and labelled		
2.	Tested within past one month		
d.	Eye wash station present		
1.	Unobstructed and labelled		
2.	Water changed weekly		
e.	First-Aid Kit available and labelled		
1.	Fully stocked		
3.	PROTECTIVE CLOTHING		
a.	PPE present (goggles, gloves, coats, face shield etc)		
b.	Visitor coats and safety glasses available		
c.	Proper heat resistant/cryogenic gloves available		
d.	Appropriate personal clothing and footwear		
4.	HAZARDS		
a.	Walkways, doors and fire escape routes unobstructed		
b.	Adequate lighting in all areas		
c.	Work benches and floors cleaned daily		
d.	Storage areas accessible, clean and dry		
5.	SPILL PROCEDURE		
a.	Spill kits available (biological/chemical/radioactive)		
b.	Clearly posted with instruction for use		
c.	Chemical spills documentation present		
6.	ELECTRICAL		
a.	Power distribution board clearly labelled		
b.	Extension cords only for temporary use		
c.	Multiplugs used only on computers		
d.	Surge protection (UPS) present		

е.	Electrical cords not frayed	
f.	Electrical plugs in good condition	
g.	Earth leakage system in good working condition	
7.	GAS CYLINDERS	
a.	Properly and individually chained to the wall	
b.	Labelled empty or full	
c.	Labelled as to cylinder contents	
d.	Safety caps on cylinders not presently in use	
e.	"No smoking" & "Danger of explosion" signs present	
8.	REFRIGERATORS/FREEZERS	
a.	"No Food or Drink" signs posted on doors	
9.	CHEMICAL STORAGE	
a.	Chemicals stored by reactive class (flammables, acids etc)	
b.	Incompatible chemicals physically separated	
c.	Chemicals properly labelled	
d.	Chemicals dated on receipt and when opened	
e.	Inspected monthly for leakage, cracked stoppers, etc.	
f.	Storage areas labelled with hazard stickers	
g.	Acids/corrosives/solvents stored in compatible trays	
h.	No chemicals stored on bench tops/in fume hoods/under sinks	
i.	Flammable liquid storage cabinet present and labelled	
j.	List of chemicals available present with MSDS	
10.	FIRE EQUIPMENT	
10. a.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order	
10. a. b.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled	
10. a. b. c.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order	
10. a. b. c. d.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present	
10. a. b. c. d. e.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year	
10. a. b. c. d. e.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year	
10. a. b. c. d. e. 11.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE	
10. a. b. c. d. e. 11. a.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked	
10. a. b. c. d. e. 11. a. b.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal	
10. a. b. c. d. e. 11. a. b. c.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept	
10. a. b. c. d. e. 11. a. b. c.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept	
10. a. b. c. d. e. 11. a. b. c. 12.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept BIOHAZARD CABINETS/EXTRACTION HOODS	
10. a. b. c. d. e. 11. a. b. c. 11. a. b. c. 12. a. i.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept BIOHAZARD CABINETS/EXTRACTION HOODS In good working condition	
10. a. b. c. d. e. 11. a. b. c. 12. a. b.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept BIOHAZARD CABINETS/EXTRACTION HOODS In good working condition Inspected and serviced within last year	
10. a. b. c. d. e. 11. a. b. c. 12. a. b. c. i. b. c. i. b. c. i. i. i. b. c. i.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept BIOHAZARD CABINETS/EXTRACTION HOODS In good working condition Inspected and serviced within last year Smoke test done regularly (minimum once a week)	
10. a. b. c. d. e. 11. a. b. c. 12. a. b. c. d. d.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept BIOHAZARD CABINETS/EXTRACTION HOODS In good working condition Inspected and serviced within last year Smoke test done regularly (minimum once a week) Cleaned daily	
10. a. b. c. d. e. 11. a. b. c. 12. a. b. c. d. e.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept BIOHAZARD CABINETS/EXTRACTION HOODS In good working condition Inspected and serviced within last year Smoke test done regularly (minimum once a week) Cleaned daily	
10. a. b. c. d. e. 11. a. b. c. 12. a. b. c. d. 13.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept BIOHAZARD CABINETS/EXTRACTION HOODS In good working condition Inspected and serviced within last year Smoke test done regularly (minimum once a week) Cleaned daily SAFETY PROCEDURES & DOCUMENTATION	
10. a. b. c. d. e. 11. a. b. c. 12. a. b. c. 13. a. l	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept BIOHAZARD CABINETS/EXTRACTION HOODS In good working condition Inspected and serviced within last year Smoke test done regularly (minimum once a week) Cleaned daily SAFETY PROCEDURES & DOCUMENTATION In-house training up to date Diabate	
10. a. b. c. d. e. 11. a. b. c. 12. a. b. c. d. 13. a. b.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept BIOHAZARD CABINETS/EXTRACTION HOODS In good working condition Inspected and serviced within last year Smoke test done regularly (minimum once a week) Cleaned daily SAFETY PROCEDURES & DOCUMENTATION In-house training up to date Risk assessment procedures up to date	
10. a. b. c. d. e. 11. a. b. c. 12. a. b. c. d. 13. a. b. c. d. 13. a. b. c. l.	FIRE EQUIPMENT Fire extinguishers present, clearly labelled in working order Fire blankets present and clearly labelled Fire hose present, clearly labelled, and in working order Fire alarm system present All equipment serviced within the last year BIOHAZARD WASTE Appropriate containers available and clearly marked Containers sealed and stored correctly before disposal Regular disposal system in place & records kept BIOHAZARD CABINETS/EXTRACTION HOODS In good working condition Inspected and serviced within last year Smoke test done regularly (minimum once a week) Cleaned daily SAFETY PROCEDURES & DOCUMENTATION In-house training up to date Risk assessment procedures up to date Medical surveillance records up to date	

e.	Safety meetings held regularly & records kept	
f.	Injury on-duty reports up to date	
g.	Standard operating procedures up to date	
14.	AUTOCLAVE	
a.	In good working condition	
b.	Inspected and serviced within the last year	
c.	Pressure tested within the last two years	
d.	Log book for daily temperature and pressure recording	
	and quality control indicators present	
15.	ACCOMODATION	
a.	Building adequate	
b.	Receiving office adequate	
c.	Staff facilities adequate	
d.	Laboratory space adequate	
e.	Bench space adequate	
f.	Other rooms (Phlebotomy, Office, night duty, etc.)	
16.	LABORATORY EQUIPMENT	
a.	Clean and in good working order	
b.	Properly guarded	
c.	Proper electrical connections	
d.	Staff adequately trained in use	
17.	VENTILATION & NOISE	
a.	Temperature control systems adequate	
b.	Dust and fumes minimized	
c.	Noise level acceptable	

General observations:

Action to be taken:

Signed by:

Laboratory Manager:

Date: _____

Appendix G List of Notifiable Diseases

The FMOH declares the following conditions to be of concern to the public health and reportable as required by law:

- a. Acute Flaccid Paralysis (AFP)/Polio
- b. Avian Human Influenza
- c. Cholera
- d. Dysentery
- e. Measles
- f. Malaria
- g. Meningococcal meningitis
- h. Neonatal Tetanus
- i. Plague
- j. Relapsing fever
- k. Rift Valley Fever (RVF)
- 1. SARS
- m. Smallpox
- n. Typhoid Fever
- o. Typhus
- p. Viral Hemorrhagic Fever
- q. Yellow Fever
- r. Any unusual occurrence of infectious or communicable disease or any unusual or increased occurrence of any illness that may indicate public health hazard, including any single case or multiple cases of a newly recognized, emergent or re-emergent disease or disease-producing agent, including newly identified multi-drug resistant bacteria or a novel influenza strain such as a pandemic influenza strain.
- s. Any outbreak, epidemic, or unusual or increased occurrence of any illness that may indicate an outbreak or epidemic. This includes suspected or confirmed outbreaks of foodborne disease, waterborne disease, disease caused by antimicrobial resistant organisms, any infection that may indicate a bioterrorism event, or of any infection that may indicated a public health hazard.

In addition to the reportable conditions, the FMOH requires the following emergency illnesses or health conditions to be of concern to the public health and reportable:

- i. Clusters of Respiratory illness (including upper or lower respiratory tract infections, difficulty breathing and Adult Respiratory Distress Syndrome);
- ii. Clusters of Gastrointestinal illness (including vomiting, diarrhoea, abdominal pain, or any other gastrointestinal distress);
- iii. Influenza-like constitutional symptoms and signs;
- iv. Clusters neurologic symptoms or signs indicating the possibility of meningitis, encephalitis, or unexplained acute encephalopathy or delirium;
- v. Cluster of Rash illness;
- vi. Haemorrhagic illness;
- vii. Botulism-like syndrome;
- viii. Sepsis or unexplained shock;
- ix. Febrile illness (illness with fever, chills or rigors);

x. Non traumatic coma or sudden death; and

Reports should be submitted to the Woreda Health Office, Regional Health Bureau or Federal Ministry of Health using a Standard Report Form.

Source: National Notifiable Diseases and Conditions Reporting Rule and General Control Measures for the Control of Public Health Threats. FMOH, Ethiopian Public Health Institute. April 2009.


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Section 1 Introduction

Nursing is a profession that entails the humanistic blend of scientific knowledge and the art of holistic practice to address the basic human need of achieving health and wellness. Nurses work collaboratively with patients, their families, and other health care professionals to develop and implement a plan of care. They coordinate the patient's care and treatment provided by a professional health care team, while frequently acting as a patient advocate.

Nursing practice covers assessment, diagnosis, planning, intervention and evaluation in:

- a) The promotion and maintenance of health,
- b) The management of illness, injury or infirmity, and
- c) The restoration of optimal function, or palliative care.

Nursing practice also includes research and education in relation to the above activities.

Good professional nursing care ensures that patients:

- receive high quality, safe and effective care delivered by competent nurses,
- are treated as a person with respect, honesty and dignity,
- are safe and comfortable confident in the care environment, and
- are informed and have a say in the care they receive.

This chapter establishes nursing practice standards which all hospitals should fully implement to ensure proper nursing care.

Section 2 Operational Standards for Nursing Care

- 1. The hospital has established management structures and job descriptions that detail the roles and responsibilities of each nursing professional, including reporting relationships.
- 2. The hospital has a nursing workforce plan that addresses nurse staffing requirements and sets minimum nurse to patient ratios in each service area.
- 3. The hospital has written policies describing the responsibilities of nurses for the nursing process including the admission assessment, planning, implementation and evaluation of nursing care.
- 4. All admitted patients have a nursing care plan that describes holistic nursing interventions to address their needs. The plan is regularly reviewed and updated as required.
- 5. The hospital has established guidelines for verbal and written communication about patient care that involves nurses, including verbal orders.
- 6. The hospital has standardised procedures for the safe and proper administration of medications by nurses or designated clinical staff.

Section 3 Implementation Guidance

3.1 Organisation of and Support for the Nursing Function

Nurses play a pivotal role in any hospital. Encompassing the largest workforce in a hospital, nurses act as direct caregivers who serve a hospital twenty-four hours a day, seven days a week. This gives nurses a unique perspective on both patient care and hospital operations. Given the complexities of hospital management and the direct relationship between hospital operations and patient care, nursing responsibilities have expanded to include a greater managerial role. This includes assuming an increased role in hospital leadership and contributing to effective decision-making within the overall hospital structure, as well as within case teams, wards/units or departments.

3.1.1 Job descriptions

Nurses play many roles within a hospital. They may work as part of inpatient, outpatient or emergency case teams; they may lead specialist clinics and may provide health education to patients and the community both within the hospital and at outreach sites. Given the different roles of nursing staff within a hospital it is essential that each hospital develops clear job descriptions for the various nursing posts which will guide nurses in their day to day work and form the basis for performance evaluation/appraisal of the nurse in his/her duties (see Section 3.8 of *Chapter 11 Human Resource Management*).

3.1.2 Team work

Nursing practice requires teamwork, an on-going interaction between members of the multidisciplinary team, the patients, patients' relatives and hospital managers. In working with colleagues and hospital management, the nurse must:

- collaborate with the patient and their caregivers,
- work with colleagues in the formulation of overall goals, plans and decisions related to patients,
- work with other members of the multidisciplinary team in caring for patients,
- consult with other health care providers on patient care, as appropriate,
- make referrals, including provisions for continuity of care, as appropriate, and
- collaborate with other disciplines in teaching, consultation, management, and research activities as opportunities arise.

It is essential that within a case team, ward/unit or department there exists a clear management structure that delineates the ultimate roles and responsibilities within the given team and clinical setting, determining who has clear authority over certain decision-making processes.

3.1.3 Clinical Supervision and Delegation

Clinical supervision is "a formal process of professional support and learning which enables individual practitioners to develop knowledge and competence, assume responsibility for their own practice and enhance consumer protection and safety of care in complex clinical situations". In all work settings nurses should receive adequate support and supervision to ensure that they have the opportunity to gain professional knowledge and expand their skills.

Nurses may delegate nursing procedures to junior nurses/health assistants and/or to student nurses. Before delegating the nurse must ensure that anyone they delegate to is able to carry out the instructions, and the nurse must provide adequate supervision to ensure that the outcome of any delegated task meets required standards.

3.1.4 Nursing Workforce Plan

Shortages of appropriate nursing staff or inappropriate distribution of available staff adversely affects the quality of patient care. Inappropriate workforce planning has been shown to increase staff dissatisfaction and nurse turnover, increase patient mortality, increase hospital-acquired infections, and increase the risk of needle-stick injuries.¹

The hospital should establish a nursing workforce plan that:

- sets minimum nurse to patient ratios for each inpatient ward/service, taking the skill mix of staff into consideration,
- identifies priority areas where the nurse count must at all times meet the minimum ratio requirements (for example intensive care/high dependency units, post operative recovery, emergency department, labour and delivery etc), and
- establishes procedures for transferring nurses across clinical settings, or calling in extra nurses from home in order to maintain minimum nurse to patient ratios, especially in the priority areas.

Determining the minimum nurse staffing level is a complex process. Factors to be considered include:

- the severity of the clinical condition of patients,
- the intensity of nursing care needed, for example the frequency of nursing interventions such as observations, medication administration, wound care, stoma care, bathing etc,
- the number of admissions and discharges,
- the availability of technology (patient monitors, beepers etc),
- the skill mix of staff, and
- the availability of and responsibilities of patient caregivers.

There should be a minimum of a registered professional nurse in-charge of each ward/unit who has a diploma or bachelor degree education and relevant knowledge, skills and experience to manage a ward/unit and the nursing staff therein. The nurse-in charge, together with hospital management should determine the minimum nurse to patient ratio for the unit. The ratio should be kept under review and amended as necessary.

The nursing workforce plan should also consider the role of nurses in outpatient and specialist clinics and the nursing contribution to hospital management and governance structures (such as quality committees, infection prevention committees etc).

3.1.5 **Provision of Resources**

Hospitals should ensure that nurses have access to and are trained on how to use resources (including equipment and consumables) correctly and cost-effectively. Nurses are responsible for forecasting

¹ Needlemann, Jack; Buerhaus, Peter; Mattke, Soeren; Steward, Maureen; Zelevinsky, Katya; Nurse-Staffing Levels and the Quality of Care in Hospitals, N Engl J Med. 2002; 346 (22): 1715 – 1722

stock-outs of nursing formats and other consumables on the ward, and should inform the appropriate party of the need for additional resources to prevent stock out.

3.2 Nursing Process

The nursing process is an organized, systematic and holistic approach to nursing through which nursing care provision is organized to achieve patient centered care. The nursing process involves <u>Assessment</u>, <u>D</u>iagnosis, <u>Planning</u>, <u>Implementation and Evaluation of care (ADPIE)</u>. This should be done in collaboration with the patient and/or caregiver(s).

In working with patients, the nurse must:

- listen to the people in his/her care and respond to their concerns and preferences,
- support people in caring for themselves to improve and maintain their health,
- recognize and respect the contribution that people make to their own care and wellbeing,
- make arrangements to meet people's language and communication needs, and
- share with people, in a way they can understand, the information they want or need to know about their health.

Characteristics of the Nursing process include the following:

- Problem-oriented,
- Goal-oriented,
- Orderly, planned, systematic,
- Open to accepting new information during its application,
- Interpersonal, and
- Permits creativity among nurses and clients.

3.2.1 Nursing Admission Assessment

A nursing assessment is a tool used to collect and document critical data regarding a patient's health, psychological and social status. This assessment remains accessible to the entire health care team during the course of a patient's stay in order to assist the team in determining proper patient care and treatment.

In the nursing assessment, the nurse gathers and examines both *Subjective* and *Objective* data.

- 1. *Subjective data* are what the patient/client actually states (e.g. "I'm tired"). These are his/her feelings and perceptions.
- 2. *Objective data* are concrete, observable information such as:
 - vital signs
 - laboratory studies
 - changes in physical appearance.

NB: SS=Subjective data are *Stated*. OO = Objective data are *Observed*.

Examples:

Subjective data		Objective data:		
•	"I feel sick."	• Blood pressure of 110/70 mmHg.		
•	"I have a stabbing pain in my side."	• Rash on right arm		
•	"I wish I were home."	• Walks with a limp		
• "I feel like nobody likes me."		• Ate all of his breakfast		
		• Urinated 150 ml clear urine		

- A) Procedure of Nursing Admission Assessment
 - 1. *Patient arrival:* Upon the patient's arrival to the unit, place him/ her in a bed and orient him/ her to the given surroundings. Be certain to provide directions to the toilet and wash facilities, how to call for assistance and any other pertinent information about the hospital unit's routine operations.
 - 2. *When patient is settled into bed:* After settling the patient into bed, take the patient's blood pressure, pulse, temperature and respirations. Record this information on both the:
 - (1) Admission Assessment (See Appendix A of this Chapter) and (2) Routine Observation Sheet (See Appendix B, item 17; *Chapter 3 Medical Records Management*).
 - 3. *Complete nursing assessment:* Within 24 hours of the patient's arrival, the nursing admission assessment should be completed and filed in the patient's medical record. Data should be collected from the patient as a first priority. If the patient is not able to participate, then the information should be collected from a family member or a guardian. The Physician History and Physical Examination Assessment may also be used as a source of information (see *Chapter 3 Medical Records Management*, Appendix B: Item 4).
- B) Admission assessment

A nursing admission assessment complements the physician assessment by focusing on the patient's environmental, psychological and social conditions. The nursing assessment gives particular attention to the patient's 'activities of daily living' such as sight, hearing, speech and language, mobility, independence and self care.

A sample Nursing Admission Assessment Form is presented in Appendix A.

3.2.2 Nursing Diagnosis/ Problem Identification

The purpose of nursing diagnosis is to identify problems or needs that require nursing input. The nursing diagnosis differs from the physician's diagnosis as illustrated in Box A.

Box A Physician vs Nursing Diagnosis

Physician diagnosis is disease focused, for example:

"Ato Yidnek has pain and swelling in all his joints. Diagnostic studies indicate that he has rheumatoid arthritis. Anti-inflammatory drugs will be prescribed to treat the rheumatoid arthritis"

Nursing diagnosis is holistic, considering both the problem and its effect on the patient and family, for example:

'Ato Yidnek has pain and swelling in all his joints making it difficult to feed and dress himself. He states that he feels worthless when he cannot even feed himself'.

The nursing diagnosis forms the basis for providing nursing care. Factors to consider when making a nursing diagnosis include:

- self care limitations or impaired functioning related to mental and emotional distress or mental retardation;
- deficits in the functioning of significant biological, emotional and cognitive systems;
- emotional stress or crisis components of health problems, pain and disability;
- self-concept changes, developmental issues, and life process changes;
- problems related to emotions such as anxiety, aggression, sadness, loneliness, and grief;
- alterations in thinking, perceiving, symbolising, communicating and decision making;
- difficulties in relating to others;
- behaviours and mental states that indicate the patient is a danger to self or others or has a severe disability;
- interpersonal, socio/ethnic/cultural, spiritual or environmental circumstances or events which have an affect on the mental and emotional well being of the patient family or community; and
- symptom management, side effects associated with medications and other aspects of the treatment regimen.

The nursing diagnosis/diagnoses should be written as a three-part statement(s) which includes:

- 1. The problem (P)
- 2. Its cause or etiology (E)
- 3. Signs and symptoms (S)

The PES format describes the problem and its etiology, together with data (signs and symptoms) that validate the chosen diagnosis. To write a diagnostic statement for an actual nursing diagnosis, link the problem and its cause by using "related to" then add "as manifested by" or "as evidenced by" and state the major signs and symptoms that validate the diagnosis.

