

DO NO HARM (KENYA)

Injection Safety In the Context of Infection Prevention And Control

TRAINING OF TRAINERS FACILITATION GUIDE



MARCH 2006

RECOMMENDED CITATION:

Making Medical Injections Safer (MMIS), Training of Trainers Facilitation Guide, Injection Safety in the Context of Infection Prevention and Control, Ministry of Health and John Snow, Inc. Research and Training (MMIS – Kenya Program), March 2006.

Published by:

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March 2006



The Making Medical Injections Safer (MMIS) project is a five-year initiative funded by the President's Emergency Plan for AIDS Relief through the US Agency for International Development (USAID) and the HHS Centers for Disease Control and Prevention (CDC).



Making Medical Injections Safer is implemented by John Snow, Inc. in collaboration with the Program for Appropriate Technology in Health (PATH), the Academy for Educational Development (AED), and the Manoff Group.

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ACKNOWLEDGEMENTS

Technical Reviewers and Support Team

(JSI MMIS); Dr. Jackson Songa, Catherine N. Lengewa, Amos M Chweya, Frederick M Okuku, Bernice Kasaya, Jimmy Okeoma, Bahati Augustine (JSI Deliver)

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Ministry of Health; James K Thuo, Samuel M Kamau, Stewart Kabaka, Anish Okeyo, Immaculate Njoroge, Kiarie Waweru, Hanshi J Aden, Steve Mwangi, John N Karanja, Susan A Nyerere, Mary Nandili, Rukia Dzombo , Ernest Kyalo

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ACRONYMS

AD	Auto-Disable
AED	Academy for Educational Development
AEFI	Adverse Event Following Injection
AIDS	Acquired Immune Deficiency Syndrome
AMC	Average Monthly Consumption Rate
BCC	Behaviour Change and Communication
CDC	Centers for Disease Control and Prevention
CQI	Continuous Quality Improvement
FEFO	First Expiry First Out
FIFO	First In First Out
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
IPC	Infection Prevention and Control
IPCC	Interpersonal Communication and Counselling
IV	Intra-venous
JSI	John Snow, Inc.
LMIS	Logistics Management Information System
M & E	Monitoring and Evaluation
MMIS	Making Medical Injections Safer
NGO	Non-Governmental Organization
PATH	Program for Appropriate Technology and Health
PEP	Post-Exposure Prophylaxis
PHR	Physicians for Human Rights
PLWHA	People Living With HIV/AIDS
POP	Persistent Organic Pollutant

PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
SCB	Steps to Behaviour Change
SIGN	Safe Injection Global Network
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USA	United States of America
USAID	United States Agency for International Development
WHO/AFRO	World Health Organization Regional Office for Africa.

PART 1:

THE TRAINER OF

TRAINERS'

FACILITATION GUIDE

Introduction

According to WHO, sixteen billion injections are administered each year in developing and transitional countries. Unsafe injections are common worldwide. Due to the overuse of injections in many countries, unsafe injection practices transmit substantial proportion of blood-borne diseases.

Injection safety (IS) is an integral component of infection prevention and control (IPC), which is critical to healthcare services. The observation of safe injection practices will promote improved access to quality care and treatment for people living with HIV/AIDS (PLWHA) and other blood-borne diseases. Surveys have indicated that injections are the preferred method of treatment for patients and clients. Therefore, as we attempt to reduce the spread of HIV/AIDS and other blood-borne diseases, it is imperative that injection safety be given priority.

Injection Safety Health-care waste is special in that it has a high potential of infection and injury. Unsafe injection practices and inadequate handling of health-care waste may have serious public health consequences and impact on the environment. Hospitals and health-care establishments have responsibilities and a “duty of care” for the environment and public health, particularly in relation to injection safety and the waste they produce. They also carry a responsibility to ensure that there are no adverse health and environmental consequences as a result of injection practices and waste handling, treatment and disposal activities. Unfortunately, health-care waste management is, in many regions, not yet carried out with a satisfactory degree of safety.