Example 1:

Problem Etiology (cause) Symptom/Sign "ineffective airway clearance related to incisional pain as manifested by poor cough effort"

Example 2

Problem

Etiology (cause)

Symptom/Sign

"impaired communication related to inability to speak Amharic as manifested by inability to follow instructions in Amharic and verbalisation of requests in English".

Nurses may also note that a patient has certain risk factors that put him/her at risk of a particular nursing diagnosis. These risk factors and the related 'potential nursing diagnosis' should be documented so that the nursing care plan can include actions to prevent the problem. For example: 'at risk of impaired skin integrity due to patients' age, weight, immobility and confinement to bed''. The nursing care plan would then include action to prevent irritated or broken skin such as regular turning, massage etc).

A sample Nursing Problem Statement List is presented in Appendix B.

Appendix C presents the North American Association of Nurses Approved Nursing Diagnoses (NANDA).

3.2.3 Nursing Care Plan

The Nursing Care Plan is designed to provide consistency in care and treatment to a patient by documenting all aspects of the patient's nursing care regime. The goal of any plan of care is to aid the patient's return to his/her best state of health, to help him/her maintain independence and to ensure a smooth transition to home. The Nursing Care Plan should be based on the nursing assessment and nursing diagnoses, and should be individualized, tailored to the patient's health problems or psychotherapeutic and physiological needs. The nursing care plan guides each nurse to intervene in a manner congruent with patient needs and goals and provides outcome criteria for measurement of progress.

In implementing nursing care plans, nurses should use a wide range of interventions designed to promote, maintain, and restore mental and physical health. Nursing interventions should be:

- based on current knowledge and principles of relevant treatment modalities,
- selected based on the needs and/or desires of the patient,
- selected according the nurse's level of practice, education, and certification,
- implemented within the established plan of care,
- performed in a safe, ethical and appropriate manner,
- adapted to changing patient needs and situations, and

• reviewed in order to understand the progress or lack of progress toward identified goals.

The following aspects of nursing care should be considered when developing and implementing a nursing care plan:

1. *Therapeutic relationship*

The development of a therapeutic relationship between the nurse and the patient promotes patient engagement and motivation for self-care. It contributes to patient cooperation with nursing and treatment regimes.

2. Counselling

The counselling role is part of nursing practice and reinforces healthy behaviour and interaction patterns, helps the patient to modify or discontinue unhealthy ones and promotes the patient's personal and social integration.

3. *Promoting self-care activities*

The nurse needs to ensure that:

- the self-care interventions assist the patient in meeting his/her unique needs and assuming personal responsibility for activities of daily living,
- the self-care activities of daily living are appropriate for the patient's age, developmental level, gender, sexual orientation, ethnic/social/cultural background, and education,
- self-care interventions are aimed at maintaining and improving the patient's functional status, and
- patients are referred to community/extended family/social support network resources, as necessary.

4. *Psychobiological interventions*

Psychobiological interventions provide the foundation for the treatment regimen and nurses are in an excellent position to support the use of such interventions. Nurses should explore patients' feelings and concerns related to:

- illness and diagnosis,
- prescribed medication, and
- hospitalization.

5. *Health education*

Patients need to understand their medical as well as their nursing diagnosis, assessments, interventions and their side effects, and they must develop, as much as possible, self-sufficiency in caring for themselves.

6. Assigning a 'named nurse'

A 'named nurse' is responsible to arrange and coordinate all the needed health care services at all of the necessary points of service, and acts as the main point of contact between the patient/caregivers and the healthcare team. Assigning a 'named nurse' is particularly helpful for patients with multiple problems or with a long length of hospital stay.

In writing the nursing care plan, the nurse should think about:

- Who is it for? (the patient and other members of nursing team)
- What are the short term and long term goals?
- How can you determine that you have reached the goals? (measurable)
- How will the patient know he/she has achieved the goals? (realistic)
- Who is involved in the delivery of the care? (The patient (and family), yourself, the nursing team, medical staff, multidisciplinary team, labs, investigations, procedures etc)
- How quickly is the problem likely to change?
- How soon will you need to re-evaluate the plan?
- How many problems are there?
- Which order of priority?

The nursing care plan should also:

- act as an educational programme related to the patient's health problems, treatment, and selfcare activities,
- indicate responsibilities of the nurse and the patient, and other case team members if relevant,
- give direction for patient-care activities that can be delegated by the nurse to other care providers,
- provide for appropriate referral and case management to ensure continuity of care,
- establish a process for discharge planning, and
- employ a systematic strategy to monitor the patient's health status and to evaluate and revise the care plan.

A sample nursing care plan is presented in Appendix D.

3.2.4 Implementation of Nursing Care Plan

The nursing care plan should be presented to the multidisciplinary case team for discussion and affirmation on the appropriateness of the planned interventions. The nursing care plan should be implemented by all nurses who care for a particular patient. Hence all nursing staff should be familiar with the care plan for each patient and should ensure that the activities described in the nursing care plan are carried out during each nursing shift.

Implementation of the nursing care plan should be documented in a Nursing Patient Progress Report (Appendix E).

On the Progress Report nurses document the administration of prescribed care and treatment, the patient's response to that care and treatment, the patient's emotional adjustment, health education given to the patient, and any other related patient care information. Nurses chart a progress report at the end of each shift worked.

3.2.5 Evaluation of the Nursing Care Plan

Nursing care is a dynamic process involving change in the consumer's health status over time, giving rise to the need for new data, different diagnoses, and modifications in the plan of care.

As new problems arise they should be entered onto the Problem Index List and related goals and activities to address the problem should be entered onto the Nursing Care Plan. Similarly, if a problem resolves this should be recorded on the Problem Index List to indicate that goals and activities related to that particular problem are no longer necessary.

The nursing care plan should be regularly reviewed and modified as necessary. The following questions should be considered:

- 1. Have the goals of the nursing care plan been achieved?
- 2. If not, why not? Were the goals realistic? Was the patient committed to the goals? Was there enough time to achieve the goals? Did other problems arise that impeded progress? Were interventions consistently performed as prescribed?
- 3. Have any new problems developed that have not been addressed?
- 4. Could more have been achieved than originally hoped for? Should new goals be set?

3.3 Communication

Every hospital should establish clear guidelines for both verbal and written forms of communication that involve nurses.

- a) *Written communication:* This includes the written documentation of all findings, progress, care and treatment provided to the patient by the medical team, including the nurses. A written record permits immediate access to all information related to the patient's care and facilitates the exchange of information between all members of the case team.
- b) *Verbal communication*: For nurses, this entails the act of reporting and conversing with other members of the health care team regarding the patient's progress and status.

3.3.1 Written Communication: Medical Record Documentation

The following items are used by nurses to document a patient's course of treatment. It is the nurse's responsibility to ensure that a patient's medical record is complete, containing all the necessary forms in the proper sequence. The forms are intended to guide the entire medical team and to become a permanent record maintained in the patient's medical record.

- 1) *Clinical forms:* Nurses must record patient data and findings on clinical forms that include:
 - Routine Observation Sheet
 - Intravenous Fluid Administration Record,
 - Fluid Balance Chart
 - Medication Administration Record

Samples of the above forms are presented in Chapter 3 Medical Records Management, Appendix B.

It is the nurse's responsibility to chart on the appropriate form and to make sure that the information is timely and accurate.

- 2) Nursing Process Forms: As described in Section3.2 above, nurses should record all steps in the nursing process on the appropriate forms:
 - Nursing Admission Assessment Form (Appendix A)
 - Nursing Problem Statement List (Appendix B)
 - Nursing Care Plan (Appendix D)
 - Nursing Patient Progress Report (Appendix E)

3.3.2 Verbal Communication

- Reporting to Physicians: Whenever a patient's status changes, the physician should be informed. The status should be reported in an objective manner, allowing for the physician's recommendation(s). Any physician's order should then be documented in the medical record by the nurse as a verbal order. Verbal orders from a physician to a nurse must be told to 2 nurses simultaneously in order to ensure that instructions are clearly understood and verifiable. The transcribed order should be signed by the physician within 24 hours.
- 2) Nurse-to-Nurse Report: During a shift change, the off-going nurse should verbally report to the on-coming nurse concerning the status of each patient using a standard format. The report consists of a general synopsis of the patient, any significant events during the shift, as well as a progress report of the work completed. Updates should be provided on IV administration, tests done or pending, abnormal laboratory findings, and general patient progress.

Follow the format below for performing nurse-to-nurse shift report.

- Patient name
- Patient age
- Reason for seeking care/Chief complaint
- Patient diagnosis: present all current diagnoses
- Current IVs
- Tests completed or pending
- Abnormal lab findings: do not report normal findings
- Events during the shift: synopsis of what occurred during the shift
- Patient progress: description of patient's response to any treatment or events that occurred during the nurse's shift, including the patient's progression towards discharge
- 3) Nurse to Junior Nurse/Health Assistant/Student Report: At the start of each shift, the nurse is responsible for reporting to the junior nurse/health assistant/student regarding patient(s) under his/her care. Specific care information related to bathing, ambulating, eating, toileting, and other similar concerns should be discussed. A written checklist of tasks to be completed should be given to the junior nurse/health assistant/student.

Use the following format for performing a nurse to junior nurse/health assistant/student report. It is important that the assigned tasks are specific to ensure that the junior nurse/health assistant/student is able to accomplish them during their shift.

- a) *Vital Signs:* Describe the frequency required for assessing a patient's vital signs. Is it necessary to assess them:
 - Once a shift,
 - Twice a shift,
 - Every hour, or
 - Other unique needs.
- b) *Bathing*: Describe the level of assistance the patient requires for bathing and changing linens. Is the level:
 - Complete assistance during both bath and bed linen changing,
 - Required assistance when bringing bathing materials to the patient who must remain in the bed while linens are changed,
 - Required assistance when bringing bathing materials to the patient who is capable of getting out of the bed while the linens are changed, or
 - No assistance necessary because the patient is independent during bathing and the patient is capable of getting out of bed while the linens are changed.
- c) *Activity*: Describe the activity level of the patient as follows:
 - Bed rest: how often does the patient need to be turned?
 - Out of bed (OOB) walking: is the patient OOB at will or does he/she need assistance? If assistance is required, please inform the aide of the frequency of OOB.
 - Out of bed to chair: what is the level of assistance required to get OOB to a chair? If assistance is required, please inform the aide of the frequency that this should occur and for how long.
- d) *Toileting:* Describe the level and type of assistance the patient requires to perform the following (if applicable):
 - Out of bed to the bathroom,
 - Offer the bedpan to the patient every _____ (amount of time),
 - Patient uses the urinal,
 - Patient has a Foley catheter, and/or
 - All patient output should be recorded and communicated.
- e) *Diet:* Describe the patient's type of diet and the assistance they require:
 - Set up the food only,
 - Set up and cut the food,
 - Feed the patient, and/or
 - Record all input.

- f) Safety: Describe how often the aide needs to make rounds on the patient.
- **4)** *Patient Education:* It is important to educate the patient, his/her spouse/partner, and his/her family about the illness and course of treatment being provided as a preventative and/or curative measure. It informs and empowers the patient, thus improving his/her ability to achieve a higher level of wellness and ability to manage specific needs. Efforts to educate the patient should be realistic, relevant and provide time for patient practice and opportunity to seek clarification.

Patient education should also incorporate family members and other caregivers who often play strong role in facilitating patient care in coordination with medical staff. One suggestion to improve the family and staff relationship is through the use of a Patient Caregiver Contract, whereby the relationship is formalized between families/caregivers and medical staff (A sample Patient Caregiver Contract is presented in Appendix F). This allows patient families to act as "aides" and provide certain services (feeding, bathing, ambulating, bringing fresh sheets and food, etc.) within guidelines that are acceptable to medical staff. Such a formalized process can greatly improve the patient's quality of care. It is also important to ensure that such a contract is fully understood by both the patient and caregiver prior to signing.

3.3.3 Physician Orders

Physicians provide both written and verbal forms of communication in order to direct a patient's care. It is the nurse's responsibility to ensure that a physician's orders and plan for a patient's care are put into action.

Physician's orders should be recorded by the physician on a Physician Order Sheet (See *Chapter 3 Medical Records Management,* Appendix B, item 8). When the order is carried out this should be documented on the order sheet, including the date and time that the order was carried out, and the signature of the person confirming that the order has been completed.

All physician orders, even verbal orders, must be documented.

Any/all verbal orders from a physician must be given to two (2) nurses simultaneously in order to ensure verbal instructions are clearly understood and verifiable. The physician should be clear about which nurse (of the two) is to implement his/her verbal orders. Once received, the order is immediately transcribed into the Physician Order Sheet by the implementing nurse. The nurse who is writing the order completes the transcription by writing "verbal order given by (the name of the physician)/the nurse's signature." All verbal orders are to be reviewed and co-signed by the physician within twenty-four (24) hours.

3.4 Medicines' Management

It is the nurse's responsibility to safely administer the medications to a patient as ordered by the physician. Nurses should be aware of the desired outcome, dosage, preparation and side effects of each prescribed medication.

Procedure

- 1) *Physician Order*: A physician's order is required for the administration of all medications. There are several types of orders:
 - *Standing order:* To be carried out as specified until it is canceled by another order (including PRN orders).
 - *Single order:* To be carried out only once, as directed.
 - *Stat order:* To be carried out immediately.
 - *Verbal order:* An order that has been communicated through the phone or verbally. These orders are reserved for times when the physician is unable to reach the patient's medical record. Verbal orders can only be taken by a nurse, who must immediately transcribe the verbal order into the Physician Order Sheet. Verbal orders from a physician to a nurse must be told to 2 nurses simultaneously in order to ensure that instructions are clearly understood and verifiable. *All verbal orders must be co-signed by the physician within 24 hours*.

Physician orders need to include the following information when they are transcribed into the Physician Order Sheet in order to be considered complete. Orders are not to be carried out unless all of these elements are present. If an element is missing, the physician who issued the order should be called to complete the order.

- *Date and time*: When the order was written.
- *Full name of the medication:* Either the chemical or generic name can be used without abbreviations.
- *Dosage*: Specify the amount of medicine to be given. Abbreviations are discouraged.
- *Concentration*: If the medication is to be diluted in IV fluid, the amount and type of diluent/s ordered.
- *Duration*: If the medication is to be given over a period of time, such as IV administrations, the duration of the infusion ordered should be recorded by the physician. Nurses should then translate and document the duration of infusion into number of (micro) drops per minute.
- *Time and frequency:* The time of day and how often a medication is to be given, as ordered by the physician. The nurse who transcribes the order will identify the specific time that the medication is to be given by following a standardized schedule.
- *Route:* For medications that can be given in several ways, the route of administration needs to be clearly written.
- *Physician Signature:* Is to be clearly written immediately following the order.
- 2) *Transcribing the Order:* Medication orders are transcribed by the nurse from the physician order sheet to the Medication Administration Record. The nurse will document that the order has been transcribed by putting a signature next to the order.

The nurse is responsible for questioning the physician regarding any medication order or element of an order that is in his/her judgment an error. The perceived error may be in the drug ordered, dosage, route, time and/or frequency to be given.

3) *Administration of Medications:* The following steps should be followed by the nurse when administering medications. Two processes are outlined which differ based on whether the medication is stored at the patient's bedside or in a central cabinet. There are three distinct steps to administering medications: preparation, administration and documentation. Each step requires safety checks to ensure that the right drug is given to the right patient.

Medications at the Bedside

- The nurse brings the Medication Administration Record to the patient's bedside.
- The nurse checks the prescribed medication from the patient's bedside to the Medication Administration Record *three times* to ensure that it is the proper medication:
 - 1. When reaching for the container of medication,
 - 2. Immediately prior to the pouring the medication, and
 - 3. When returning the container to its proper location.

Medications in a Cabinet

- The nurse brings the Medication Administration Record to the cabinet.
- The nurse checks the prescribed medication from the cabinet to Medication Administration Record *three times* to ensure that it is the proper medication:
 - 1. When reaching for the container of medication,
 - 2. Immediately prior to the pouring the medication, and
 - 3. When returning the container to its proper location.
- Medications should be prepared one patient at a time. Each medication for a single patient should be organized into a group for that individual patient, prior to dispensing medications for another patient.
- When medications are to be given to more than one patient, the medication cup/container should be clearly marked with each bed number.
- Before administering medication, the nurse should cross-reference the bed number (on cup/container) with the bed number and name listed on the Medication Administration Record.
- 4) Administration:
 - The nurse who prepares the medication should always be the nurse who administers the medication.
 - During administration, medications should never be out of the sight of the administering nurse.
 - It is the nurse's responsibility to confirm that they are giving the correct drug to the correct patient. When the nurse arrives at the patient's bedside, the nurse must confirm using two methods that the patient is properly identified.
 - Check the name on the Medication Administration Record with the patient's posted name.
 - Ask the patient to repeat their name.

- Once the correct patient is verified, administer the medication. If it is an oral medication do not leave it for the patient to take later. The nurse needs to observe all medications being taken to assure that the medication has been adequately administered.
- If a patient refuses a medication, the physician should be notified and it should be clearly documented in the medical record.
- 5) *Documentation:* Immediately following the administration of a patient's medication, the nurse who administered the medication must document on the Medication Administration Record that the medication has been given. The nurse must document the time that each drug was given and then sign and initial the record.

Section 4 Implementation Checklist and Indicators

4.1 Assessment Tool for Operational Standards

In order to determine if the Operational Standards of Nursing care standards have been met by the hospital an assessment tool has been developed which describes criteria for the attainment of a Standard and a method of assessment. This tool can be used by hospital management or by an external body such as the RHB or FMOH to measure attainment of each Operational Standard. The tool is presented in Appendix E of *Chapter 13 Monitoring and Reporting*.

4.2 Implementation Checklist

The following Table can be used as a tool to record whether the main recommendations outlined above have been implemented by the hospital. This tool is not meant to measure attainment of each Operational Standard, but rather to provide a checklist to record implementation activities.

		Yes	No
1.	There is a system for coordinating and managing nursing staff.		
2.	Job descriptions for nursing positions have been developed.		
3.	A nursing workforce plan has been developed.		
4.	The hospital's nurse staff requirements are defined in the nursing workforce plan.		
5.	Nurse to patient ratios for each service area are defined in the nursing workforce plan.		
6.	There is a written policy for the nursing process.		
7.	Nurses complete nursing admission assessments for inpatients.		
8.	Nurses complete a nursing care plan for inpatients.		
9.	There are written guidelines for nursing verbal and written communication.		
10.	There are written guidelines for medication administration.		

Table 1.	Nursing	Care	Standards	Checklist
	- tur sing	Curt	Standarus	Checkinse

4.3 Indicators

In addition, the following indicators may be monitored on a regular basis to assess the effectiveness/outcomes of implementation of the recommendations provided in this chapter.