This course, therefore, aims at transmitting the basic skills for the development and implementation of injection safety practices and health-care waste management

policy, including the components outlined in this guide. In this way, health-care and research facilities can take steps towards securing a healthy and safe environment for their employees and communities. The primary purpose of this guide is to help the trainers and facilitators to carry out injection safety training effectively at Operational Level Health Workers Training. The guide provides guidance on the types of training materials, the various methods that will be used as well as the objectives and content at each training session.

It is recommended that during the training the trainer or the facilitator should use local materials and examples as much as possible, reinforced by the use of real situations and photographs. The training materials include extensive use of overhead projection as a visual aid, overhead transparencies, handouts, flyers film shows figures slides, lip charts or black boards. These materials will depend on the content and the preferred method by each facilitator

Purpose of the Guide

The primary purpose of this guide is to help managers' plan in-service training for health workers to improve Injection safety practices and safe disposal of injections waste. This document will be used as a facilitators guide for training operational level Health Workers who include the Doctors, Nurses and Clinical Officers as well as all their trainers.

The content of the Guide focuses on achieving safe and appropriate injection practices within the context of infection prevention and control through the following WHO/SIGN integrated three-part strategy:

1. Changing behaviour of healthcare workers and patients;
2. Ensuring availability of equipment and supplies;
3. Managing waste safely and appropriately.

Target group

The course designed in this *Guide* is targeted at managers, regulatory authorities and Policy makers who are involved in injection safety and health-care waste management. The main Professional categories are the following:

- Health workers
- Officials from national and provincial levels involved with developing policies.
- Hospital managers
- Administrators of health-care establishments;
- In injection safety and health-care waste management;
- Environmental regulators;
- Environmental health professionals;
- Representatives of local authorities;
- Waste collection, treatment and disposal managers;

Content of the Guide

The *Guide* introduces the concept of infection prevention and control and highlights injection safety as a key component. It further details how safe injection can be achieved, while emphasizing skills needed for effective and appropriate communication to encourage a change in practice, changes in behaviour and the reduction of the demand for injections. It also details out on Supplies Management and Waste Management.

The *Guide* is organized as follows:

Chapter 1: INTRODUCTION TO THE FACILITATORS' GUIDE

Chapter 2: FACILITATION

Chapter 3: MODULES

MODULE 1 - INFECTION PREVENTION AND CONTROL

Unit I: Introduction to Infection Prevention and Control (IPC)

Unit II: Risks Associated with Unsafe injection Practices

MODULE 2 - SAFE INJECTION PROCEDURES AND PRACTICES

Unit I: Infection Control Policies and Guidelines

Unit II: Ensuring Safe injection

Unit III: Unsafe Injection Practices

MODULE 3 - BEHAVIOUR CHANGE COMMUNICATION

Unit I: Communication and Behaviour Change Process

Unit II: Interpersonal Communication Skills

Unit III: The Counselling Process

MODULE 4 - SUPPLY MANAGEMENT

Unit 1: Introduction to Logistic

Unit 2: Inventory Management

Unit 3: Storage

Unit 4: Recording and Reporting

Unit 5: Monitoring and Evaluation

MODULE 5 - WASTE MANAGEMENT

Unit 1: Introduction to Healthcare Waste.

Unit 2: Management of HCW

Unit 3: Health and Safety during Waste Handling.

GLOSSARY

APPENDICES

BIBLIOGRAPHY (Information used in the development process and will be useful for further reading)

PART 2:

FACILITATION

Introduction:

This section of the Guide focuses on the preparation for, organization, implementation and evaluation of training. The intent is to provide the facilitator with basic educational processes, which will assist in the training. It is expected that the facilitator will employ these processes and approaches in using the Guide to train healthcare workers in injection safety.

Consider the following points in Box 1, 2, 3, and 4

Box 1 - Success

- ↪ **15% of a person's success is determined by**
 - ➔ **The job knowledge and**
 - ➔ **Technical skills.**
- ↪ **85% is determined by individual's attitude and ability to relate to other people.**

BY Research by Carnegie foundation

Box 2 - Facts about learning

I hear and I forget

I see and I remember

I do and I understand

Confucius c. 450 BC

Box 3 - How we learn

1% through taste

2% through touch

3% through smell

11% through hearing

83% through sight

Box 4 - What we remember

➡ 10% of what we read

➡ 20% what we hear

➡ 30% what we see

➡ 50% see and hear

➡ 80% what we say

➡ 90% say and do

Who is a facilitator?