S/N	Indicators	Formula	Frequenc	Comment
			У	
1.	Pressure sore incident rate	Number of pressure sores/number of admissions*100	Quarterly	HMIS
2.	Attrition rate of nursing staff	Total number of nurses leaving/total number of nurses at beginning of reporting period * 100	Quarterly	HMIS
3.	 a) Cumulative number of nursing staff who received in service training b) % of nursing staff who received in service training 	 a) Total number of nursing staff with in-service training from the beginning of year to the end of reporting period b) Cumulative number of nursing staff who received training/ Total number of nurses at beginning of year * 100 	Quarterly	HMIS
4.	 In patient satisfaction survey : % of respondents who answer 'always or usually' to the following questions: a) During this health facility stay, how often did <u>nurses</u> treat you with courtesy and respect? b) During this health facility stay, how often did <u>nurses</u> listen carefully to you? c) During this health facility stay, how often did <u>nurses</u> explain things in a way you could understand? 	Total number of inpatients who respond 'always or usually' to the questions listed/ Total number of inpatients respondents*100	Biannual	Survey tool presented in Appendix F of <i>Chapter 12 Quality</i> <i>Management.</i>

Table 2.Nursing Care Standards Indicators

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Appendices

Chapter 6 Nursing Care Standards

Appendix A Sample Nursing Admission Assessment Form

Nursing Admission Assessment Form							
Please Complete or Affix Label	HOSPITAL						
Name: Father's Name:							
Address: City: Sub city:							
Kebele: House no.	Ward:						
MDN. Age.	Bed No.:						
Tal No :							
Persons	l Details						
\square Male \square Female	Nationality: Ethnic group:						
Mr / Mrs / Miss / Ms / Other	Language:						
Marital Status:	Religion:						
Disabled: 🗆 Yes 🗖 No	Occupation:						
Please detail any existing disability that the patient may have	Previous Occupation if Retired:						
including learning disability and incorporate into nursing care							
and treatment plan.							
Next	of kin						
1. Name:	2. Name:						
Relationship:	Relationship:						
Address: Tel No.: City: Sub city:	Address: 1el No.: City: Sub city:						
Kabala: House no	Kabala: House no						
Practi	tioners						
Admission Date: Time:							
Admitted / Transferred from:							
Consultant/Case Team Leader:							
Named Nurse:							
Reason for Admission / Referral:							
Presenting Symptoms:							
Medical Diagnosis / Surgical Procedure:							
Relevant Me	edical History						
Please detail any existing disability that the patient may have, inc.	lude learning disability and incorporate into Nursing Care and						
Treatment Plan.							
<u> </u>							

	Perception								
Patien	t's understanding of the reason of adm	ission:							
Family	Family or next of kin's understanding of the reason for admission:								
		.	<u>a</u> 1.	T 1 ' ' 1					
	Medication	Patient is	Currently	l'akıng (ıncl	. "over th	e count'')			
	Drug name	Dose	Freq.		Drug na	ime		Dose	Freq.
			Known A	llergies					1
				0					
						G 1			
						Special of Special of Yes	liet requ □ No	ired:	
NAM	E OF ACCEPTING/RECEIVING	NURSE:			DATE:		TIM	1E:	
SIGN	ATURE AND DESIGNATION O	F ADMIT	TING NUI	RSE:					
DATE	E: TIME:								
Count	ersign if applicable:								
	In	vestigation	n / Procedu	res at the A	dmission				
Date	Investigations	/ Procedu	res		Spec	imens	Sign	ature	Results
							<u> </u>		

Environmental & Social Assessment

Home Environment					
Number of occupants: Adults:					
Children (<= 15 yrs):					
\square No Permanent Home					
Comments:					
		_			
Toilet Facilities		Electrical Supply			
□ Pit latrine (Single household)	□ Flush toilet	Does the household have mains electricity? \Box Yes \Box No			
□ Pit latrine (Shared/Communal)	\Box None of above	Does the household have solar power? \Box Yes \Box No			
	W	Vater Supply			
□ Household piped water					
Communal/Shared piped water	Dis	tance from household: km			
Collected rainwater to household					
Collected rainwater communal/sha	ared source Dist	ance from household: km			
□ Household well	Dist	anaa from household:			
\square Communal/Shared well	Dist	ance from household: km			
\square Other	DIS				
	Discharge Arranger	nents and Other Social Details			
Lives alone?	🗆 Yes 🗆 No	o Comments:			
Employed?	\square Yes \square No	Comments:			
Self-employed?	\Box Yes \Box No	Comments:			
Dependents?		o Comments:			
Is nation tindependent?		If no place state who halps with the following x			
is patient independent?		the number of times per week.			
	Cooking	week. Washing / Dressing			
	Shoppir				
	Other:	Other:			
Commonts:	-				
comments.					

1. Maintaining a safe environment						
Orientated to Person: Ye	es 🗆 No)				
Orientated to Place: \Box Ye	es 🗆 No	History of Co	onfusion: 🗆 Yes 🗆 No	Epilepsy: 🗆 Yes 🛛 No		
Orientated to Time: \Box Ye	es 🗆 No	Glasgow Coma Scale Dizziness: □ Yes □ No				
Appears Rational: \Box Ye	s 🗆 No	History of Fa	lls: □ Yes □ No			
Additional Information:						
		2.	Breathing			
Descriptor			Channing Officient in D. 1			
At risk of obstruction		\Box Yes \Box No	Breathless: at rest	y Disease: \Box Y es \Box No		
Asthma:		\Box Yes \Box No	on exertion	$\Box Yes \Box No$		
Dry cough:		\Box Yes \Box No	orthopnea:	\Box Yes \Box No		
Productive cough:		∐Yes ∐No				
Current smoker:		□ Yes □ No	Advice given to stop:	□ No		
Ex-smoker: if yes, stop dat	e:	\Box Yes \Box No	Date advice given:			
Comments.						
		3.	Circulation			
Pulse regular:	□ Yes	\square No Comments:				
Oedema present: Pedal pulses present:	∐ Yes □ Left	\square No Comments: \square Right (Tick if pre	sent)			
Blood pressure at time of			sent)			
admission:			_			
Hypo/Hypertensive:	□ Yes	□ No				
Jr Jr Jr						
Other comments:						

Patient Assessment for Activity of Living

Patient Assessment for Activity of Living

			Comm	uniont	ion 1 S	light	8		
D1: 1		1 11			1011 4. 5	orgin			
Blind:		J NO J No	ΠL	ЦК					
Partially signted:		J NO J No							
Wears glasses		J NO J No			Glassa	c/loncoc	with nationt.		\square No
Wears contact lenses:		J INO	пт	– D	Glasse	s/lenses	with patient.		
Has cataracts		J NO	ЦL						
Other comments:									
		C		•	<i>7</i> 11	•			
		C	ommu	inicatio	on 5. He	earing			
Hearing impairment:	□ Yes	s 🗆 No)		Profe	oundly de	eaf: \Box Yes \Box No	🗖 L	\Box R
Hearing aid with patient:	\Box L	\Box R			Lip-r	eads:	\Box Yes \Box No		
Hearing aid in working orde	r: 🛛 Yes	\Box No)		Sign	language	$\square Yes \square No$		
If no action taken:	\Box L	\Box R							
	\Box Yes	\Box No)						
Other comments:									
	C	Commui	nicatio	on 6. Sp	peech a	nd langu	uage		
Native Language:						Larvng	ectomy:	□ Yes	□ No
Speaks Amharic:	[□ Yes	\square N	0		Trache	ostomy:	□ Yes	□ No
Understands Amharic:]	□ Yes		0		Comm	unication aids given:	\Box Yes	\square No
				-			8		
		1 · 6	. 1	• 1.0	• 1.• ·	、 、			
Other comments (special new	eds e.g. : dy	yslexia ð	k learn	ling diff	iculties)::			
			7 D	,•	1 1 • 1				
			7. Ea	ting an	d drink	ing			
							Diet Required:		
							Nil by mouth:	\Box Yes	🗆 No
Difficulty swallowing	□ Yes	\square No					P.E.G/N.G. feed:	□ Yes	🗆 No
Difficulty chewing	\square Yes	\square No					Fluids only:	□ Yes	🗆 No
Wears dentures:	Π Yes						Pureed diet:		
Dentures with patient:	\square Yes	\square No					Soft dist:		
Dentares with patient.							Sont diet:		
Consumes alashal:		\square No					Vegetarian/vegan:	⊔ Yes	∐ No
Consumes alconor.							Halal (Muslim):	\Box Yes	□ No
How many units per day:							Fasting:	□ Yes	🗆 No
				_			Diabetic diet:	□ Yes	🗆 No
1. Ask the patient: Have you lost weight recently? \Box Yes \Box No					Salt free [.]	□ Yes	🗆 No		
2. Have you had any change in appetite or food intake? \Box Yes \Box No				∐ No	How controlled				
3. Is a special diet required?				[⊥ Yes	⊔ No	Supplemente:		
Other comments:							Supprements:		
							Please specify:		

Personal Hygiana and Drassing					
Condition of Skin:					
Condition of Hair/Scalp:					
Condition of Mouth:					
Other comments:					
9 Elimination-Urine	10 Elimination-F	Bowels			
	Usual habits:				
Urine elimination problem?: \Box Yes \Box No	Colostomy present?:	□ Yes □ No			
Catheter: 🗆 Yes 🗆 No	Diarrhoea: 🗆 Yes 🗆 No				
Type: Size:	Frequency:				
Date of insertion:					
Dysuria: Frequency:	Constipation:	□ Yes □ No			
Urgency: Urinalysis:	Incontinence:	□ Yes □ No			
Stress incontinence: Yes No					
How is incontinence being managed?					
11.1	Mobility				
Is the patient able to walk on his/her own? \Box Yes \Box No	D If No, restricted by:				
Aids used: \Box Ves \Box No. If yes specify	Supervision required:				
Comments:					
12. Psych	ological Care				
Altered body image: Yes No If No, restricte	d by:				
	5				
Anxiety and Emotional requirements:					
Other:					

Patient Assessment for Activity of Living

	13. Spiritual/Dying					
Religion: see Personal Details		Anxieties/Issues:				
Would patient like to see:						
Cultural/Religious Repre	sentative: □ Yes □ No					
Please state if yes:						
	1/	L Slooming				
	14	. Steeping				
Usual pattern:						
Sleep interrupted by:		Required night sedation:				
Pain:						
Anxiety						
Other		No. of pillows used:				
Diale Factory	15. Cardiov	Advice civer:				
RISK Factor.						
Smoking:	LI Yes LI No	Smoking cessation				
Overweight:	□ Yes □ No	Low fat diet, reduce alcohol intake, and increase physical activity.				
Hypertension: B/P > 140/90	□ Yes □ No	Weight loss, reduce salt intake, stress management, and stop smoking.				
		Importance of good B/P control and compliance with medication.				
Diabetes:	□ Yes □ No	Importance of good diabetic control, regular attendance at clinic.				
Raised Cholesterol:	□ Yes □ No	Diet and exercise.				
Serum cholesterol level:	Date:	Low cholesterol diet, use of statins.				
Comments:		Comments:				
Name of Assessing Nurse:		Date: Time:				
Signature and Designation of A	ssessing Nurse:	Date: Time:				
Countersign if applicable:						

Appendix B Sample Nursing Problem Index List

Nursing Problem Index List						
Please Co	omplete or Affix Label		HOSPITAL			
Name:	Father's Name:					
Address: City:	Sub city:	Ward				
Kebele:	House no.	Bed No.:				
MRN:	Age:					
Tel. No.:						

Nursing Problem Index List

Date Identified and Time	No	Problem	Signature and Designation	Date Resolved and Time	Signature and Designation

Nursing Problem Index List

Date Identified and Time	No	Problem	Signature and Designation	Date Resolved and Time	Signature and Designation

Appendix C 2009–2011 North American Association of Nurses Approved Nursing **Diagnoses**

Activity/Rest

Activity Intolerance Activity Intolerance, Risk for Activity Planning, ineffective Disuse Syndrome, risk for Diversional Activity, Deficient Fatigue Insomnia Lifestyle, sedentary Mobility: Bed, Impaired Mobility: Wheelchair, Impaired Sleep, Readiness for Enhanced Sleep Deprivation Sleep Pattern Disturbed Transfer Ability, Impaired

Circulation

Autonomic Dysreflexia Autonomic Dysreflexia, risk for Bleeding, risk for Cardiac Output, decreased Intracranial Adaptive Capacity, decreased Perfusion, ineffective peripheral tissue Perfusion, risk for decreased cardiac tissue Perfusion, risk for ineffective cerebral tissue Perfusion, risk for ineffective gastrointestinal Perfusion, risk for ineffective renal Shock, risk for

Ego Integrity Anxiety [specify level] Anxiety, death Behaviour, risk-prone health Body image, disturbed Conflict, decisional (specify) Coping, defensive Coping, ineffective Coping, readiness for enhanced Decision making, readiness for enhanced Denial, ineffective Dignity, risk for compromised human Distress, moral Energy field, disturbed Fear Grieving Grieving, complicated Grieving, risk for complicated Hope, readiness for enhanced Hopelessness Identity, disturbed personal Post-Trauma Syndrome Post-Trauma Syndrome, risk for Power, readiness for enhanced Powerlessness Powerlessness, risk for Rape-Trauma Syndrome Relationships, readiness for enhanced Religiosity, impaired Religiosity, ready for enhanced Religiosity, risk for impaired Relocation Stress Syndrome Relocation Stress Syndrome, risk for Resilience, impaired individual Resilience, readiness for enhanced Resilience, risk for compromised Self-concept, readiness for enhanced Self-esteem, chronic low Self-esteem, situational low Self-esteem, risk for situational low Sorrow, chronic Spiritual Distress Spiritual Distress, risk for Spiritual Well-being, readiness for enhanced

Elimination

Bowel Incontinence Constipation

Constipation, perceived Constipation, risk for Diarrhea Motility, dysfunctional gastrointestinal Motility, risk for dysfunctional gastrointestinal Urinary Elimination, impaired Urinary Elimination, readiness for enhanced Urinary Incontinence, functional Urinary Incontinence, overflow Urinary Incontinence, reflex Urinary Incontinence, risk for urge Urinary Incontinence, stress [Urinary Incontinence, total-retired 2009] Urinary Incontinence, urge Urinary Retention [acute/chronic]

Food/Fluid

Breastfeeding, effective Breastfeeding, ineffective Breastfeeding, interrupted Dentition, impaired Electrolyte Imbalance, risk for Failure to Thrive, adult Feeding Pattern, ineffective infant [Fluid Balance, readiness for enhanced [Fluid Volume, deficient hyper/hypotonic] Fluid Volume, deficient [isotonic] Fluid Volume, excess Fluid Volume, risk for deficient Fluid Volume, risk for imbalanced Glucose, risk for unstable blood Liver Function, risk for impaired Nausea Nutrition: less than body requirements, imbalanced Nutrition: more than body requirements, imbalanced Nutrition: risk for more than body requirements, imbalanced Nutrition, readiness for enhanced Oral Mucous Membrane, impaired Swallowing, impaired

Hygiene

Self-care, readiness for enhanced Self-care Deficit, bathing Self-care Deficit, dressing Self-care Deficit, feeding Self-care Deficit, toileting Neglect, self

Neurosensory

Confusion, acute Confusion, risk for acute Confusion, chronic Infant Behavior, disorganized Infant Behavior, readiness for enhanced organized Infant Behavior, risk for disorganized Memory, impaired Neglect unilateral Peripheral Neurovascular Dysfunction, risk for Sensory Perception, disturbed (specify: visual, auditory, kinaesthetic, gustatory, tactile, olfactory) Stress Overload

Pain/Discomfort

Comfort, impaired Comfort, readiness for enhanced Pain, acute Pain, chronic

Respiration

Airway Clearance, ineffective Aspiration, risk for Breathing Pattern, ineffective Gas exchange, impaired Ventilation, impaired spontaneous Ventilatory Weaning Response, dysfunctional

Safety Allergy Response, latex

Allergy Response, risk for latex Body Temperature, risk for imbalanced Contamination Contamination, risk for Death Syndrome, risk for sudden infant Environmental Interpretation Syndrome, impaired Falls, risk for Health Maintenance, ineffective Home Maintenance, impaired Hyperthermia Hypotherma Immunization Status, readiness for enhanced Infection, risk for Injury, risk for Injury, risk for perioperative positioning Jaundice, neonatal Maternal/Fetal Dyad, risk for disturbed Mobility, impaired physical Poisoning, risk for Protection, ineffective Self-Mutilation Self-Mutilation, risk for Skin Integrity, impaired Skin Integrity, risk for impaired Suffocation, risk for Suicide, risk for Surgical Recovery, delayed Thermoregulation, ineffective Tissue Integrity, impaired Trauma, risk for Trauma, risk for vascular Violence, [actual/] risk for other-directed Violence, [actual/] risk for self-directed Wandering [specify sporadic or continual]

Sexuality

Child-bearing Process, readiness for enhanced Sexual Dysfunction Sexuality Pattern, ineffective

Social Interaction Attachment, risk for impaired Caregiver Role Strain Caregiver Role Strain, risk for Communication, impaired verbal Communication, readiness for enhanced Conflict, parental role Coping, ineffective community Coping, readiness for enhanced community Coping, compromised family Coping, disabled family Coping, readiness for enhanced family Family Processes, dysfunctional Family Processes, interrupted Family Processes, readiness for enhanced Loneliness, risk for Parenting, impaired Parenting, readiness for enhanced Parenting, risk for impaired Role Performance, ineffective Social Interaction, impaired Social Isolation

Teaching/Learning Development, risk for delayed Growth, risk for disproportionate Growth and Development, delayed Health Behaviour Health Management, ineffective self Knowledge, deficient (specify) Knowledge (specify), readiness for enhanced Noncompliance [Adherence, ineffective] (specify) Therapeutic Regimen Management, ineffective Therapeutic Regimen Management ineffective family Therapeutic Regimen Management, readiness for enhanced

Appendix D Sample Nursing Care Plan

Nursing Care Plan					
Please Complete or Affix Label				HOSPITAL	
Name:		Father's Name:			
Address:	City:	Sub city:	Ward:		
	Kebele:	House no.	Bed No.:		
MRN:		Age:			
Tel. No.:					

Nursing Care Plan

Date and Time	Problem No	Nursing assessment of identified problem and goal	Intervention/Action	Signature and Designation
Nursing Care Plan

Date and Time	Problem No	Nursing assessment of identified problem and goal	Intervention/Action	Signature and Designation

Appendix E Sample Nursing Patient Progress Report

Nursing Patient Progress Report				
	Please Con	plete or Affix Label		HOSPITAL
Name:		Father Name:		
Address:-	City:	Sub city:	Word	
	Kebele:	House no.	Bed No.:	
MRN:		Age:		
Tel. No.:				

Nursing Patient Progress Report / Evaluation

Date and Time Problem Identified	Problem No	Patient Progress Report / Evaluation	Review Date and Time	Signature and Designation

Date and Time	Problem No	Patient Progress Report / Evaluation	Review Date and Time	Signature and Designation

Nursing Patient Progress Report / Evaluation

Appendix F Patient Caregiver Contract		MRN:	
		WARD:	BED:
I. Patient Information			
Patient's name:			
Date:	Age:	Sex:	_
Reason for Admission:			
II. Visitor Information			
Name(s) of all visitors:			
1)	Relationship to	patient:	
2)	Relationship to	patient:	
3)	Relationship to	patient:	
4)	Relationship to	patient:	

II. Official Caregiver Information

Name(s) of all patient family member(s), close relative(s) or friend(s) who is/are responsible for patient care. Cannot exceed 2 individuals per patient.

1)	Relationship to patient:
2)	Relationship to patient:

III. Hospital Visiting Hours and Regulations:

 Official Caregivers:
 24 hours a day

 Visitors:
 1:30 - 2:30 (ET)
 / 7:30am - 8:30am (GT)

 5:30 - 7:30 (ET)
 / 11:30am - 1:30pm (GT)

 11 - 2
 (ET)
 / 5:00pm - 8pm (GT)

Official and Non-official Caregiver Regulations:

In the best interest of all patients, staff and visitors, a maximum of TWO visitors are permitted to see a patient at *any one time* (children under 8 years old not included; however all children must be accompanied by an adult). Caregivers and visitors are not permitted to damage and/or take possession of hospital property or equipment. Official caregivers will be held responsible in the event that hospital property or equipment is damaged or stolen. Visitors and official caregivers will be removed from the ward immediately if they interfere with the medical and non-medical staff's ability to perform their jobs, or if they threaten the security of the staff, patients or visitors.

IV. Role of Official Caregivers:

1) To work with ward medical and non-medical staff (cleaners, hospital administrators) in a cooperative and respectful manner

- 2) To undergo a brief orientation to the ward upon patient admission (including basic infection prevention training and introduction to facilities available for caregiver use)
- 3) To supply ordered medication (if paying patient)
- 4) To change patient bed sheets
- 5) To change patient bedpan in designated area
- 6) To use toilet and shower properly and clean messes made by self or patient
- 7) To dispose of liquid and solid waste separately and in provided containers
- 8) To cooperate with cleaning staff in order to maintain cleanliness of the patient's room and ward hallways
- 9) To exchange time in the ward and duties ONLY with other official caregivers
- 10) To assist in minimizing visitors during regular visiting hours in order to avoid overcrowding and spread of infection
- 11) To inform medical staff and/or ward security guard of the patient's medical problems which are encountered in the ward
- 12) To assume responsibility for hospital fee upon patient discharge, if patient does NOT have a free paper from his/her kebele

IV. Role of Visitors:

- 1) To allow ward medical and non-medical staff (cleaners, hospital administrators) to perform their duties in cooperative, respectful manner
- 2) To undergo a brief orientation to the ward upon patient admission (including basic infection prevention training and introduction to facilities available for caregiver use)
- 3) To follow visiting hour guidelines
- 4) To respect the property of all staff, patients, and visitors
- 5) To conduct appropriate behaviour in the hospital, so as not to disturb the peace and security of all patients, hospital staff, and visitors
- 6) Should a disagreement occur, to file a formal written complaint to the head of the department ward, rather than to create a direct confrontation
- 7) To assume responsibility for hospital fee upon patient discharge, if patient does NOT have a free paper from his/her kebele.

I, the undersigned, agree to fulfill the above mentioned responsibilities and regulations as an official caregiver, in order to ensure the best possible care for the aforementioned patient(s). I understand that failure to comply with these responsibilities and regulations will result in my ejection from the ward. I also understand that the failure of non-official caregivers to comply with visiting hours and regulations will result in their ejection from the ward.

1) Print Caregiver Name: _	
Signed:	
2) Print Caregiver Name: _	
Signed:	
3) Ward Staff Witness:	
Signed:	



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Abbreviations ART Antiretroviral therapy CEO Chief executive officer CDC Centers for Disease Control and Prevention (U.S.) HBV Hepatitis B virus HCAI Health care acquired infection HCP Healthcare personnel HCV Hepatitis C virus HCW Healthcare waste HCWM Healthcare waste management HEPA High efficiency particulate air HIV Human immunodeficiency virus IMAI Integrated Management of Adolescent and Adult Illness IMNCI Integrated Management of Newborn and Childhood Illnesses IP Infection prevention MDT Multidisciplinary team Methicillin Resistant Staphylococcus Aureus MRSA OSHA Occupational Safety and Health Administration (U.S.) PEP Post exposure prophylaxis PPE Personal protective equipment PIHCT Provider Initiated HIV Counselling and Testing STI Sexually transmitted infections ΤB Tuberculosis WHO World Health Organization

Section 1 Introduction

The potential for the transmission of infections in the health care setting is high. Both those receiving and providing care in a hospital are at risk of acquiring and transmitting infections through exposure to blood, body fluids or contaminated materials.

The term most commonly used to describe the type of infection acquired in a healthcare setting is *healthcare acquired infections (HCAIs)*. Healthcare acquired infections are defined as infections that are acquired in any healthcare setting by a patient who was admitted for a reason other than that infection. The patient population is often sick, immunocompromised and more susceptible to infections and is also more likely to transmit infections to others.

Healthcare workers may be exposed to infection through the provision of care. Invasive clinical procedures and the use of instruments and sharps expose healthcare workers to needlestick injuries and in turn to potentially infectious agents.

Although minimal data is available on the prevalance of HCAIs in Ethiopian hospitals, in developing countries with health systems and resources similar to Ethiopia, studies have shown HCAI rates as high as $40\%^{1}$.

Establishing an infection prevention program with the aim of stopping the transmission of infectious agents is the only way to reduce the occurrence of HCAIs, and demonstrates a hospital's commitment to the well-being of patients and staff by minimizing the likelihood of HCAIs and assuring a clean and safe environment. Moreover, hospitals must ensure that the safety of employees, patients and visitors is upheld by preventing the acquisition and transmission of infections. The prevalence of infectious diseases such as tuberculosis, Human immunodeficiency virus (HIV), Hepatitis B (HBV) and Hepatitis C (HCV) and other infectious diseases in Ethiopia heightens the urgency for hospitals to implement a comprehensive infection program which includes:

- Effective management,
- Staff engagement and involvement,
- Provision of necessary equipment and supplies,
- Monitoring and surveillance, and
- Training.

Implementing an infection prevention and control program will a) help improve the quality of patient care and b) save valuable resources in the long-term.

This chapter outlines the key components of a comprehensive hospital infection prevention program.

¹ Admasu, K. Assessment of Infection Prevention Practices in Hospitals in Addis Ababa, 2008.

Section 2 Operational Standards for Infection Prevention

- 1. Hospital Management supports improvement efforts in infection prevention by ensuring that operational and technical capacity, financial and human resources required to adhere to infection prevention guidelines are available.
- 2. A designated group and/or individual(s) are in place to effectively implement and monitor infection prevention activities.
- 3. The hospital has an operational plan for the implementation of infection prevention activities. The plan follows national guidelines and includes guidance on infection prevention practice, procedures and materials.
- 4. Standard practices to prevent, control and reduce risk of hospital acquired infections are in place.
- 5. The hospital has an adequate plan to address transmission based precautions for staff, patients, caregivers and visitors.
- 6. The hospital ensures that equipment, supplies and facilities/infrastructure necessary for infection prevention are available.
- 7. All hospital staff are trained using standard infection prevention training materials.
- 8. The hospital provides health education to patients, caregivers and visitors, as appropriate, on infection prevention practices.

Section 3 Implementation Guidance

3.1 Management of Infection Prevention Activities

Effective management is essential to creating an effective infection prevention (IP) program. There are two tiers of management of an IP program: direct management of IP activities by a designated individual(s); as well as senior level management from the Chief Executive Officer (CEO), Senior Management Team and the Governing Board.

Hospitals should have a designated person or persons to oversee day to day infection prevention activities. Their roles and responsibilities in relation to IP activities should be described in their job description and each should be allocated sufficient time in their work schedule to fulfil their IP duties. Resources permitting, it is recommended that one person is designated to coordinate overall infection prevention activities as his/her primary responsibility. This person could be a nursing staff member, environmental health worker or any other staff member who has been trained in infection prevention and control principles.

In addition to a full-time IP designate, the hospital should also have an Infection Prevention Committee charged with overall coordination and monitoring of the hospital's infection prevention work. The committee should be multi-disciplinary and representative of the hospital staff and should have no more than 5-8 members. Committee members should be individuals who are interested and engaged in infection prevention work and are able to direct hospital staff to implement the IP program and incorporate IP strategies into their daily work responsibilities.

Hospital staff from key areas should be represented on the IP committee. Representatives from the following areas should be considered for membership on the hospital's infection prevention committee:

- Inpatient, outpatient and emergency case teams
- Environmental Health
- Nursing
- Medical
- Housekeeping
- Administration (CEO, or another senior manager)
- Pharmacy
- Laboratory
- Laundry
- Kitchen
- Instrument processing unit
- Occupational health and safety
- Quality Management (e.g. Incident officer)

In addition to the above members, it is advisable to include a representative from the hospital finance unit (head of hospital finance, accounting). It is critical that those who can commit funds and who can assure that funds are allocated to support IP functions (purchase of critical supplies, such as soap, antiseptics, disinfectants, personal protective equipment, etc.) are involved with or aware of the infection prevention committee's work. Having the appropriate people participate in the committee can empower individuals to take ownership of the program and can assist in assuring the long-term sustainability of the program.

Senior level management should support the IP committee's efforts by:

- Monitoring the IP committee's overall activities,
- Ensuring that equipment and supplies needed for IP activities are available,
- Reviewing committee reports (e.g. on healthcare acquired infections prevalence) and acting on actionable items, and
- Encouraging staff adherence to and involvement in IPC activities.

This core group of hospital leaders can guide the infection program by identifying areas of critical need, prioritizing areas to focus the program, and committing funds to make the program successful.

3.1.1 Infection Prevention Committee's Scope of Work

The infection prevention (IP) committee and infection prevention designate(s) are responsible for coordination of the hospital's overall infection prevention activities as well as development of an operational plan for infection prevention activities.

If there is a person selected to work on infection prevention activities full time, his/her responsibilities should be clearly delineated in a job description. The committee should also have a TOR that outlines the roles and responsibilities of all members. The TOR should include the frequency of meetings as well as the process for recording and reporting information. It is recommended that the committee meets regularly, at least once a month. The team should select a chairperson who will be responsible for coordinating the IP committee's activities (calling meetings, disseminating minutes etc) and a secretary to record meeting minutes. The committee's main responsibilities are to:

- 1. Define the hospital's annual infection prevention plan.
- 2. Monitor and evaluate the performance of the infection prevention program by assessing implementation of the plan and adherence to practice.
- 3. Establish a program for the surveillance of HCAIs.
- 4. Review HCAI surveillance data.
- 5. Report findings on HCAI surveillance and performance of the infection prevention (IP) program to management and other staff and identify areas for intervention.
- 6. Ensure, in collaboration with relevant staff, appropriate staff training in infection prevention guidelines.
- 7. Ensure, in collaboration with relevant staff, the consistent and adequate supply of personal protective equipment and other infection prevention supplies and equipment.
- 8. Create a sense of individual responsibility for IP amongst all staff.

3.1.2 Infection Prevention Plan

A number of national guidelines exist which outline infection prevention policies and practice including the Federal Ministry of Health's *Infection Prevention Guidelines for Healthcare Facilities in Ethiopia*. These documents should serve as a resource to hospital staff, particularly staff engaged in infection prevention activities. However, the successful implementation of an IP program requires an operational plan that defines how the national guidelines will be implemented at hospital level.

The IP plan should define the infection prevention policies of the hospital, how those policies will be implemented and by whom.

The plan should outline all of the activities to be included in the hospital's infection prevention program. At a minimum the plan should address the hospital's policies and procedures for:

- Standard precautions,
- Transmission based precautions,
- Equipment and supplies for IP activities, including personal protective equipment,
- Monitoring and evaluation of IP activities, and
- IP training.

3.2 Standard Precautions

Standard precautions are a set of recommendations to minimize the spread of infections in a health care setting. Healthcare workers should apply the principles of standard precautions with each encounter with a patient and consider every person, patient or staff, as potentially infectious or susceptible to infection.

Most HCAIs can be prevented through readily available and relatively inexpensive strategies. The elements of standard precautions include implementation of recommended practices regarding:

- Hand hygiene,
- Personal protective equipment,
- Safe work practices (such as safe injection practice, safe practice in the operating room),
- Safe house keeping,
- Disposal of health care waste management, and
- Processing of instruments and linens.

3.2.1 Hand Hygiene

Hand hygiene is one of the most important measures for infection prevention. Studies have shown that effective and consistent hand hygiene practice among hospital staff can significantly reduce the occurrence of HCAIs. Hand hygiene generally refers to hand washing, hand antisepsis (with alcohol based hand rub) and surgical hand scrub. Hand hygiene should be practiced by all healthcare providers before and after contact with a patient/client regardless of their health status. Steps of hand hygiene (hand washing and hand antisepsis) should be posted close to every sink and steps of surgical hand scrub near scrubbers' sink (See appendix A for a sample hand washing poster). To achieve the greatest compliance in hand hygiene *all staff* should be trained in proper hand hygiene techniques as part of infection prevention training program and hand hygiene facilities (such as functioning sinks, soap and water) should be in place in all patient care areas. The hospital should provide a consistent supply of clean water for all patient care areas. This can be achieved by short term provision of water using containers with improvised sinks (buckets with faucets fixed to it) and /or temporary storage tankers or long term provision of water from a reliable supply designed for the hospital.

The hospital should also provide plain soap, in the form of bar or liquid, antiseptic soap, and/or alcohol and glycerine (for preparation waterless antiseptic hand rub) for all patient care areas on a regular basis. If bar soap is used, provision of small bars and draining soap racks is recommended to prevent accumulation of contaminated liquid which harbours microorganisms. When the soap dispensers are reused they should be thoroughly cleaned before refilling; adding soap to a partially empty soap dispenser is not recommended as it leads to bacterial contamination of the soap. The major and minor operation rooms should be provided with plain soap, antiseptic soap, 2-4% chlorohexidine and 7.5-10% povidone iodine, alcohol, non-contaminated glycerine, and nail cleaners/soft brushes for surgical hand scrubs.

In procedure areas, it is advisable to install faucets with foot controls or faucets that can be closed by elbow to minimize contamination after hand washing. Disposable paper towels should be placed close to the faucets for easy access after washing hands. If it is not possible to supply disposable towels, every health care provider should have a pair of personal towels for everyday use to dry hands after washing. These personal towels should be washed and dried every day. Using common towels should be avoided as this is associated with cross contamination.

In addition to staff training, the hospital should ensure that hand hygiene is included in the health education program given to patients and caregivers.

3.2.2 Personal Protective Equipment

Personal protective equipment (PPE) can be defined as "specialized clothing or equipment worn by an employee for protection against infectious materials."² PPE protects the healthcare worker by creating a barrier between the person and any potentially infectious substance. Personal protective equipment includes: gloves, gowns, aprons, masks/respirators, protective eyewear (face shield, goggles), caps, protective shoes.

Hospitals should make certain that there is a sufficient supply of all personal protective equipment for all hospital staff. Regular supply should be provided when there is increased demand or need for replacement of worn out items. The hospital should monitor staff use of all personal protective equipment to ensure consistent utilization.

Table 1 outlines the different types of personal protective equipment that are commonly used in a hospital setting.

Personal Protective Equipment	Туре
Gloves	Heavy duty gloves
	Surgical gloves
	Examination gloves (latex or nitrile)
	Other types (ex. those worn by cleaning and laundry staff)
Protective Eyewear	Eye shield
	Goggle
	Visors
Masks	Dust mask
	Surgical
	Respirators
	Other type of face mask
Aprons	Plastic apron
	Other types
Protective shoes	Boots
	Nurse shoes
	Other protective shoes
Caps	
Face shield	

 Table 1. Personal Protective Equipment: Types

Each personal protective has a different use and application. Table 2 presents a summary of the types of PPE, when each should be worn and by whom.

² CDC, Guidance for the selection and use of personal protective equipment in healthcare settings.

Table 2.	Personal	Protective	Equipment:	Uses
----------	----------	------------	------------	------

Type of PPE	Who should wear PPE?	What is	When PPE should be worn
		Protected?	
Gloves Surgical (normal and elbow length)	Medical, nursing staff (including students)	Hands	When there is direct contact with exposed wounds, blood, body fluids, or any type of lesion.
Examination Nitrile			When drawing blood or handling medical instruments involved with invasive procedures
Latex			(catheters, IV insertion, probes, etc.).
Heavy duty			During surgical procedures
	Porters Runners/transitors Cleaning, laundry staff		When handling waste items or others contaminated surface
			When cleaning patient areas.
Protective eyewear	Medical, nursing staff (including students) Porters	Eyes	When splattering of blood or body fluids to the face is possible,
	Runners/transitors		When handling biohazardous, soiled linens,
	Cleaning, laundry staff as needed		When performing waste collection for hazardous or non-hazardous waste.
Masks	Medical, nursing staff	Mouth, nose	To protect mucous membranes of mouth and nose
Surgical mask	(including students)		when splattering of blood, body fluids, secretions
	Porters Runners/transitors		or excretions is possible
	Cleaning, laundry staff as needed		
Particulate respirators	Medical, nursing staff, cleaning staff entering isolation rooms	Mouth and nose	When entering the room of airborne infectious agents such as TB
Face shields	Medical, nursing staff (including students)	Face, mouth, nose and eves	To protect mucous membranes of eyes when splattering of blood, body fluids, secretions or excretions is likely
Plastic aprons	Medical, nursing staff	Skin,	To protect skin and clothing when splattering of
Gowns	(including students)	clothing	blood, body fluids, secretions or excretions is likely
	Porters		
	Runners/transitors		
	laundry staff as needed		
Protective shoes	Medical, nursing staff (including students)	Shoes	To protect feet when there is the likelihood of the splattering of blood, body fluids, secretions or excretions
	Porters		
	Runners/transitors		To protect from sharps injury
	Cleaning, kitchen and laundry staff as needed		
Caps	Medical, nursing staff	Hair	To protect hair when there is the likelihood of
	(including students)		the splattering of blood, body fluids, secretions or

Porters		excretions				
Runners/tr	ansitors	To reduce	spread	of	microorganisms	from
		healthcare pe	ersonnel	to pa	tient or food	
Cleaning,	kitchen and					
laundry sta	ff as needed					

Synthetic long sleeve aprons, goggles and masks should be provided to all staff involved with conducting invasive procedures. Synthetic long sleeve aprons, goggles and masks should be consistently used when splashes are anticipated.

3.2.2.1 Selecting the Appropriate PPE

When selecting what PPE should be worn, the health care worker should assess:

- I. Type of exposure anticipated
 - a. Spray or contact The health care worker should assess the type and volume of body fluid or blood that he/she may potentially encounter in caring for the patient and select appropriate PPE accordingly.
 - b. Type of isolation precaution (airborne, contact or droplet) The health care worker should also consider the level or type of isolation precaution that the patient is on.
- II. Durability and appropriateness for the task.
- III. Correct fit of the PPE.

3.2.2.2 Cleaning and disposal of PPE

Reusable PPE should be cleaned following standard cleaning procedures (see Section 3.4.4).

Equipment	Standard procedure
Apron	If reusable: clean with detergent and water, dry, disinfect with 70% alcohol If disposable: discard in appropriate waste container according to the health care facility waste management guidelines
N 95 or standard surgical mask(Use disposable mask only)	Discard in appropriate waste container according to the health care facility guidelines
Eye protector/goggles/face shield	If reusable: clean with detergent and water, dry, and disinfect with 70 % alcohol or soak in 1% hypochlorite solution for 20 minutes and rinse and dry. If disposable: discard in appropriate waste bag according to the health care facility guidelines.

Table 3	Personal	Protective	Equi	nment [.]	Cleaning	and Dis	posal Methods
I HOIC C.	1 CIDOMAI	1100000110	Lqui	pinent.	creaming		oobai metiioab

Gown	If reusable: launder as per the health care facility guidelines for soiled linen For example: launder in hot water ($70^{\circ} - 80^{\circ}$ C) if possible OR Soak in clean water with bleaching powder 0.5% for 30 minutes Wash again with detergent and water to remove the bleach. Dry in a clothes drier or in the sun.
Cap (Use of disposable cap is recommended)	If reusable: launder as per the health care facility guidelines for soiled linen For example: launder in hot water (70° - 80° C) if possible OR Soak in clean water with bleaching powder 0.5% for 30 minutes Wash again with detergent and water to remove the bleach. Caps should be dried in a clothes drier or in the sun. If disposable: discard in appropriate waste bag. Seal the bag.
Gloves (Use disposable gloves only)	If gloves are disposable it is advisable to decontaminate (by washing) before disposal. Gloves should be changed and disposed of properly after contact with every patient or contaminated item.
	Surgical gloves can be reused after reprocessing using sterilization or high level disinfection (HLD) techniques. Surgical gloves should not be reprocessed more than three times.
	Gloves are not reusable if the glove has been torn, punctured, or broken.
	Housekeeping staff should wash the exterior of their utility gloves after cleaning each patient area/room to prevent the spread of infectious agents.
	Gloves should be discarded in the appropriate waste container according to the waste management guidelines

Source: Adapted from Practical Guidelines for Infection Control in Health Care Facilities, WHO, 2003.

3.2.3 Infection Prevention in the Surgical Unit

The surgical unit is inherently a high risk area. Providers are exposed to blood and injuries from the use of sharp instruments used to perform surgeries. Patients are also at risk of acquiring infections as a result of the procedures performed. Standard precautions described above must be adhered to by all surgical unit staff. Described below are additional safe practices to minimize the risk to patients and staff in the surgical unit.

A. Organization of the Surgical Unit

The surgical unit should have well delineated areas: unrestricted, transition, semi-restricted and restricted areas. All three areas should be clearly marked.

The **unrestricted area** is the area at the entrance and is isolated from other areas of the surgical unit. Staff, patients and materials are supplied to the surgical unit through this entry point.

The **transition zone** is where staff dressing rooms and lockers are located. Staff change into their surgical attire in this area. Only authorized staff should enter this area.

The **semi restricted area** includes preoperative and recovery rooms, storage space for sterile and high-level disinfected items, and corridors leading to the restricted area. Support activities (e.g., instrument processing and storage) for the operating room can occur here. Traffic in this area should be limited to authorized staff and patients at all times. Clean, closed shoes should be worn by staff to protect against fluids and dropped items (ex. sharps). Staff working in this area should wear surgical attire and a cap. The area should be separated by doors limiting access to the restricted area of the surgical unit.

The **restricted area** consists of the operating room(s) and scrub sink areas.

- Never store instruments and other items in the operating room.
- Limit traffic to authorized staff and patients at all times.
- Keep the door closed at all times, except during movement of staff, patients, supplies and equipment.
- Scrubbed staff must wear full surgical attire and cover head and facial hair with a cap and mask.
- Staff should wear clean, closed shoes that will protect their feet from fluids and dropped items.
- Masks are required when sterile supplies are open and scrubbed staff are operating.
- Patients entering the surgical unit should wear clean gowns or be covered with clean linen, and have their hair covered.

The Unit should have a consistent and adequate supply of all surgical antiseptics of proper concentrations and personal protective equipment. The staff should be regularly inspected for the proper use of personal protective equipment and surgical antiseptics.

There should be appropriate facilities for surgical hand scrub: antiseptic soap, clean water, soft brush or sponges (not hard brushes), and 60-90% alcohol and glycerin. It is advisable to post steps of surgical hand scrub near the scrubber's sink and instruct the staff to adhere to the recommended hand scrub techniques.

Waste containers for sharps, contaminated and non-contaminated wastes should be in place and regularly checked for proper use. All the decontamination containers and bleach should be in place for the processing of contaminated items.

B. Surgical Antisepsis

The majority of post operative wound infections can be prevented through the use of surgical antisepsis procedures which include:

- Hand hygiene (as described in section 3.2.1),
- Surgical hand scrub and gloving of the surgical team, and
- Applying an antiseptic agent to the surgical site.

Surgical Hand scrub

The hospital should have a regular supply of antiseptics for hand hygiene and skin preparation for surgery. All types of antiseptics should be regularly supplied to all procedure rooms. This includes, but is not limited to, alcohol (ethyl or isopropyl) 70%, chlorohexidine2-4%, iodine preparation 3%, iodophors 7.5-10%. Hospital staff should be monitored for the proper use of each antiseptic solution.