- ✚ A facilitator is someone who uses knowledge of group processes to formulate and deliver the meeting interactions to be effective
- ✚ Focus is on effective processes allowing the participants to focus on the content
- ✚ Facilitation is learner-centered.
- ✚ Helping others to learn and you learn too
- ✚ 'Making things easy'

What makes a good facilitator?

Exercise:

- ✚ **Reflection:**
 - ➡ Think back to your own school days and the teaching and teachers you encountered.
 - ✚ Describe the teacher who made you feel like dropping the subject.
 - ✚ Describe the teacher who made you enjoy the lessons

Who is an effective facilitator?

- ✚ Know their subject matter.
- ✚ Take the time to get to know their audience
- ✚ Are nonjudgmental.
- ✚ They respect differences of opinion and life choices
- ✚ Are culturally sensitive.
- ✚ Are self-aware.
 - ➡ They recognize their own biases and act in a professional manner when their "hot buttons" are pushed.
- ✚ Are inclusive
- ✚ Are lively, enthusiastic and original.
- ✚ Use a variety of vocal qualities.
- ✚ Use "body language" effectively.

- ✚ Make their remarks clear and easy to remember.
- ✚ Illustrate their points.
- ✚ Understand group dynamics and are comfortable managing groups.
- ✚ Are flexible

How to Facilitate Effectively

The core values of trust and integrity are important expectations in ensuring that the injections given do no harm to both receivers and providers.

To facilitate effectively, you need to:

1. Create an Effective Learning Atmosphere

- ➡ Support the participant group by building an atmosphere of trust and modeling a positive attitude.
- ➡ Ensure that the entire course content is covered.
- ➡ Model effective facilitation skills.

1. Prepare Clear, Well-Structured Handouts

Basic facilitation skills

- ✚ Ask open-ended questions.
- ✚ Listen to both verbal and non-verbal communication
- ✚ Rephrase participants' communications accurately and without judgment.
- ✚ Respect every participant's feelings, perspectives, and contributions.
- ✚ Adhere to time schedule.
- ✚ Focus on developing skills and not only on knowledge.
- ✚ Make the learning process active.
- ✚ Make the course material clear by speaking slowly and using language that is understood by all participants

Facilitators' Skills

The following are useful skills for the facilitator (See Box 9 for tips):

Non-Verbal

- ➔ Maintain eye contact with everyone in the group as you speak.
- ➔ Do not appear to favour certain people in the group.
- ➔ Move around the room without distracting the group.
- ➔ Avoid pacing or addressing the group from a place where you cannot be easily seen.
- ➔ React to what people say by nodding, smiling, or other actions that show you are listening.
- ➔ Stand in front of the group; do not sit – particularly at the beginning of the session. It is important to appear relaxed and at the same time be direct and confident.

Verbal

- ➔ Ask questions that encourage responses. Open-ended questions help: 'What do you think about...,' 'How...,' 'What if...,' etc. If a participant responds with a simple "YES" or "NO," encourage elaboration by asking questions like 'Why do you say that?'
- ➔ Ask the other participants if they agree with a statement someone makes. Be aware of your tone of voice, and speak clearly and slowly.
- ➔ Be sure the participants talk more than you do.
- ➔ Do not answer all questions yourself. Participants can answer each other's questions. Say 'Does anyone have an answer to that question?'
- ➔ Paraphrase by repeating statements in your own words. You can check your understanding and reinforce statements.

- ➡ Summarize the discussion. Be sure everyone understands it and keeps it going in the direction you want. See if there are disagreements and draw conclusions.
- ➡ Reinforce statements by sharing a relevant personal experience. You might say, 'That reminds me of something that happened last year'..."

Lesson Planning

The three main components of a lesson plan are:

- a) Introduction
- b) Presentation and Exercises
- c) Conclusion.