Antiseptics should be poured into a small, reusable container for daily use. Gauze or cotton wool should not be stored in antiseptics. Antiseptic solutions should not be filled on top of the existing solution in the dispensers. Containers/dispensers with antiseptic solutions should be emptied and washed with soap and water every time before refilling. There should be an established routine schedule for preparing new solutions and cleaning containers. Reusable containers should be labeled with the date each time they are washed, dried, and refilled. Concentrated antiseptic solutions should be stored in a cool, dark area.

Surgical site preparation

Microorganisms (usually bacteria or sometimes fungi) normally found on the patient's skin can lead to postoperative wound infections. Conducting pre-operative antisepsis can help reduce risk of infection.

Before the operation, the patient's skin (at the incision site) should be washed with soap and water and cleansed with an antiseptic agent in order to minimize the number of microorganisms on the skin or mucous membrane. Do not shave hair at the operative site (if necessary, trim hair close to skin surface immediately before surgery).

C. Safer Operations

Before each operation, the surgical team performing the surgery should review how sharps will be handled during the operation. This will help minimize the number of sharps injuries. The team should try to use the "least dangerous instrument or device that will effectively accomplish the task, while at the same time minimizing the risks to the patient and surgical team."

"Hand-free" technique of passing surgical instruments should be used. Instruments should be placed in a sterile or highly disinfected kidney basin, or other small container to pass from one staff to another during the operation. Scalpel blades can be dulled when placed in a metal container. Placing a sterile cloth in the bottom of a metal container or using a plastic container can protect against the dulling of a blades. The surgeon should be verbally alerted before transferring a sharp instrument by saying "sharps".

Regular inspection should be done to ensure consistent implementation of the safe (recommended) practices.

Further guidance is presented in Appendix B (WHO Surgical Safety Checklist) of *Chapter 12 Quality Management*.

3.2.4 Infection Prevention in the Laboratory

Laboratory workers are exposed to blood, body fluids and other potentially infectious materials through the course of their work. In order to reduce the risk of occupationally-acquired infections laboratory workers must adhere to standard precautions described above.

In addition, laboratory staff should:

- always wear new examination gloves when handling blood, body fluids and/or specimens containing pathogenic microorganisms,
- not eat, drink or smoke in the laboratory,
- not store food in refrigerators used for clinical and research specimens,

- not mouth pipette, but use the appropriate mechanical device,
- never open the centrifuge while it is in motion,
- always cover the end of blood collection tubes with cloth or paper towel, or point them away from anyone's face when opening,
- decontaminate work surface with 0.5% chlorine solution daily or when contaminated with a spill,
- wear protective face shield, masks or goggles if splashes and/or sprays of blood, body fluids or fluids containing infectious agents are possible,
- wear heavy duty or utility gloves when cleaning laboratory glassware,
- use puncture-resistant, leak proof containers for sharps, and
- place infectious waste materials in appropriate waste container (see section 3.4.1.1 on waste management).

Further guidance on safety practices for the laboratory staff can be found in *Chapter 5 Laboratory Services;* section 3.9.

3.3 Transmission based precautions

Transmission-based precautions are sets of extra precautions that need to be employed when routes of the transmission are not interrupted though use of Standard Precautions alone. Each of these precautions should be used in conjunction with Standard Precautions.

The hospital should provide private rooms for patients with airborne, droplet or contact transmissions of microorganisms. All providers entering private rooms should be trained or at least well oriented about all types of precautions to apply.

Specific precautions for each type of exposure are outlined below.

3.3.1 Contact precautions

Contact precautions are intended to reduce the risk of transmission through direct and indirect contact with an infectious patient. Direct contact transmission includes skin to skin contact and the physical transfer of pathogens from an infectious patient. This includes contact during bathing, turning, and other patient care activities. Indirect contact means that the infectious patient has contaminated an object in their environment and then the object comes into contact with a potential host. Contact precautions should be used when a patient is known to have a specific disease that is easily transmitted by direct or indirect contact.

Illnesses that require contact precautions include but are not limited to the following:

- Acute diarrhoea in an incontinent or diapered patient,
- Diarrhea in adult with recent antibiotic use,
- Bronchitis or croup in infants and young children,
- History of infection with multi drug resistant organisms (except TB), and
- Abscess or draining wound that cannot be covered.

Patient Placement

- Private room
- Door may be left open
- If private room is not available, place patient in room with patient having active infection with the same microorganism, but with no other infection (cohorting)

Precautions

- Exercise strict barrier precautions for any type of contact with the patient and their surrounding environment.
- Disposable gloves must be worn by all hospital staff that enter the room/patient area. All PPE must be disposed of properly when contact with the patient is finished. If disposable gloves are not available then gloves and gowns must be placed for washing and appropriate disinfection.
- Hand washing using antiseptic soap must occur after removing gloves and other PPE.
- Medical equipment must *not* be shared between patients. If it is to be shared, then any equipment that comes into contact with a new patient must be disinfected. When cleaning, all surfaces within the vicinity of the patient must be cleaned on a daily basis. This should include cleaning bed rails, patient over-the-bed tables, night stands, floors, patient sinks, doorknobs, and other item that may have come into direct contact with the patient.
- After an infectious patient leaves or is discharged, all surfaces and linens must be properly cleaned and disinfected.
- All stationary and portable medical equipment must be cleaned. Examples include thermometers, cardiac monitors, respiratory equipment, wheelchairs, and stretchers.

Patient Transport

- Limit transport of patient for essential purposes only
- During transport, ensure precautions are maintained to minimize risk of transmission of organisms

3.3.2 Droplet precautions

Droplet precautions are intended to reduce the transmission of infectious pathogens from contact with an infectious person to the mucous membranes of the nose or mouth of a healthy individual. Infectious droplets can come from an infected person who coughs, sneezes, talks, or breathes heavily. Droplets travel up to 1 metre in distance. Thus, droplet precautions require the use of masks within 1 metre of the infected patient.

Patient Placement

- Private room
- Door may be left open
- If private room is not available, place patient in room with patient having active infection with the same disease, but with no other infection (cohorting)
- If neither option is available, maintain separation of at least 1 metre (3 feet) or more between patients

Respiratory Protection

• A mask must be worn by all hospital staff who come within 1 meter (3 feet) of patient

Patient Transport

- Limit transport of patient for essential purposes only
- During transport, patient must wear surgical mask
- Notify area/unit receiving patient in advance

3.3.3 Airborne precautions

Airborne precautions are additional precautions needed for infectious patients whose pathogens are spread by an airborne route. Typically, this applies to most patients who are known to have respiratory infections and measles.

The following are procedure specifications for airborne precautions:

Patient Placement

- Private room
- Door closed at all times

Respiratory Protection

- Masks must be worn by all hospital staff entering the room/ patient area.
 - If TB is known or suspected, a particulate respirator mask should be worn, if available.
 - If chicken pox or measles:
 - Immune persons—no mask is required
 - Susceptible persons—should not enter the room
 - \circ Mask should be removed after leaving the room and placed in a plastic bag or
- Room air should be exhausted to the outside (negative air pressure) using fan or other filtration system.
- If private room is not available, place patient in room with patient having active infection with the same disease, but with no other infection (cohorting).
- Nursing staff should be held responsible for screening visitors who are allowed to enter the patient area/room. Persons who are susceptible (not immune or vaccinated) should not enter the room or be assigned to the care of a patient known to be infected with the respective disease. However, if visitation is allowed, then the visitor is required to abide by all infection prevention guidelines and airborne precautions.

Patient Transport

• If the patient must leave the unit for diagnostic procedures, then all medical personnel involved in the medical care of the patient should be notified before the patient leaves the medical ward. This enables the medical technician and all staff to prepare and wear appropriate equipment.

- Before patient transport, the transporter should place a clean sheet over the wheelchair or stretcher.
- For patient transport, the patient should wear a facial mask to prevent the spread of airborne pathogens.

3.3.4 Cohorting

The hospital should provide private rooms for patients with airborne, droplet or contact transmissions of microorganisms. If single rooms are not available, or if there is a shortage of single rooms, patients infected or colonized by the same organism can be cohorted (sharing of room/s).

When cohorting is used during outbreaks, these room/s should be in a well-defined area (a designated room or designated ward), which can be clearly segregated from other patient care areas in the health care facility used for non-infected/colonized patients.

3.3.5 Special precautions for Tuberculosis infected patients

The prevention of tuberculosis (TB) begins with stopping hospital-acquired TB infections from patient-to-patient and patient-to-staff contact. Active TB is easily transmitted from person to person through the airborne route. TB remains a formidable threat in global health, as one third of the world is infected. Ethiopia is one of the 22 high TB burden countries which together produce 20% of the world's TB cases.³ Prevention of TB transmission within the hospital setting is important to upholding high standards for patient safety and minimizing the spread of TB in the population. Strict airborne precautions are critical when caring for TB patients, as airborne droplets of TB patients can remain suspended in the air for longer periods of time than other airborne pathogens.

Precautions should be made for:

- A patient with a positive sputum smear for mycobacteria
- A patient with a chest x-ray with findings of TB
- A patient who reports:
 - Having a cough of over 2 weeks and
 - o presents with an infiltrate x-ray and
 - reports with any one of the following:
 - known exposure to TB
 - known recent exposure to TB +PPD
 - known immunosuppressive state (HIV+, transplant patient, etc.)
 - alcohol abuse or injection drug use
 - past or current homelessness or incarceration
 - history of high fever, weight loss, and night sweats.

The following are special procedure specifications for preventing TB infections:

• If a patient is suspected, but not yet confirmed to have TB, precautions should be employed

³The Global Fund Sixth Call for Proposals Tuberculosis Prevention and Control. <u>http://www.theglobalfund.org/grantdocuments/6ETHT_1317_0_full.pdf</u>

until confirmed to be negative.

- N-95 and HEPA masks should be worn whenever coming into patient area if available (Note: Such masks are expensive and not readily available in Ethiopia, but if they become so they should be worn.)
- Before entering patient area/room, hospital staff should make sure that the masks are fittested to ensure they are secure
- For patient areas that have several patients, the N-95/HEPA masks do not need to changed UNLESS the patient is known to have MDR-TB
- Hand hygiene needs to be performed before and after contact with the mask and patient
- Patients should be advised to use a tissue when coughing or sneezing, even when no one else is in the room. This is because the droplets of TB patients remain in the air for an extended period of time.
- If a patient must exit the room for a medical procedure, the patient should be fitted with a tight fitting surgical mask or a N-95 mask, if possible. A HEPA mask cannot be used.
- Visitors must exercise similar precautions as medical staff. Visitors should use a N-95 mask if possible or a tight fitting surgical mask if one is not available.
- Any visitors that have been known to have close contact with the patient prior to admission should be tested for TB if possible and advised about symptoms that could occur.

3.4 Environmental Hygiene

3.4.1 Waste Management

By some estimates, nearly 80% - 85% of waste generated in healthcare establishments is municipal waste and 20%-15% is infectious waste. However, in most health care facilities in Ethiopia waste is not segregated according to proper segregation methods and it is difficult to quantify the type and amount of waste produced. A varying proportion of healthcare waste (HCW) requires special attention, including sharps (e.g. needles, razors, scalpels etc.), pathological waste, other potentially infectious waste, pharmaceutical waste, biological waste, and hazardous chemical waste. In addition, all waste generated under certain circumstances, such as in isolation wards and microbiological laboratories, requires special attention.

Healthcare facilities produce waste that is potentially harmful to public health and the environment. Healthcare workers, patients, waste handlers, waste pickers, and the general public are exposed to health risks from infectious waste (particularly sharps), chemicals, and other special HCW. Improper disposal of special HCW, including open dumping and uncontrolled burning, increases the risk of spreading infections and of exposure to toxic emissions from incomplete combustion. Proper management of HCW through an integrated, effective waste management system can minimize the risks both within and outside healthcare facilities.

3.4.1.1 Waste Management Procedures

Waste management is a multi-step process involving:

- Waste Minimization
- Segregation
- Handling

- Collection
- Storage
- Transportation
- Treatment and Disposal

Waste Minimization

In a proper HCW management system, the first step is waste reduction or minimization. It helps to ensure good sanitation of the health facility and the safety of workers and communities by reducing the quantity of wastes generated. Waste minimization also reduces the environmental impact by decreasing air pollution and the landfill capacity needed for disposal. Significant reduction of waste generated in health care facilities may be encouraged by implementing:

- source reduction such as by avoiding or reducing unnecessary injections,
- improved waste reuse/recycling practice,
- good management and work control practices (rational use of different reagents, medical equipments and materials, etc.), and
- proper waste segregation system.

Segregation

Segregation denotes the separation of waste into a range of classes according to its character. Waste separation reduces the quantity of waste that requires specialized treatment and care. Generally, facility waste is classified into 3 categories of waste: non-infectious, sharps waste and infectious waste.

Non-infectious waste is waste that is non-hazardous and under normal circumstances poses no health risk. It includes paper, packaging, left-over foods, boxes, glass, plastic, etc.

Sharps waste includes sharp materials and equipment that are disposed after being used. For example, used syringes, needles, lancets, blades, scalpels, broken glass, etc.

Infectious waste is a waste material that has, in part or in whole, been in contact with blood and/or body fluids. Due to the presence of blood and body fluids, such wastes are regarded to be infectious waste and can potentially transmit microorganisms to susceptible people. It includes contaminated gauze, dressings, cultures, IV lines, used gloves, anatomical wastes, placenta, tissues and the like.

Segregation must:

- take place immediately and at the source where the waste is generated; waste must never be resorted.
- ensure that proper segregation techniques are used and that infectious HCW is not mixed with non-infectious waste.

The 3 categories of HCW shall be segregated into colour coded containers as follows:

Segregation Category	Color-coded container	Non-color coded bins
Non-infectious waste/	Black bin	Bins should be labelled
General waste		non-risk waste
Infectious waste	Yellow bin	Bins should be labelled
		infectious waste
Sharp waste	Yellow safety box	The box should be labelled
		biohazard waste.

Note that in the absence of colour coded bins, it is possible to in place waste segregation system using labelled waste bins with an infectious and non-infectious symbol or text on the side of the bins. However, such bins should not be used for liquid waste.

To maximize efficiency and safety, these three waste categories must be handled and disposed of separately throughout the main steps of: segregation, collection, handling, storage, transport, treatment, and disposal.

Location of segregation containers

- Safety boxes.
 - A safety box should always be located within arm's reach of any place where an injection is given. Safety boxes may be transported on a trolley with injection equipment in patient wards.
 - Safety boxes should not be placed in high traffic areas (ex. corridors outside patient rooms or procedure rooms) where people could bump into them or be stuck by someone carrying sharps to be disposed of.
 - Don't place containers on the floor or anywhere where they could be knocked over or easily reached by a child.
- Infectious waste bins.
 - Yellow infectious waste bins should be located in all rooms where infectious waste is generated.
 - Infectious waste bins should not be located in public areas.
- Non-infectious waste garbage bins.
 - Black garbage bins should be located in all rooms where waste may be generated.
 - Garbage bins should be located in all public areas.

Figure 1. Segregation of health care waste by waste type



Source: Training Health Workers in the Management of Sharps Waste, PATH, 2005.

Handling

When handling waste, waste management staff should wear protective clothing at all times. Wearing PPE reduces risk from sharps and protects against exposure to blood and other bodily fluids, and splashes from chemicals. PPE that is recommended to be worn when handling waste includes:

- Dust mask,
- Face shield,
- Heavy duty, gloves,
- Plastic apron,
- Clothes that cover the body,
- Heavy duty, boots,
- Head cover, and
- Goggle.

See also section 3.4.3 below, Box A.

Handling sharps

- Place the syringe in a safety box immediately after use
- Do not recap, bend, or remove needles from syringe.

Handling safety boxes

- Safety boxes must be fully and properly assembled before use.
- Safety boxes must be sealed and collected when they are ³/₄ full.
- Safety boxes must never be emptied or opened.

- Put sharps containers as close to the point of use as possible and practical, ideally within arm's reach.
- Mark or label safety boxes so that people will not unknowingly use them as a garbage container or for discarding other items.
- Don't shake a safety box to settle its contents and make room for more sharps.

Handling infectious waste bins

- Infectious waste bins should be covered before collection.
- Bins should be cleaned and disinfected by using 0.5% chlorine solution for 10 minutes after emptying.

Collection

Schedule

- At a minimum, the infectious waste bins should be collected each day.
- Safety boxes should be collected when ³/₄ full or daily.
- Garbage bins should be collected each day.
- No infectious bag or bin should be collected unless it is labeled with its point of production and content.

Rotating bins

• A rotating bin system must be used if bins are collected during patient hours. When a bin or safety box is collected, an empty bin or safety box must immediately be put in its place. This practice is not necessary if bins are collected when the facility is closed, however emptied bins and new safety boxes must be in place when the facility opens.

Storage

- Each hospital should have a specially designated room for waste storage.
- The room should be used only for storage of safety boxes and infectious waste until final disposal.
- Infectious waste should not be stored for more than two days before being treated or disposed of.
- Safety boxes may be stored for up to one week before incineration or transport. The frequency of incineration should be based on the amount of sharps waste produced and on incinerator capacity.
- The storage room should be totally enclosed and locked.
- The storage room should be inaccessible to the public, animals, rodents, birds and insects.
- There should be good lighting and ventilation of storage room.

Transport

On-site transport

- A trolley, bin, or wheel barrow may be used for transporting safety boxes and bins.
- The collected waste should not be left even temporarily anywhere other than at the designated storage room.
- Containers should be covered with lids during storage and transport.
- Carts should be used for transporting bags of infectious waste within the facility.

Transport to Off-site Disposal

- The waste should be placed in rigid, leak-proof containers before being loaded.
- Containers should be covered with lids during transportation.
- When transporting plastic bags of infectious waste, care should be taken to prevent tearing the bags.
- Vehicles used for transporting infectious waste should be disinfected (0.5% chlorine solution) prior to use for any other purpose.
- The vehicles should carry adequate supply of plastic bags, standard protective clothing, cleaning tools and disinfectants to clean and disinfect in case of any spillage.
- Records should be kept to document all transport of medical waste.

Disposal

Options listed in decreasing order of preference.

- Sharps waste:
 - Incineration using either properly built brick incinerator or another incinerator,
 - Transport to off-site incinerators, if there is centralized treatment service or
 - On-site burial.
- Infectious waste:
 - On-site burial or
 - On site incineration provided that the incinerator is standard incinerator and capable of destroying such wastes.
- Non-risk waste:
 - Collection by municipal truck for landfill disposal or
 - On-site secured burning.

Incineration

All incinerators should be inspected and maintained by an environmental health professional on a regular basis, and report of the inspection should be provided to hospital management. Incineration must follow standard operating procedures, including proper loading, preheating, and control, according to the design of the incinerator. Dangerous materials must not be incinerated, including: PVC plastics, mercury thermometers, batteries, x-ray materials, aerosol cans, glass vials. Incinerator

operators must remove ash from the ash chamber and grate before using the incinerator. Ash should be put in an ash pit or waste pit.

Operator

Incinerator operators must wear protective equipment when loading and operating the incinerator. Proper equipment includes heavy duty gloves, boots, apron, and goggles. Protective equipment should be made of materials that do not easily burn or melt.

Burial of infectious waste

Burial pits must be properly constructed and protected. Pits must be above the water table (the bottom of the pit should at least be 1.5 meter away from the ground water table) and fenced to prevent access by animals and the community. Non-risk waste must not be dumped into infectious waste burial pits.

Waste Spills

Despite the implementation of preventive measures, waste spills can occur. Outlined below are procedures to manage waste spills according to type. Further guidance on managing pharmaceutical waste spills is given in *Chapter 4 Pharmacy Services*.

All those managing waste spills should wear personal protective equipment such as protective gloves, goggles and masks.

A) Infectious Waste Spills

A bleach (Sodium Hypochlorite) solution should be poured over waste and be allowed to stand for 15 minutes. After the allotted time has passed, using a dustpan and broom, the waste should be carefully brushed off the ground and into an infectious waste bag or bin. Ensure no waste remains in the broom. After waste has been removed, cover the area with bleach solution.

B) Sharps Waste Spills

A bleach (Sodium Hypochlorite) solution should be poured over waste and allowed to stand for 15 minutes. After the allotted time has passed, using a dustpan and broom, the waste should be carefully brushed off the ground and into a puncture proof container. Do not allow hands to contact sharps. Ensure no sharps fragments remain in the broom. After waste has been removed, cover the area with bleach solution.

C) Managing spills of broken thermometer and blood pressure equipment

Those handling spills of broken thermometer and blood pressure equipment should wear examination gloves on both hands. All droplets of mercury should be collected with a spoon (or similar utensil), and placed in a small, closed container for disposal or reuse. Wash or clean the area with a bleach (chlorine) solution. When process is complete, examination gloves that were used should be removed carefully and hands washed properly.

Please see Appendix B for a summary of procedures for handling and disposal of healthcare waste.

3.4.2 Linen Processing

The laundry plays a key role in the function of the hospital and in preventing the spread of infection. The unit is responsible for transporting linens from wards and other patient areas to the laundry, laundering the linens and returning items to respective areas. These procedures ensure the provision of clean linens and clothing for patients and staff alike.

Hospitals may provide the laundry service through its own staff or, or may contract out services to an outside vendor. However, regardless of how the service is provided and by whom, the hospital must ensure that standards are met and the guidance adhered to.

The hospital laundry should be equipped with a washing machine, dryer (where possible) and ironing machine. However, each hospital should first quantify the volume of work done by the laundry (average number of linens processed by the laundry per day) in order to accurately assess the number and type of machines that should be purchased. Larger hospitals with a high volume of work should have large capacity machines that can handle a high volume of linens and/or an increased number of machines Heavy-duty washers/dryers are recommended for a large hospital with high patient load.

The hospital should provide leak proof plastic containers with a lid or leak proof plastic bags at each procedure room to store soiled linens and to prevent spills from soiled linen until they are transported to the laundry. The laundry should also–at a minimum–have two separate carts to transport clean and soiled linens to and from the laundry as well as storage shelves to store clean linens before they are returned to the appropriate work area. The hospital should ensure that there is a separate folding and storage room from areas where soiled linen is presorted.

It is recommended that each unit/work area should be allotted with a designated shelf to allow separation of linens by case teams and ensure accurate management of linens. Linens should be checked regularly for holes and/or threadbare areas. Repairs, replacement or disposal should be done based on the assessment.

Work plan

Each hospital laundry should develop an operating procedure or work plan for laundry services. The plan should give guidance on the following:

- segregation of linen at the ward level,
- transport of linens to and from the laundry,
- washing procedures,
- operation of machines,
- segregation of linen by the laundry staff after washing,
- storing of linen and transport to different case teams/wards,
- registration/recording of incoming and outgoing linen, and
- staffing plan (define number and name of personnel assigned to work each shift).

Supplies

The laundry should ensure that there is always an available supply of detergent and bleach.

Procedures

Linens with visible contamination by blood, body fluids, secretions and excretions are categorized as "soiled" or "contaminated". Other used linen is termed "used". These two categories should be segregated and treated separately. Linen should be handled with minimum agitation to avoid aerosolisation of pathogenic microorganisms. Soiled/contaminated linens should be placed in leak proof bags or containers to avoid any spills or drips of blood, body fluids, secretions or excretions during transportation. Linen from an isolation room should not be sorted, shaken, or handled excessively. As a general rule all linens used in a procedure should be considered infectious, even if there is no visible contamination.

Linens should be disinfected by using hot water and/or bleach. Heavily soiled linen should be washed separately from non-soiled linens. Staff handling linens should ensure that they wear personal protective equipment such as boots, heavy-duty gloves, eye protection, aprons and masks to protect against splashes.

Wash linen (sheets, cotton blankets) in hot water and detergent, rinse and dry preferably in a dryer or in the sun. Wash wool blankets in warm water and dry in the sun, or in dryers at cool temperatures. Check all items for cleanliness and rewash if needed.

Linens being supplied to the operating rooms/theatres and high-risk areas, e.g. burns units should first be autoclaved.

Mattresses and pillows with plastic covers should be wiped over with a detergent. Mattresses without plastic covers should be steam cleaned (if available) if they have been contaminated with body fluids. Pillows should be laundered using standard procedures described above.⁴

Laundry staff should be trained and/or oriented on the laundering process.

Safety

Below are some hazards that laundry staff may face:

- Exposure to blood, body fluids, and other excretions,
- Exposure to sharps and other materials,
- Contact with chemicals,
- Noise exposure, and
- Slips/Trips/Falls.

The hospital should ensure that appropriate measures are put in place to protect staff from these and other hazards. For example, the floor should be kept clear of water, and personal protective equipment should be provided to protect laundry staff against exposure to contaminated materials. Laundry staff at minimum should have plastic aprons, heavy duty gloves, masks, protective eyewear (such as goggles) and protective shoes. Other protective equipment should be provided as necessary. Staff should also be monitored to ensure the proper use of personal protective equipment.

⁴ WHO, Practical Guidelines for Infection Control in Healthcare Facilities, 2003.

3.4.3 Housekeeping

Maintaining a clean environment is essential to providing quality care for patients. Proper cleaning will reduce the number of microorganisms in patient care areas and will help to minimize the risk of exposure to infectious agents to patients, families, caregivers, visitors and hospital staff. Hospitals may provide the housekeeping service through its own staff or, or may contract out services to an outside vendor. However, regardless of how the service is provided and by whom, the hospital must ensure that standards are met and the guidance adhered to.

Work plan

The housekeeping department should develop operating procedures or work plan on the cleaning process and schedule for each unit (clinical vs. administrative areas). Appendix C presents guidelines for cleaning procedures and schedule for the outpatient and inpatient units. The provided procedures are meant to serve as a guide for hospitals in devising their own cleaning schedule and procedures. Further detailed guidance can be found in *Infection Prevention Guidelines for Healthcare Facilities in Ethiopia*.

Supplies

The hospital should have a regular supply of all necessary cleaning materials. At a minimum each hospital should provide the following:

- Disinfectants and detergents, bleach, powder detergents e.g. Omo
- Mops, cloths for dusting, brooms, soaps, buckets
- Personal protective equipments for cleaning staff and alcohol for hand rub preparation.

The head of the department should plan for and request supplies to meet monthly consumption needs.

Procedures

Administrative and office areas with no patient contact require normal domestic cleaning including sweeping, dusting and washing floors and windows with detergent.

All patient care areas should be cleaned by wet mopping, scrubbing or dusting and or scrubbing using disinfectant cleaning solutions. Dry sweeping is not recommended.

The cleaning solution should be prepared according to the guidance outlined in the *Infection Prevention Guidelines for Healthcare Facilities in Ethiopia*. Staff should be trained/oriented on how to prepare cleaning solutions and procedures for preparing the solution should be posted in an area visible to the cleaning staff.

The pattern of cleaning should be from least soiled area to most soiled and from high to lows areas. Any areas visibly contaminated with blood or body fluids should be cleaned immediately.

Isolation rooms and other areas that have patients with known transmissible infections should be cleaned with a detergent/disinfectant solution at least daily.

All patient care areas, including horizontal surfaces and all toilet areas should be cleaned twice a day.

Safety

The hospital should provide cleaning staff with personal protective equipment appropriate for the work. For example, all cleaning staff should have plastic aprons, heavy duty gloves, masks and protective shoes. Staff likely to be exposed to substances that may splash or splatter should also be supplied with goggles. Other protective equipment should be provided as necessary.

Box 1 below provides a graphic of representation of what should be worn by cleaning staff.

Box A. Personal protective equipment for cleaning staff.



SOURCE: Adapted from Waste Handlers, PATH, July 2006.

Staff should also be monitored to ensure the proper use of personal protective equipment and cleaning supplies.

3.4.4 Instrument processing

There are four main steps in instrument processing as outlined in Figure 2 below: decontamination, cleaning, sterilization or high-level disinfection and storage.

Figure 2: Instrument processing steps



Based on guidance given in *Infection Prevention Guidelines for Healthcare Facilities in Ethiopia*, the hospital should outline clear procedures on how instrument processing should be done. Instrument processing protocols should be posted in procedure rooms and all staff responsible for instrument processing should be trained/oriented on the process. In addition, all staff responsible for decontamination should be trained on how to prepare 0.5% and 0.1% chlorine solutions from different concentrations of bleach. Instructions for preparing chlorine solutions should be posted in the procedure rooms and staff instructed to follow the outlined procedures.

Each hospital should have a consistent supply of bleach (with a visible labelling of the concentration of chlorine), brushes (preferably tooth brushes), three plastic containers (one for each step in the process washing with soap (detergent) and water, cleaning with 0.5% chlorine solution, and rinsing) and personal protective equipment for each procedure room. The person in charge of the procedure room should plan for and request bleach, detergent and related supplies to meet monthly consumption needs to ensure that supply is not interrupted. Stop watches should be provided for each procedure room to ensure compliance to timing for each step in the decontamination and/or cleaning process.
The hospital should have functioning autoclaves and dry heat ovens for sterilization of medical equipment. There should also be a supply of 2-4% glutaraldehyde or 8% formaldehyde for chemical sterilization of plastic items. Steamer pans and boilers should be in place for high level disinfection purposes. The persons operating the autoclaves and dry heat ovens should adhere to machine operation instructions. In addition, all staff should be trained on the use of the machines. The hospital should regularly monitor the effectiveness of sterilizers using specified indicators. Mechanical, chemical and biological indicators can be used. Mechanical indicators are most commonly used. This would include checking adherence to recommended time, temperature and pressure. Chemical indicators (using bacteria) are considered to be the best method for monitoring the effectiveness of sterilizers, Ethiopian hospitals may not currently have the capacity to implement this.

All sterile items should be stored in an area and manner to protect the packs or containers from contaminants such as dust, dirt, moisture, animals, and insects. The storage area of sterile items for the hospital is best located next to or connected to the place where sterilization occurs. The space should be in an area separate, enclosed, with limited access and should be used only to store sterile and patient care supplies.

Persons responsible for instrument processing should be regularly supervised to ensure their adherence to protocols, proper performance and consistent use of personal protective equipments during the procedure.

3.4.5 Traffic Flow

Proper management of patient care areas – flow of patients and visitors– in the hospital is integral to maintaining high standards of infection prevention. Overcrowding can help the spread of infections among patients, staff, and visitors. The organization of the patient and visitor population will not only prevent the unnecessary transmission of disease, but also will allow the hospital to operate in an efficient manner. Clinical and supportive staff must be able to perform their tasks in a hospital environment where distractions are minimized. Furthermore, standards need to be established so that the duties and roles of both staff and patient's visitors are clearly delineated and understood by all parties involved with patient care. With appropriate patient and visitor control, the hospital can provide quality care in a clean and safe environment.

Each hospital should strive to control the organization of all patient areas and public spaces. The hospital layout should be organized in a way that promotes the efficient movement of traffic throughout the hospital. As much as possible services should be organized close to one another to minimize patient transit time. Hospitals should ensure that waiting areas have ample space and provide a secure, shaded area in which patients can wait for care. Further guidance on hospital layout can be found in *Chapter 2 Patient Flow* and *Chapter 8 Facilities Management*.

Patients and visitors should not be allowed to enter into areas of the hospital where they are not receiving a service (for example outpatients should not enter inpatient wards, visitors to inpatients should not go to OPD etc).

Caregiver and visitor control: Putting visitor controls in place serves to prevent confusion and disputes that may arise between visitors and hospital staff, thus enabling more efficient hospital operations. The use of visitation hours and placing limits on the total number of non-hospital staff entering a patient ward area at a given time are both effective methods for controlling caregiver and visitor access. Visiting hours should be established with consideration for when health providers conduct the morning and evening rounds, cleaning staff conducts daily duties, and hospital has meal times. The hospital should establish a system to regulate the number of visitors and caregivers allotted for each patient. Limits should be set on the number of visitors and caregivers allowed to be with a patient at any given time. ID badges or identification cards should be issued to visitors and/or caregivers to assist hospital staff in monitoring patient rooms. To ensure that there is clear communication between a caregiver and the nursing staff, it is suggested that each caregiver sign a contract (see Chapter 6 Nursing Care Standards, Appendix F for a sample patient caregiver contract, which delineates the caregiver's role in the care of the patient). The contract holds caregivers accountable for their duties and their conduct within the hospital ward. Furthermore, it prevents disputes between staff and visitor when a potential conflict arises. Contracts should outline caregiver's responsibilities such as proper visiting hours and leaving the ward to permit cleaning and nursing staff to perform their duties.

3.4.6 Food Safety

The provision of nutritious, good-tasting and sanitary food is an essential part of patient care. Meals provided to patients can lessen the need for drugs and other interventions and hasten a patient's recovery shortening their hospital stay. Food borne outbreaks are not uncommon at hospitals thus measures should be taken to minimize the likelihood of food borne illnesses.

Food safety should be ensured through the provision of adequate, clean facilities for food preparation and storage.

It is imperative that:

- The kitchen is kept clean and free from bacteria
- Quality of produce and meats is reviewed and maintained
- Quality and taste of food is monitored by Head of Kitchen or other senior manager
- Kitchen staff maintain personal hygiene and health

Food purchase and storage

A committee consisting of representatives from the kitchen, environmental hygiene and procurement unit should be created to oversee the delivery of food items for the kitchen. Possible committee members could be the kitchen manager, dietician, sanitarian, and purchaser.

When food items are delivered to the kitchen the kitchen manager or delegate should check the items to ensure that that the food that is delivered is of the desired quality. If possible all members of the committee should be present. If the quality of the food is not acceptable, then the supplier should be informed, "rejected" items returned, and if possible, the supplier should provide replacements that meet the committee's specifications.

The food items that are delivered to the kitchen have to be properly stored in a separate clean area in the kitchen. Food that is perishable and warm should be cooled before storage.

Food handling and preparation

- There should be separate cutting boards for meat products and non-meat products.
- Cooking staff should be oriented on safe handling of food.
- Cooking should be done at proper temperature and for the appropriate length of time.
- All kitchen staff should follow hand hygiene procedures outlined in section 3.2.1. Hand hygiene should be practiced both before and after handling food. In addition to hand hygiene, kitchen staff should also maintain their personal hygiene. Facilities for bathing should be made available to all kitchen staff.

Cleaning

The kitchen should be cleaned at the end of each day. Waste should be disposed of regularly (see section 3.4.1 on waste management). Special attention should be given to food preparation areas and cooking equipment and utensils.

Safety

Kitchen staff should have access to face masks, hair covers, and plastic aprons at a minimum. Other personal protective equipment should be supplied as necessary.

To ensure patient safety and minimize the risk of infection transmission, kitchen staff should regularly be tested for communicable diseases. Staff should be tested at least every three months for diseases that can be transmitted through unsafe handling of food; for example typhoid fever. Any kitchen staff identified as having an active infection should be removed from food handling and preparation until 24-48 hours after symptoms have resolved.

Below are some hazards that kitchen staff can face:

- Ergonomics (repetitive motions, reaching/lifting etc),
- Kitchen equipment (hot surfaces, electrical shocks, use of sharp objects etc),
- Fire (improper storage of flammable items, poor cleaning etc),
- Hazardous chemicals (pesticides, disinfectants etc),
- Machine guarding,
- Food borne disease,
- Slips/falls,
- Electrical safety, and
- Infectious materials.

Protective measures should be in place to minimize accidents incurred due to the above listed hazards.

Quality Assurance

Food temperature should be checked. Hygienic and aseptic conditions should always be checked by the dietician.

The guidelines outlined above apply to any food services provided by the hospital. Hospitals may provide the service directly, or may contract out services to an outside vendor. Regardless of how the

hospital provides the service, the hospital must ensure that standards are met and the guidance adhered to.

3.5 Worker safety

In addition to the procedures outlined above, the hospital should ensure that mechanisms are in place to identify and address occupational health and safety risks to staff. The hospital should also ensure that staff can access services in the event that they are exposed to infectious agents.

For more detailed guidance on Occupational Health and Safety refer to *Chapter 11 Human Resources Management*; section 3.13 on Occupational Health and Safety. For more guidance on Hospital Safety please refer to *Chapter 8 Facilities Management*; section 3.8.

3.5.1 Injection safety

The use of injection materials in the hospital setting exposes healthcare personnel to needle stick injuries and potentially to infectious materials. The WHO estimates that "contaminated injections caused annually 21 million HBV infections, two million of HCV infections and 260,000 HIV infections. These infections led to 49,000, 24,000 and 210,000 deaths respectively. 40% of global burden of HBV and HCV among health workers is attributable to occupational exposure."⁵ It is imperative that hospitals establish an injection safety plan as part of an infection prevention program.

The injection safety plan should include the hospital's procedures to address the following areas:

- Needle and syringe usage and disposal:
 - Every injection is given using a single sterile syringe and needle combination
 - Syringes are not reused
 - No recapping, manual detaching or manipulation of used needles
 - After each use, the needle and syringe are safely disposed of in a puncture proof container (See section 3.4.1.1 on waste management)
- Provision of injection materials such as auto-disable syringes and disposable syringes that are of the recommended quality and sterility of the syringes (within expiry date, WHO/UNICEF certified brand)
- Needle stick injuries:
 - There is a reporting and tracking mechanism for needlestick injuries
 - HIV Post exposure prophylaxis plan (see below)

3.5.2 HIV Post exposure Prophylaxis

The risk of HIV infection after a needle stick injury or other exposure to HIV-infected blood is estimated to be 0.3% (3 in 1000 or 1 in 300). However, several cases of seroconversion among healthcare workers exposed to HIV via mucous membrane or non-intact skin have been documented. Implementation of standard precautions (as described in section 3.2) will significantly reduce occupational exposure of hospital staff (both healthcare workers and support staff) to HIV and other blood borne pathogens. In the event that healthcare personnel (HCP) are exposed, hospitals should have a PEP program in place to identify, assess staff needing PEP and provide care and treatment.

⁵ WHO, Technical Guidance for Global Fund HIV Proposals, 2008. http://www.who.int/hiv/pub/toolkits/Injection%20safety.pdf

NB: The following guidelines only address the management of occupational exposure among healthcare workers. In addition to PEP for occupational exposures, hospitals should provide PEP services for non-occupational exposure to HIV, such as sexual assault. The recommendations provided in this section are based on the draft national PEP protocol. The protocol has not yet been approved but the recommendations provided here can serve as a guide for hospitals until the national PEP protocol is finalized.

3.5.2.1 Components of a PEP Program

All hospital staff should be aware of standard IP practices to minimize exposure, as well as where and to whom an occupational exposure should be reported (refer to section 3.13, *Chapter 11 Human Resources Management*; for more guidance on occupational health and safety services).

PEP services can be offered within case teams or through the hospital's ART clinic. Regardless of where PEP services are provided, the hospital should ensure that there are an adequate number of staff members that have had PEP training or participated in trainings that include PEP (e.g. Basic ART, IMAI/IMNCI, and STI/PEP). In addition, the hospital should ensure the provision of the equipment and supplies necessary for PEP outlined in Box B.

Box B Inputs Required for PEP Service

All Service Outlets

The required IP supplies and hospital infrastructure—as described in other sections of this chapter-must be made available in every service outlet

PEP Outlets

- PEP drugs:
 - Zidovudine (AZT) or Stavudine (d4T) or Tenofovir (TDF)
 - Lamuvudine (3TC)
 - Kaletra (Lpr/r) or Efavirenz : one pack in each service outlet area
- Rapid HIV test kits
- PEP protocols
- PEP decision-making tool (wall charts)
- PIHCT guideline
- PIHCT protocols
- Standard patient education materials on HIV, PIHCT, and ART
- National IP guideline
- Condoms
- Penile models
- Intra-facility referral forms

ART Clinic

• In addition to the items mentioned above for PEP service outlets, the PEP register should be available in the ART clinic and preferably this should be the primary place of operation for the PEP focal person.

The availability of PEP services in the health facility should be made known to all staff. Details of the services that are offered (location, who to contact etc) should be posted in areas visible to all staff. In addition, availability of PEP services should be included as part of the hospital's new hire orientation, in service orientation, or in trainings offered through the hospital's occupational health and safety services or infection prevention training.

3.5.2.2 PEP Procedures

If an occupational exposure occurs, the following procedures for PEP should be followed:

Step 1 Treat exposure:

- Use soap and water to wash areas exposed to potentially infectious fluids as soon as possible
- Flush exposed mucous membranes with water
- Flush exposed eyes with water or saline solution

Step 2 Report exposures: Report and document the exposure. The incident should be reported to the healthcare personnel's immediate supervisor or case team leader. The supervisor or other appropriate person should complete an Occupational Blood and Needle Stick Exposures Recording form presented in Appendix F. The occurrence of the incident should also be reported to the hospital Incident Officer and Occupational Health and Safety Officer.

Step 3 Determine the level of risk: It is important to determine risk of HIV transmission to the HCP associated with the HCP's exposure. A number of criteria that should be used to determine the level of risk are described in detail in thePEP decision-making tool presented in Appendix D. This tool should also be used to determine the need for PEP, to decide if PEP is indicated and whether or not a 2-drug or 3-drug regimen is required.