The stages of a lesson therefore entail:

1. Opening of the lesson and motivating the learners.
2. Reviewing past work related to the current lesson's objectives and content.
3. Introducing the lesson topic: explain the objectives to be achieved, and the teaching/learning method (s) to be used.
4. Presenting new information and demonstrate, explain, or illustrate, as required.
5. Engaging the participants actively in the teaching/learning process.
6. Reinforcing the new learning by questioning, repetition, practice, etc.
7. Assessing the learning and repeat, or practice further if necessary.
8. Summarizing the lesson and close, indicating opportunities for further study.

Effective time management of the lesson is critical.

In preparation for training, the facilitator is expected to be able to design a lesson plan inclusive of:

- ✚ Prepare learning objectives (see page 14,15)
- ✚ Prepare content
- ✚ Decide on teaching/learning Methods based on the specific objectives and content (see page 16)
- ✚ Organise relevant practical exercises
- ✚ Design evaluation tools to assess learning progress;
- ✚ Select training methods and techniques (Table 1);
- ✚ Select and use training materials (Table 2);
- ✚ Prepare a timetable;
- ✚ Conduct training, using principles of adult learning (see page 25);
- ✚ Evaluate the training based on set expectations, and conduct:
 - ➡ Daily formative evaluation
 - ➡ Pre-training assessment
 - ➡ Post-training assessment
 - ➡ Impact evaluation (part of programme design).

Remember, the facilitator needs to adapt content to the skill level of the individuals being taught.

Learning Objectives

Learning objectives:

- ✚ Give directions and define in precise terms what is to be accomplished in a given activity.
- ✚ Describe learning outcomes or behavioural changes or what is expected of the learner at the end of the learning experience(s).
- ✚ Guide all activities of programme for both planners and participants.

Learning Objectives range from **general** to **specific** according to levels of specificity.

👉 **General** objectives guide content selection and are written at course or module level. They are written with passive verbs, therefore not measurable.

E.g. “Understand the communication process;”

👉 **Specific** objectives are derived from general objectives and guide content development at unit, lesson, etc. levels. They are written with active verbs, are therefore measurable.

E.g. “Define the term communication;”

“List the types of communication;”

“Identify common barriers to communication.”

Writing of specific objectives depends on the different kinds of learning. Examples include:

Knowledge/Information/Facts

Objectives for learning knowledge/information/facts use active verbs such as:

➡ List	➡ Explain
➡ Name	➡ <i>Describe</i>
➡ Tell	

Skills

There are many kinds of skills, including manual skills, communication, cognitive, problem solving/decision-making and leadership skills. Objectives for learning new skills use words like:

➡ Apply	➡ Use	➡ Differentiate
---------	-------	-----------------

➡ Demonstrate	➡ Construct	➡ Plan
➡ Compare	➡ Develop	➡ Examine
➡ Analyse	➡ Decide	➡ Implement

Attitudes

Attitude changes are the hardest to teach and evaluate; learning is measured indirectly by observing behaviours. Objectives for learning new attitudes are phrases like:

"Demonstrate --- by ---" (e.g. "demonstrates respect for patients by greeting them by their name, listening closely to their questions...")

Factors to consider when selecting teaching methods and materials

- ➡ Target audience
- ➡ Subject matter
- ➡ Resources available
- ➡ Venue characteristics

Table 1: Teaching/Learning Methods

Type	Use	Advantage	Limitation
Lecture	➡ To provide oral information to large and small groups. ➡ To provide factual knowledge	➡ Inexpensive ➡ Apparent saving of time (for the teacher) and resources ➡ Presence of the teacher (showmanship) ➡ Covers a large group of students ➡ Covers large	➡ A monologue ➡ Keeps the students passive ➡ Does not help students learn how to solve problems ➡ Does not allow for individual pace of learning