If the exposure occurs during working hours, the case team leader (where the exposure happened) can treat the exposure site, assess the source patient status, and determine the exposure code.

After working hours (nights, weekends, & holidays): The exposed HCP should report to the Emergency Case Team for exposure risk assessment. The physician or nurse should complete the Occupational Blood and Needle Stick Exposures Recording form (Appendix F) and should utilize the PEP decision-making tool to determine if PEP is indicated.

- If PEP is not indicated, the Emergency case team personnel will advise the HCP accordingly and the exposure case is considered closed at this point.
- If PEP is indicated outside regular working hours then the HCP should be given a 'PEP starter pack'. PEP starter packs should contain sufficient drugs for three days medication and should be available in the Emergency pharmacy. The HCP should be instructed to report to the ART clinic on the next working day for further management and investigations.

Step 4 Counseling and Testing: All healthcare personnel who have been exposed and have PEP indication should be provided with HIV counselling and testing. Counselling and testing can either be provided by a trained member of the case team where the exposure occurred or at the ART clinic.

Step 5 Provide PEP treatment: Begin appropriate drug and PEP treatment.

- Exposed individuals who test negative for HIV, should receive comprehensive counselling on PEP and receive follow-up care according to the standard PEP protocol, including the completion of the one month treatment and subsequent HIV tests at 3 and 6 months post-exposure.
- Individuals who test positive for HIV should be enrolled in chronic HIV care and receive standard HIV/ART services.

A sample Post Exposure Prophylaxis Patient Tracking Form (from draft National PEP Guideline) is presented in Appendix E. This form should be used to track HCP over the course of their treatment.

Step 6 Follow-up testing: Follow-up laboratory testing should be done at 3-months and 6-months post-exposure.

Step 7 Maintain records: Keep records of all exposed staff. These records should be maintained securely to ensure confidentiality.

3.5.2.3 Management of PEP Services

To ensure that PEP services are implemented according to the standard protocol, hospitals should assign a PEP focal person. This role could be held by the Occupational Health and Safety officer (see section 3.13 of *Chapter 11 Human Resource Management*). He/she should regularly (at least weekly) monitor the availability of inputs (as listed in Box B above) and supplies necessary to provide PEP services, the quality of PEP services, the efficiency of referral linkages for patients who started PEP during non-regular hours and the completeness of PEP registries. The PEP focal person should be an active member of the hospital ART multi-disciplinary team (MDT) and IP committees and participate in meetings with the MDT and IP committees at least monthly. The PEP focal person should also prepare reports for the IP committee and Senior Management Team (SMT) on PEP services. The report should include:

- The number of occupational and non-occupational exposures (categorized by type) reported in the hospital
- The age, sex, and occupation (including case team) of workers reporting an exposure
- The number of patients that started PEP treatment
- The number of patients that completed the PEP treatment
- The number of patients that received 3 or 6 month post-exposure HIV testing

The data generated from the PEP outlets should be used by case teams and senior management to identify ways of improving PEP and ART services in the hospital as well as ways to prevent the occurrence of occupational exposures among HCP.

3.5.2.4 Monitoring and Evaluation of PEP Services

Hospital management should monitor the implementation of PEP services by checking the availability of the inputs, following the process and the output of the PEP service (as defined below) first at baseline and every 4-6 months thereafter.

The hospital management should monitor the process of the PEP program implementation by assessing:

- The availability of all input materials
- The continuous availability of PEP services both at regular and non-regular working hours
- The adherence of healthcare workers to the national PEP protocol
- The presence of regular (monthly) IPC committee meetings
- The minutes of hospital IPC committees
- Reporting system for the IPC committees to the hospital management
- The implementation of operational (action) plans developed for PEP following IPC committee meetings

3.6 Equipment, Supplies and Infrastructure

The IP Committee should conduct a needs assessment to identify:

- current stock of supplies (personal protective equipment and cleaning supplies such as gloves, soap, towels, linens, alcohol, etc)
- availability and functionality of sinks, toilets
- availability and functionality of incinerator and other waste disposal equipment
- availability and functionality of laundry equipment
- availability and functionality of ventilation systems
- availability and quality of water supply

The assessment should be done periodically (at a minimum annually) to ensure that any new needs are identified. Conducting an evaluation not only permits the IP committee and hospital management to estimate needed supplies and equipment for implementing IP policies, but allows staff to identify their own needs. Hospital management can also use information from the evaluation to properly plan and budget for purchase/maintenance of IPC-related supplies and equipment.

The need for IP supplies and equipment can be assessed on a department/service area basis as outlined in Table 4 below:

Case Team	Hazard	PPE need
Laundry	Blood contaminated linens	Gloves
		Apron
		Boots
		Masks etc.
Operating room	Blood splash	Apron
		Goggles
		Face shield etc.

 Table 4. IP Supplies and Equipment Needs Assessment

IP supplies should be purchased regularly to ensure that there is an adequate supply available. If IP supplies are purchased through a bidding process, clear specifications should be given to the bidding committee or unit responsible for purchasing the IP supplies that outline the desired quality and type of materials to be purchased.

In addition to assessing supply needs, the IP committee should also assess infrastructural needs required to support infection prevention activities. The IP committee should assess the availability, functionality of infrastructure as well as quantify the cost of repair/replacement. The assessment could include plumbing and sewage, sinks, incinerator for waste disposal and laundry equipment.

The key infrastructural needs are outlined in brief below. For more detailed guidance please refer to the *Chapter 8 Facilities Management*.

Buildings

The design and layout of the hospital building can impact the effectiveness of infection prevention practice. Increasingly architects of hospitals design facilities to improve traffic flow and minimize risk of infections. When additions or new constructions are planned, the IP committee should be consulted to provide input (with respect to infection prevention) on the design of the facility.

Water, sewage and plumbing

The hospital should ensure that safe water is available 24 hours a day. Provisions should be in place to ensure that when water outages/shortages occur that water supply is not interrupted. Tankers or other water storage containers should be in place. They should be cleaned regularly and the quality of water should be sampled periodically to check for contamination.

Sinks, toilets

It is important that all wards within a hospital have properly functioning sink and toilet facilities. At a minimum, there should be a sink in each patient care area. Facilities should be accessible to patients, staff and visitors. Larger wards or those with more than one entrance are recommended to have a minimum of two sinks with plumbing. There should also be a functional sink at each patient area, clinical room, and nursing station. Investments must also be made to ensure existing sinks work properly and preventive maintenance is done. Repairs should be scheduled as necessary. Sinks and toilets should be cleaned and disinfected regularly.

Electricity

The hospital should ensure that electricity is available 24 hours a day. In particular, procedure rooms and operating rooms should have adequate lighting. A generator or other energy supply should be available for use when power supply is interrupted.

Ventilation

Proper ventilation of patient care areas can reduce trapping of air, promote air circulation and help to minimize the transmission of infections.

General patient care areas should be well ventilated. In the absence of HEPA filters and mechanical filtration systems, windows should be opened to allow for ventilation of rooms. A study conducted in Peru showed that hospitals which had high ceilings and large windows and used natural ventilation minimized the risk of airborne transmission of infections such as tuberculosis.⁶ Natural ventilation can be a low cost intervention that can minimize the spread of infection.

⁶ Escombe et al, 2007

Lay out of patient beds

Patient rooms should be organized in a way that will reduce transmission risk. In wards with an open layout, spacing between beds should be 1-2 meters.

3.7 Monitoring and Surveillance

An IPC program must include routine monitoring and surveillance. The hospital must assess the success of its infection program by measuring adherence to IP guidelines as well as identifying and tracking HCAIs quarterly, at a minimum.

3.7.1 Monitoring

Hospitals should measure the effectiveness of all components of the IP program including inputs, processes and outcomes:

For example:

Inputs: IP inputs would include equipment and supplies for hospital staff. Input data can be used to assess the availability, quantity and quality of supplies and equipment needed for IP practice. In addition, data can be used to conduct cost analysis.

Process and Outcomes: This data can be used to assess the safety and effectiveness of a hospital's operations and can be collected through the following methods:

- Performance indicators: The IP Committee must develop and monitor performance indicators to assess the progress of the IP program. Targets should be set for each indicator based on improvements using a percentage scale. For example, a key target may be a 50% improvement in the number of staff observed using proper infection prevention techniques within a given day; or rate of healthcare facility acquired infection. This will allow the IP committee to work towards continual improvements, rather than reaching a particular benchmark.
- Qualitative methods for assessing quality include clinical vignettes and consultation observation. Clinical vignettes involve providing staff with hypothetical cases and recording their response on how they would handle the given cases. Consultation observations involve observing staff as they interact with patients and adhere to national IP guidelines.
- Surveys: Often used to collect data on facility procedures, for example, hand hygiene procedures being used by facility staff (please see Appendix G). A checklist can also be used to assess adherence to IP guidelines (please see Appendix I). Surveys are more common as they can be used to collect a large amount of data at once and is easier to implement than continuous reporting.
- Observation: The IP Committee also can conduct unannounced site visits to various case teams on a monthly basis. These site visits would ostensibly be carried out to determine what is working and what is not. This approach could provide a strong incentive for the case teams to maintain a high level of IP practices. It would also act as an indicator which the IP Committee could use to determine the efficacy of the IP program and implement changes where necessary.

3.7.2 Surveillance of Nosocomial Infections

Monitoring and measuring healthcare acquired infections can provide valuable information on the effectiveness of the hospital's infection prevention program. Tracking the number of HCAIs or rate of HCAI allows hospitals to assess quality of care and patient safety. In addition, data can reveal areas for improvement or gaps in practice that need to be revised or strengthened. HCAIs should be included as one of the indicators in the Balanced Scorecard that is monitored regularly by the Governing Board (See *Chapter 13 Monitoring and Reporting*).

In devising a surveillance program the IP committee should consider the following:

- Patients and units to be monitored
- Type of infections and relevant information to be collected
- Frequency and duration of monitoring
- Methods of data collection
- Methods for data analysis, feedback and dissemination
- Methods to ensure confidentiality of information

The methods to be used and staff responsible for coordinating and conducting surveillance should be clearly outlined in the hospital's HCAI surveillance protocol. In addition, staff involved in coordinating or collecting HCAI data should include someone trained/oriented in IP practice and knowledgeable in data collection and analysis techniques.

Either prevalence or incidence of HCAIs can be tracked. Prevalence studies would be conducted at one point in time and would measure infections that exist on the day the survey is done. Incidence surveys measure number of infections that occur in patients over a defined period of time. For an incidence survey, patients would be tracked throughout the course of their stay in the hospital and the incidence of an infection would be recorded. This method is most effective when conducted for specific infections (surgical site infections) or in specific units (surgical unit or ICU).

Conducting surveillance of HCAIs can be a time consuming and costly undertaking. Therefore when resources are limited, facilities can choose to focus on specific units or specific types of infections. For example, the hospital HCAI surveillance can begin with tracking surgical site infections and/or surveillance of particular invasive procedures such as endoscopy. Various strategies and the methodologies that should be used are outlined in detail in the WHO document: Prevention of Hospital Acquired Infections: A Practical Guide — WHO/CDS/CSR/EPH/2002.12. For further guidance on setting up a HCAI surveillance protocol please reference this document. In addition, a sample data collection tool for monitoring HCAIs is presented in the Appendix H).

3.7.3 Using the data

The results of the surveillance studies should be compiled by a member of the IP committee in a written report on a regular basis. The report should include details of the study including: time frame, the department(s) included, the number of patients seen by the department(s) within the time frame, number of HCAI detected, and rate of HCAI. The report should also include analysis of the potential causes of the HCAIs, problems identified and recommended solutions. The report should be submitted to the IP Committee and Senior Management Team for action or resolution.

Data can be used to show the savings in cost that preventing HCAIs can bring. In order to show the benefits of reducing HCAIs, simple calculations can be done based on the following assumptions:

- 1) Assume a hospital acquired infection rate of 20% of the patients admitted: (Note that the literature states that HCAIs can be as high as 40%).
- 2) Average daily admission of seventeen patients. (Approximate number for a 250 bed hospital.)
- 3) Assume three additional nights stay in-hospital resulting from HCAIs.^[20]

Calculation based on previous assumptions:

In one month of 30 days, we would expect approximately 510 admissions. 102 those patients would contract an HCAI per month. These 102 patients would result in an additional 306 days of admission and care.

Over the course of a full year, the total number of avoidable in-hospital days could be as high as 3,672. The staff time and resources needed to treat these avoidable in-hospital days becomes a very significant drain on already overcrowded hospitals with limited resources. In fact, if the hospital can implement a *very aggressive* and effective IP program a greater number of in-hospital days can be avoided as follows:

Percentage Reduction	Avoided In-Hospital
In HCAI Rates	Days per Year
10%	1,836
20%	3,672
30%	5,508
40%	7,344

Implementing an effective IP program that can reduce the rate of HCAIs will increase both staff time and resources used by the hospital to implement better infection prevention practices and thus further reduce the rate of HCAIs.

In addition, information that is gathered through surveillance can be used to reward individuals or case teams that are performing well. As an added incentive, a "Case Team of the Month" certificate or award could be presented to those units who have significantly lowered the HCAIs in their case teams or have implemented innovative changes that could be used as models for other case teams to follow within the hospital. Recognition and reward can go a long way in motivating staff and creating a sense of ownership for their work.

3.8 Infection Prevention Training

Successful adoption of infection prevention standards requires periodic Infection Prevention training for all staff. In order to effectively implement IP practices, staff must first be informed and educated on current IP principles.

The Infection Prevention team should assess training needs of the staff and provide required training in collaboration with the human resource department. Trainings should include general information on IP practice and principles as well as practical skills training. Trainings for all staff should include

general IP principles but should also be tailored and appropriate to staff job functions. Hospitals can contact partner organizations to provide standardized IP trainings for staff—through either on site or off site trainings. In addition, orientation on IP can be provided on site by hospital staff. Materials should be adapted from standard training materials and trainers should be trained in IP. Hospitals should provide periodic re-training or orientation for staff and review the impact of trainings. Further IP information can be given to staff through awareness programs and campaigns.

A motivated and invested hospital workforce is essential to ensuring the sustainability of IP policies. As such, successful adoption of infection prevention standards requires that Infection Prevention trainings not only educate hospital staff on IP policies, but also motivate the staff to adhere to the IP guidelines. Staff ownership can be cultivated by:

- Involving staff by asking their input on IP policies
- Assigning a staff member of each case team a role in coordinating and monitoring staff on infection prevention policies
- Providing orientation and sensitization on the importance of IP

The following are additional recommendations on what elements should be included in a comprehensive IP training to support implementation of an IP program.

Establish the importance of IP with staff: To facilitate staff investment in implementing IP policies, the IP committee should ensure that all staff understand that the IP policies they are being trained in:

- Prevent the spread of unnecessary infections
- Improve the quality of patient care
- Promote a safe environment for both patients and staff, and
- Ensure that patients have a clean environment so that recovery and length of stay is at an ideal standard.

Use appropriate training techniques: It is necessary that infection prevention policies are clearly understood by all hospital staff. This can be accomplished by using group-based training and demonstrative techniques to ensure that all staff, including low-literate staff, are sufficiently informed on IP practices.

Foster Staff Motivation: To maximize the benefits of infection prevention training, the following items are suggested to maintain a motivated staff:

- Senior management, physicians, and case team leaders should be role-models in following infection prevention guidelines. They show due diligence in adhering to infection prevention policies
- Make and award certificates of achievement following the IP training
- Suggest that letters of recommendation be written and placed on file for staff after good performance evaluations are achieved
- Publicly recognize staff as individuals or in case teams that exemplify "excellence in infection prevention practice". For example, a "wall of recognition" or "employee of the month" award can be used to create positive reinforcement for staff

Distribute IP guidelines throughout hospital: Once training has been completed, materials relating to IP guidelines should be posted in both public and private spaces throughout the hospital. The IP guidelines should be strategically located in places where IP must be practiced, for example, hand hygiene posters should be posted in all hospital bathrooms as a reminder to staff to wash their hands.

3.8.1 Educating patients, caregivers, and other visitors regarding IP policies

Family members/caregivers are integral in the health delivery process, as they may assist in the care of the patient while he/she is hospitalized. Therefore it is critical to ensure that family members and other caregivers are informed and educated on IP policies. Since caregivers and visitors are not trained hospital staff, special attention is needed in educating all visitors on appropriate IP policies.

Involve the nursing staff in training patients and visitors. The nursing staff are responsible for educating patients and visitors about IP practices within the hospital. Nurses should be held accountable for effectively communicating proper IP policies to both patients and visitors. Since some patients may be illiterate, it is necessary that representatives from the nursing staff recite the roles and responsibilities to all patients and visitors who enter the site.

Educate patients and visitors on IP policies using illustrative pamphlets. The nursing staff can educate patients and visitors in either a group or an individual basis. The hospital should have pamphlets and/ or brochures that highlight the IP practices that the patients, caregivers and visitors are expected to abide by. For example, educational pamphlets should address hand hygiene procedures and visiting hours. Brochures, pamphlets, or other educational materials should be illustrative in nature. This enables all visitors and patients — regardless of education or literacy level—to quickly grasp the concepts of IP policies. Wherever possible, posters detailing IP practices also should be posted in patient care areas.

Section 4 Implementation Checklist and Indicators

4.1 Assessment Tool for Operational Standards

In order to determine if the Operational Standards for Infection Prevention have been met by the hospital an assessment tool has been developed which describes criteria for the attainment of a Standard and a method of assessment. This tool can be used by hospital management or by an external body such as the RHB or FMOH to measure attainment of each Operational Standard. The tool is presented in Appendix E of *Chapter 13 Monitoring and Reporting*.

4.2 Implementation Checklist

The following Table can be used as a tool to record whether the main recommendations outlined above have been implemented by the hospital. This tool is not meant to measure attainment of each Operational Standard, but rather to provide a checklist to record implementation activities.

		Yes	No
1.	An Infection Prevention Committee has been established.		
2.	Terms of reference for the Infection Prevention Committee are defined.		
3.	An operational plan that defines the hospital's infection prevention activities has been developed.		
4.	Monitoring of infection prevention activities is conducted and reported to the senior management team.		
5.	Healthcare acquired infections are tracked.		
6.	Standard precaution practices are defined and in place.		
7.	Transmission based precaution practices are defined and in place.		
8.	Equipment needed to provide infection prevention activities are available.		
9.	Supplies needed to provide infection prevention activities are available.		
10.	Trainings and orientations on infection prevention are provided to staff.		
11.	Health education on infection prevention is given to patients and caregivers.		

Table 5.	Infection	Prevention	Checklist
	intection	1 I CV CHUIOH	Checkinse

4.3 Indicators

In addition, the following indicators may be monitored on a regular basis to assess the effectiveness/outcomes of implementation of the recommendations provided in this chapter.