Type	Use	Advantage	Limitation
Discussion	<ul style="list-style-type: none"> ➔ To increase knowledge and elicit reactions from individuals and groups ➔ To stimulate creative thinking 	<p>amount of information in a specified period of time</p> <ul style="list-style-type: none"> ➔ Inexpensive ➔ Interactive ➔ Accounts for participants' views 	<ul style="list-style-type: none"> ➔ Can be time consuming
Buzzing	<ul style="list-style-type: none"> ➔ To increase knowledge 	<ul style="list-style-type: none"> ➔ Stimulates individual thinking 	<ul style="list-style-type: none"> ➔ Can be time consuming
Brainstorming	<ul style="list-style-type: none"> ➔ To increase knowledge ➔ To change attitude 	<ul style="list-style-type: none"> ➔ Consensus building ➔ Highly interactive ➔ Elicits group's understanding/ ➔ Agreement on a topic 	<ul style="list-style-type: none"> ➔ Can be time consuming
Small Group Activity	<ul style="list-style-type: none"> ➔ To build problem solving skills ➔ To strengthen independent learning ➔ To develop peer teaching 	<ul style="list-style-type: none"> ➔ Permits a teacher/student dialogue ➔ Facilitates evaluation 	<ul style="list-style-type: none"> ➔ High cost in personnel and time (unless peer teaching is used)
Demonstration	<ul style="list-style-type: none"> ➔ To teach a specific skill or technique ➔ To model a step-by-step approach ➔ To build skills/competence ➔ To increase knowledge 	<ul style="list-style-type: none"> ➔ Inexpensive ➔ Highly interactive ➔ Easy to focus learner's attention ➔ Shows practical application of a method ➔ Assesses 	<ul style="list-style-type: none"> ➔ Can be expensive, depending on the material used in the demonstration ➔ Number of students is

Type	Use	Advantage	Limitation
Case Study	<ul style="list-style-type: none"> ➔ To develop observation skills ➔ To change attitude ➔ To discuss common problems ➔ To develop problem-solving skills ➔ To promote group discussion and group problem-solving 	<p>participants' mastery of topic</p> <ul style="list-style-type: none"> ➔ Problem-oriented ➔ Reality-oriented ➔ Interactive 	<p>limited</p> <ul style="list-style-type: none"> ➔ Keeps the students passive ➔ Can be time consuming
Role Play	<ul style="list-style-type: none"> ➔ To build skills/competence ➔ To increase knowledge ➔ To change attitude 	<ul style="list-style-type: none"> ➔ Problem-oriented ➔ Reality-oriented ➔ Interactive ➔ Problem-solving ➔ Interactive ➔ Allows learners to explore alternative approaches to a situation 	<ul style="list-style-type: none"> ➔ Can be time consuming
Simulation	<ul style="list-style-type: none"> ➔ To build skills/competence ➔ To increase knowledge ➔ To change attitude ➔ To simulate real situation and solve a problem ➔ Improve practical abilities of those in the field 	<ul style="list-style-type: none"> ➔ Provides many possible solutions to problems 	<ul style="list-style-type: none"> ➔ Can be time consuming
Focus Group Discussion	<ul style="list-style-type: none"> ➔ To increase knowledge ➔ To change attitude ➔ To illustrate reality ➔ To elicits group's 	<ul style="list-style-type: none"> ➔ Develops empathy and understanding ➔ Develops communication skill ➔ Provides 	<ul style="list-style-type: none"> ➔ Can be time consuming.

Type	Use	Advantage	Limitation
	solutions to a problem.	constructive feedback from peers and teachers ➔ Elicits individual's feelings, attitudes, opinion on topic ➔ Ensures full participation.	

Table 2: Teaching/Learning Aids

Type	Use	Advantage	Limitation
NON-PROJECTED Graphics: (drawings, various charts, various graphs, posters) Display Formats: (Boards: writing, Multi-purpose, Peg, Bulletin, Cloth, Magnetic) Models	➔ Communicate a message to the viewer ➔ Communicate a message to the viewer ➔ Display information ➔ Communicate a message to the viewer	➔ Easy to produce and duplicated ➔ Easy to store, catalogue and retrieve ➔ Are closer to reality than drawings ➔ Can be used repeatedly ➔ Can usually be made from locally produced materials ➔ Can be used alongside other training aids ➔ Promotes class participation ➔ Three-dimensional and introduce the concept of reality ➔ Some can be made with local materials ➔ Useful when actual	➔ For small audiences only (unless projected with epidiascope) ➔ For effective use, good duplicating equipment and trained staff needed ➔ For limited audience only ➔ Distracts the concentration of the instructor from the class to the board ➔ Material created cannot be stored for some boards ➔ Craftsmanship required for local construction ➔ Expensive ➔ Easily damaged or destroyed