Table 6Infection Prevention Indicators

S/N	Indicators	Formula	Frequency	Comment
1.	Healthcare acquired infection rate	Total number of patients with an infection arising >48 hours after admission during reporting period /total number of admissions during reporting period *100	Quarterly	
2.	 a) Number of occupational exposures reported in the hospital, categorized by type of exposure b) Number of on-occupational exposures reported in the hospital, categorized by type of exposure 	 a) Total number of occupational exposures during reporting period, categorized by type of exposure b) Total number of non-occupational exposures during reporting period, categorized by type 	Quarterly	
3.			Quarterly	
	The number of people that started	Total number of people started on PEP		
	PEP treatment	treatment during the reporting period		

4.	% of people that completed the PEP treatment	Total number of people that completed PEP treatment during the reporting period/ Total number of people who should have completed PEP treatment during the reporting period*100	Quarterly	
5.	a) Number of days when incinerator was not workingb) % of total days	 a) Total number of days that the incinerator was not working during the reporting period b) Total number of days that the incinerator was not working during the reporting period/total number of days in reporting period *100 	Quarterly	
6.	Inpatient satisfaction survey: % of respondents who answered 'always' or 'usually' to the question "During this health facility stay, how often was the room you were sleeping in kept clean?"	Total number of inpatients who respond 'always or usually' to the listed question/ Total number of inpatients respondents*100	Biannual	Survey tool presented in Appendix F of Chapter 12 Quality Management
7.	Outpatient satisfaction survey: % of respondents who answered 'agree' or 'strongly agree' to the question "The outpatient department was clean	Total number of outpatients who respond 'agree' or 'strongly agree' to the listed questions/ Total number of outpatients respondents*100	Biannual	Survey tool presented in Appendix F of Chapter 12 Quality Management

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Appendices

Appendix A Hand washing Techniques



SOURCE: WHO. 2005. Guidelines on Hand Hygiene in Health Care (Advanced Draft): A Summary. WHO: Geneva

Type of Waste	Procedures
General waste	• General waste is immediately placed in the general waste bin (black) by the person generating it.
	• Waste handler collects general waste daily, using a wheelbarrow/cart designated for general waste.
	• If offsite disposal is available, the waste is stored until the scheduled collection day.
	• On days when the incinerator is being operated, the general waste is taken directly to the incinerator or to burial pit.
	• If the incinerator is not operating on that day, the waste handler stores general waste in a covered, secure location until final disposal. (<i>Waste should not be stored for more than 2 days</i>).
	• Incinerator operator destroys general waste according to schedule.
	• Incinerator operator removes ash and disposes of it in an ash pit. (<i>Remove ash only after the incinerator has cooled down completely</i>)
	• Food waste is immediately placed in the designated bin.
Food Waste	• Waste handler collects and disposes of food waste immediately after meal times.
	• If offsite disposal is practiced, food waste should only be stored for up to 1 day.
	• If no on-site disposal, waste handler buries food waste daily. It is highly recommended that food waste should be composted. (When burying, strictly follow the guidelines on burying waste)
	Health care provider immediately places infectious waste in the infectious waste bin
Infectious waste	with liner bag. (yellow)
	 Waste handlers collects waste every day or when the liner bag is full using a wheelbarrow/cart designated for infectious waste
	• On days when the incinerator is being operated, the infectious waste is taken directly to the incinerator or it shall be disposed using burial technique.
	 If the incinerator is not operating on that day, the waste handler stores infectious waste in a covered secure location until final disposal. (Infectious waste should be disposed of within 2 days, but placenta and anatomical waste should be disposed on daily basis). Incinerator operator destroys infectious waste according to schedule.
	Incinerator operator removes ash and disposes of it in an ash pit
Sharps	 Injection provider immediately places used syringe in a safety box Injection provider closes safety box when its ³/₄th full and obtains new safety box, Waste handler collects filled safety boxes for storage in a secure covered, dry location awaiting final disposal.
	• Waste handler transports safety boxes to incineration site using a wheelbarrow/cart designated for infectious waste.
	• Incinerator operator destroys safety boxes according to schedule. (<i>Safety boxes should be destroyed within one week</i>).
	• Incinerator operator removes ash and disposes of it in an ash pit

Appendix B Summary of Procedures for Handling and Disposal of Health Care Waste

Appendix C Suggested Cleaning Guidelines for Hospital Environments

	Item/Area	Method	Minimum Frequency
Outpatient	Waiting area	Use clean cloths and change frequently during cleaning; disinfectant solution preferred (follow contact time). Wet mop floor (detergent is adequate).	Twice daily; pay attention to chairs and tables and other surfaces in frequent contact with hands.
	Exam room/area	Use clean cloths for each room; change cloths frequently when doing a large area; disinfectant solution preferred (follow contact time). Wet mop floor (detergent is adequate unless contaminated with blood/body fluids then use a disinfectant).	Between patients unless surfaces are covered (then daily) or immediately when contaminated with blood/body fluids. Pay attention to exam table, chairs, and tables.
	Hand washing sinks	Use disinfectant to clean sink, water tap, and faucet handles. Re-supply soap, clean towels.	Twice daily; more often as needed
	Bathrooms	Use dilute bleach or other disinfectant to clean toilet, sink, water tap, faucet handles, and door knobs. Wet mop floor with a disinfectant solution. Re-supply soap, clean towels.	Twice daily; more often as needed
	Corridors	Wet mop floors; detergent/water solution is adequate. Change bucket solution and mop head frequently.	Twice daily; more often as needed
	Linen	Soiled linen should be minimally handled in such a way to avoid aerosolization; bagged, stored separately until delivered to laundry.	Daily, more often as needed.
	Trash	Empty daily, more often as needed.	

	Item/Area	Method	Minimum Frequency
Inpatient	Open wards	Use clean cloth; disinfectant (appropriate contact time); clean all horizontal surfaces including bed rails, tables, chairs; clean door knobs, light switches/plates. Wet mop floors; detergent/water solution is adequate. Change bucket solution and mop head frequently.	Daily; area around a patient when discharged before next patient put in the bed.
	Individual patient rooms	Use clean cloth; disinfectant (appropriate contact time); clean all horizontal surfaces including bed rails, table, chairs; clean door knobs, light switches/plates. Wet mop floors; detergent/water solution is adequate. Change bucket solution and mop head frequently.	Daily and at discharge
	Bathrooms	Use dilute bleach or other disinfectant to clean toilet, sink, water tap, faucet handles, door knobs, showers/tubs. Re-supply soap, clean towels.	Every shift if shared; daily if not shared. Tubs should be cleaned in between each patient.
	Hand washing sinks	Use a disinfectant to clean sink, water tap, faucet handles. Re-supply soap, clean towels.	Every shift
	Corridors	Wet mop floors; detergent/water solution is adequate. Change bucket solution and mop head frequently.	Twice daily; more often as needed
	Linen	Soiled linen should be minimally handled in such a way to avoid aerosolization; bagged, stored separately until delivered to laundry.	Daily, more often as needed.
	Trash	Empty daily, more often as needed.	

Appendix D Post-exposure Prophylaxis Forms: Decision Making Tool





Recommended HIV post exposure prophylaxis for percutaneous injuries

	Exposur	e code
Status code	EC 2	EC 3
SC 1	Recommend basic 2-drug PEP	Recommend expanded 3-drug PEP
SC 2	Recommend expanded 3-drug PEP	Recommend expanded 3-drug PEP
SC unknown	Generally, no PEP warranted; however, consider basic 2-drug PEP for source with HIV risk factors.	Generally, no PEP warranted; however consider basic 2-drug PEP for source with HIV risk factors
HIV-Negative	No PEP warranted	No PEP warranted.

<u>Recommended HIV post exposure prophylaxis for mucous membrane exposures and nonintact skin</u> <u>exposures</u>

Otatus anda	Exposure c	ode
Status code	EC 1	EC 2
SC 1	Consider basic 2-drug PEP	Recommend basic 2-drug PEP
SC 2	Recommend basic 2-drug PEP	Recommend expanded 3-drug PEP
SC unknown	Generally, no PEP warranted. If PEP is offered & administered and the source is later determined to be HIV-negative, PEP should be discontinued.	Generally, no PEP warranted; however consider basic 2-drug PEP for source with HIV risk factors.
HIV-Negative	No PEP warranted	No PEP warranted.

Adapted from Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Post exposure Prophylaxis. MMWR Recomm Rep 2005; 54 (No RR-9): 1-17 & MMWR 1998; 47(No. RR-7): 1-33.

Post-exposure Prophylaxis Forms: Sample Patient Tracking Form Appendix E guidelines) PEP National draft (from drugs PEP started who patients for form tracking Patient

L .	Fype of exposure		Appointm	nent date: dd/	mm/ yr	Address	
Occupati Team/De	onal(Case partment)	Non Occupational	2 weeks	3 months	6 months	Region, Woreda, Kebele, House No.	Telephone

Appendix F Post-exposure Prophylaxis Forms: Sample Occupational Blood and Needle Stick Exposures Recording Form

No Da	te: This form is for recording exposures only te:
1)	Namo
1) 2)	Telenhone #:
3)	Аде·
4)	Sev.
5)	Date, time & location of exposure:
6)	Type of injury? *Please circle appropriate letter
,	a) Hollow needle deep prick
	b) Hollow needle superficial prick
	c) Solid needle deep prick
	d) Solid needle scratch
	e) Splash to the conjunctivae
	f) Splash to the oral cavity
	g) Splash to intact skin
	h) Splash to broken skin (specify:
	i) Bite
7)	Substance involved? *Please circle appropriate letter a) Blood
	b) Amniotic fluid
	c) CSF
	d) Body cavity fluids (specify:
	e) Vaginal secretions
8)	Did the body cavity fluid contain visible blood? *Please circle appropriate letter
	a) Yes
	b) No
	c) Not aware
9)	Circumstance of injury? *Please circle appropriate letter
	a) Trying to secure intravenous line
	b) Needle stick injury during surgery (specify:)
	c) Needle stick while disposing of waste
	d) Amniotic fluid splash during delivery
	e) Splash with body cavity fluids during procedure (specify:) f) Other (specify:)
) Other (speerly)
10)	Is HIV status of HCP already known? *Please circle appropriate letter
	a) $I \in S$ (the HCP is HIV) b) V_{OS} (the HCP is HIV)
	c) No (HIV status is unknown)
11)	HIV status of the source asso? *Diagon sincle array in 1-the letter
11)	a) Positive
	a) i ostrivo b) Negative
	a) Unknown

12) Clinical stage of confirmed HIV infection in the source case? *Please circle appropriate letter

- a) Asymptomatic
- b) Mild symptoms not requiring hospitalization (specify)
- c) Admitted with OI to the hospital but not seriously sick
- d) Seriously sick (terminally ill)
- e) Altered state of consciousness

13) If the exposure has occurred to the mucous membrane, how do you estimate the volume of blood or body cavity fluid? *Please circle appropriate letter

- a) Few drops and once only
- b) Few drops but repeatedly
- c) Major blood splash
- d) Several drops and repeatedly
- e) Unable to estimate
- 14) Assessor (ER physician or ART clinic personnel): after completing the questions above, please reference decision tree & report if exposed should initiate PEP? *Please circle appropriate letter
 - a) Should initiate PEP
 - b) PEP NOT indicated

15) If PEP is indicated, is the HCP agreeable to starting PEP treatment? *Please circle appropriate letter

a) Not ready

- b) Ready to initiate
- 16) Previously known medical problems or medications being taken by the HCP?
- 17) If female HCP, record last menstrual period (LMP) and if there is a risk of pregnancy?

Name of Assessor

Signature of Assessor

Date

Appendix G Monitoring and Surveillance Forms: Sample: Hand Hygiene monitoring form

Hand Hygiene Feedback Form Staff Member _____

Date:

To improve hand washing practices and to ensure that our patients are free from acquiring infections during their hospital stay, I want share with you my recent observations

Present	Absent	NA	Providing General Medical Services	Date & Shift
			Performed hand hygiene before contact with each patient, disinfected with either water and soap, an alcohol-based gel, or rubbing hands with alcohol	
			Soaked collon balls.	
			Patient was on transmission-based precautions, appropriate PPE donned.	
			discarded in the room, or closest waste receptacle, when exiting.	
			After contact with a patient, equipment that may have been in contact with a patient (bedpan, commode, Foley bag), or the handling of contaminated items such as linens, diapers, wash cloths, and wastes, hand hygiene is performed immediately after service is completed.	
			If experienced contact with a patient's blood or other bodily fluids, then hands	
			washed with soap and water. Disinfection with alcohol-based gels or alcohol- soaked cotton swabs will <u>not</u> suffice.	
			For patients on transmission-based precautions, all visitors were attired w/ appropriate PPE.	
			Performed hand hygiene, if gloves were donned. Performed before seeing next patient and/or leaving patient area	
	1		Invasive Procedures	
			Before seeing a patient, gathered needed equipment first and then performed hand hygiene.	
			Performed hand hygiene before contact with each patient, preferably before entering the room or patient area	
			Donned gloves before performing any procedures	
			Donned gowns in situations that posed potential for the splattering of blood or body fluid onto clothing	
			Donned masks, glasses/goggles, or face shields in situations where there was potential of mucous membrane exposure of the face to blood or body fluids	
			Patient was on transmission-based precautions; appropriate PPE donned.	
			Patient was on transmission-based precautions; PPE was removed and	
			discarded in the room, or nearest waste receptacle, when procedure is finished.	
			Adhered to safe disposal of sterilization of medical equipment guidelines	
			waste receptacle when interaction with patient is finished	
			Medication Administration	
			Once meds dispensed nurse proceeded directly to patient room/area. Hand	
			hygiene performed before contact with each patient.	
			Needed to perform additional tasks before entering patient room/area. Hand	
			hygiene performed just before contact with each patient.	
			Patient was on transmission-based precautions; appropriate PPE donned.	

Patient was on transmission-based precautions; PPE was removed and	
discarded in the room, or nearest waste receptacle, before seeing next patient	
or exiting patient area.	
Hand hygiene performed before seeing next patient or exiting patient area.	
For patients on transmission-based precautions, visitor attired w/ appropriate	
PPE.	
Passing Meal Trays	
Performed hand hygiene before entering first room to pass food tray (not on	
transmission-based precautions).	
Delivered tray, then consistently performed hand hygiene when exiting each	
room.	
Was interrupted during tray passing after exiting the room to do another task.	
Performed hand hygiene before passing the next tray.	
Patient was on transmission-based precautions; appropriate PPE donned.	
Patient was on transmission-based precautions; PPE was removed and	
discarded in the room when exiting.	
Patient was on transmission-based precautions: Trays passed last.	
Phlebotomy	
Specimen obtained according to policy (Gloves donned, arm band checked,	
venous access assessed, tourniquet applied, skin prepped w/ alcohol, blood	
drawn, sharps disposed in sharps container)	
Specimen labelled & placed in plastic bag, placed on cart outside room.	
Gloves removed & placed in waste basket in room.	
Repeat hand hygiene	
Patient was on transmission-based precautions; specimens obtained last.	
Patient was on transmission-based precautions; appropriate PPE donned.	

Hand hygiene=wash with soap and water or alcohol hand rub

Hand hygiene	Sinks (ward and other areas)	Soap
		Personal Towels
		Paper Towels

Appendix H Monitoring and Surveillance Forms: Sample Example of a Minimum Data Collection Form for HCAI Prevalence Study

Example of a minimum data collection form for prevalence study

Date (dd/mm/yy)	-	L			
Hospital					
Unit					
Unit specialty					
Patient					
Patient identification					
Age (years)					
Gender			□ male	□ female	
Date of admission in the hospital (dd/mm	/yy)				
Patient exposure					
Surgical procedure (during the last month	n) 🗆 Yes	□ No	,		
Urinary catheter	□ Yes	□ No			
Mechanical ventilation	□ Yes	□ No			
Intravascular catheter	□ Yes	□ No			
Antibiotic	□ Yes	□ No			
If yes, prescription for	□ The	rapy		Other/unknown	
Nosocomial infection	□ Yes	□ No			
Surgical site infection	□ Yes	□ No			
Urinary tract infection	□ Yes	□ No			
Bloodstream infection	□ Yes	□ No			
Pneumonia	□ Yes	□ No			
Other respiratory infection	□ Yes	□ No			
Line-related infection	□ Yes	□ No			
Other nosocomial infection	□ Yes	□ No			

Example of a data conection form for sur	gical site infection survemance
Date (dd/mm/yy)	
Hospital	
Unit	
Unit specialty	
Patient	
Patient identification	
Age (years)	
Gender	□ Male □ Female
Date of admission in the hospital (dd/mm/	уу)
Date of discharge (from the unit) (dd/mm/	yy)
Operation	
Date of operation (dd/mm/yy)	
Main procedure (code)	
Wound class	 Clean Contaminated Clean/contaminated Dirty/infected
ASA score	
Duration of operation (minutes)	
Urgent	□ Yes □ No
Prosthesis/implant	□ Yes □ No
Multiple procedures	\Box Yes \Box No
Coeliosurgery	\Box Yes \Box No
Antibiotics	
Antimicrobial prophylaxis	\Box Yes \Box No
Starting date (dd/mm/yy)	

Example of a data collection form for surgical site infection surveillance

Duration (days)

Surgical site infection		
Surgical site infection	□ Yes □ No	
Date of infection (dd/mm/yy)		
Infection site	□ Superficial □ Deep	□ Organ/space
Microorganism 1		
Microorganism 2		
Date of last contact (dd/mm/yy)		

Source: Excerpted from: PREVENTION OF HOSPITAL-ACQUIRED INFECTIONS: A PRACTICAL GUIDE — WHO/CDS/CSR/EPH/2002.12

Appendix I Monitoring and Surveillance Forms: Sample Infection Prevention Checklist to Assess each Case Team/ Unit

Case Team or Unit ______ Date of Assessment ______

OBSERVATION	RESPONSE (circl	e one) (N/A= No	ot applicable)
Hand Hygiene (Provider)			
Hands are thoroughly washed immediately: 1. Before and after each patient contact?	Yes	No	N/A
2. Before handling and putting on gloves?	Yes	No	N/A
3. After handing objects which might be contaminated?	Yes	No	N/A
4. After contact with blood or mucous membranes?	Yes	No	N/A
5. After removing gloves?	Yes	No	N/A
6. Is soap or antiseptic hand rub available at sinks and toilets?	Yes	No	N/A
7. Is there antiseptic hand rub available for use before and after contact with each patient contact?	Yes	No	N/A
Environmental Hygiene			
8. Sheets and blankets are clean and changed regularly?	Yes	No	N/A
9. Patients are wearing clean pyjamas or gowns?	Yes	No	N/A
10. Mosquito nets (if necessary) are being used and are clean?	Yes	No	N/A
11. Starr are separating and disposing of ward waste properly?	Yes	No	N/A
Linens Processing			
12. Soiled linens are handled, stored and transported properly?	Yes	No	N/A
13. Is there a separate room for sorting soiled linens?	Yes	No	N/A
14. Is there a separate room for sorting clean linens?	Yes	No	N/A
15. Is there a separate room tor storing clean linens?	Yes	No	N/A
Io. Are separate carts designated and used for transporting contaminated/solied intens and clean intens ?	Yes	No	N/A
<i>Housekeeping</i> 17. Are sinks in patient care areas clean, disinfected, tidy and functioning?	Yes Vec	oN oN	N/A
19. Is lighting adequate in patient care areas?	Yes Yes	o N N	N/A
	00		

Appendix I: Page 1 of 3
<i>Transmission based precautions</i> 21. Are isolation rooms available for highly contagious patients?	Yes	No	A/N
<i>Waste Disposal</i> 22. The hospital has an operating incinerator?	Yes	No	N/A
infectious and sharps waste?	Yes	No	N/A
z4. Are intectious and snarps waste disposed by burning or burying ?	Yes	No	N/A
	Yes	No	N/A
Observation of Single-use Needles, Scalpel Blades and other Sharp Objects	;	:	
26. Needles, scalpel blades and other sharp objects are disposed of immediately after use?	Yes Voc	NO	N/A
28. All sharps containers are removed when they are 3/ full and taken to the incinerator or the approved	SD I	ON NO	A /N
waste burial site?	Yes	No	N/A
Decontamination and Cleaning	;	:	
29. Blood spills are cleaned by flooding with a disinfectant and then wiped up?	Yes	No	N/A
 Instruments are decontaminated in a 0.5% chlorine solution immediately after use for 10 minutes? Instruments are thoroughly cleaned, rinsed and dry before sterilization or HLD use of labelled plastic 	Yes	No	N/A
buckets for decontamination?	Yes	No	N/A
Sterilization			
32. What method of sterilization is used?			
- High-pressure steam (if YES , go to # 2)	Yes	No	N/A
- Dry heat (if YES, go to #3)	Yes	No	N/A
33. When steam sterilizing, is the high – pressure steamer operating.			
- At 121°C (250 °F)	Yes	No	N/A
- At a pressure of 106 KPa, 15 lb /in ²	Yes	No	N/A
- For at least 20 minutes for unwrapped items; 30 minutes for wrapped	Yes	No	N/A
34. When using dry heat, are the instruments kept:			
- At 170°C (340°F) for sharps,	Yes	No	N/A
- At the required temperature (170°) for at least 1 hour, or	Yes	No	N/A
- At 160°C for 2 hours	Yes	No	N/A

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High Level Disinfection 35. What method of high-level disinfection is used? Boiling (if YES, go to # 40) -Steaming (if YES, go to # 41) -Chemical disinfectants (if YES, go to # 42)	res res res	2 ° 2 °	N/A A/N N/A
 36. When boiling, are the instruments: Boiled for at least 20 minutes once boiling begins, and	res res	o o N N	N/A N/A
 37. When steaming, are the instruments: Steamed for at least 20 minutes once boiling begins, and Nothing is added after timing begins 	res res	o o N N	N/A N/A
 38. when chemical high-level disinfectants are used: is an appropriate chemical used? rare items completely submerged? rare instruments soaked for at least 20 minutes? rare instruments rinsed with sterile/boiled water? 	res res res	0 0 0 0 Z Z Z Z	N/N A/N N/N
 Worker's Health and Safety Has training on occupational hazards and safety measures been given in the last year? Personal protective clothing and equipment is available (i.e. goggles, boots, aprons etc) Is PIHCT/VCT service available 24 hours a day? Is there a "Post Exposure Prophylaxis" (PEP) protocol in place and posted for all staff to see? Does the hospital provide immunizations for common communicable diseases? 	res res res res	° ° ° ° ° ° °	N/N A/N A/N N/N

Evaluator	Name	Signature
<u>Case Team Leader</u>	Name	Signature

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