Type	Use	Advantage	Limitation
Flip Chart	<ul style="list-style-type: none"> ➔ Displays information 	<p>equipment is not available</p> <ul style="list-style-type: none"> ➔ Gives an effective working demonstration ➔ Pages can be reused to teach the same material again ➔ Inexpensive ➔ Interactive ➔ Usable for a wide range of graphic presentations ➔ Allows step-by-step build up or organization of material presented 	<ul style="list-style-type: none"> ➔ Writing space is limited ➔ Material cannot be erased ➔ Distracts instructor's concentration from class
<u>PROJECTED</u> <ul style="list-style-type: none"> ➔ Still Pictures, Opaque Projector (epidiascope) 	<ul style="list-style-type: none"> ➔ For illustrating a subject 	<ul style="list-style-type: none"> ➔ Can project a variety of materials ➔ Can translate abstract ideas into a more realistic format ➔ Are readily available in books ➔ (including textbooks), magazines, ➔ Newspapers, catalogues, ➔ and calendars. ➔ Are relatively inexpensive. Many ➔ can be obtained at little or no cost. ➔ Can be used in many ways at all levels of instruction and in all disciplines 	<ul style="list-style-type: none"> ➔ Some photographs are simply too small for use before a group ➔ Are two-dimensional, they do not show motion ➔ Electricity required ➔ Bulky machine, difficult to transport ➔ Trained staff and duplicating equipment required
<ul style="list-style-type: none"> ➔ Overhead Projector 	<ul style="list-style-type: none"> ➔ Can be used for large audiences 	<ul style="list-style-type: none"> ➔ Presenter faces the audience and can watch 	<ul style="list-style-type: none"> ➔ Equipment required

Type	Use	Advantage	Limitation
		<p>reactions during the presentation</p> <ul style="list-style-type: none"> ➤ Projector can be used in a normally lighted room. This increases audience attention and participation ➤ Large, bright projected image results with a minimum of projection distance to the screen ➤ Can present information in systematic, developmental sequences ➤ Rate of presentation controlled by the instructor ➤ Transparencies can be rapidly prepared with easy-to-use materials and available reproduction equipment. The results are tailor-made to serve the objectives of the presenter 	<ul style="list-style-type: none"> ➤ Electricity required ➤ Transparencies easily damaged or destroyed
➤ Filmstrips	➤ Presentation of information to large audiences	<ul style="list-style-type: none"> ➤ Compact, easily handled, and always in proper sequence ➤ Can be supported with captions or recordings 	➤ Equipment required
➤ Slide	➤ Presentation of	➤ Provides colourful,	➤ Equipment

Type	Use	Advantage	Limitation
Projector	information to large audiences	<p>realistic reproduction of originals</p> <ul style="list-style-type: none"> ➤ Easily adaptable to self-learning packages ➤ Easily handled, stored, and re-arranged for various uses ➤ Can be combined with taped narrative for greater effectiveness 	<p>required</p> <ul style="list-style-type: none"> ➤ Duplication of colour slides expensive ➤ Slides may need to be purchased ➤ Slides can get out of sequence
➤ Tape Recording	➤ Individual or group use	<ul style="list-style-type: none"> ➤ Easy to prepare ➤ Flexible and adaptable element of instruction 	<ul style="list-style-type: none"> ➤ Equipment required ➤ Has a limited number of applications
➤ Interactive Video	➤ Self-instruction	<ul style="list-style-type: none"> ➤ The programmes require the viewer to play an active part in the presentation of materials ➤ Students who know the subject can take the test immediately, instead of going through the lesson; the system indicates correct or incorrect answers 	<ul style="list-style-type: none"> ➤ Equipment required ➤ Expensive; production costs high ➤ Equipment cumbersome
➤ Videotape Recording	➤ Presentation of information to large or small groups	<ul style="list-style-type: none"> ➤ Easy to use - a programme can be viewed by an individual or a group, in full room light ➤ The presentation can be run at any time, and it can be repeated, stopped or advanced as needed 	<ul style="list-style-type: none"> ➤ Equipment required

Type	Use	Advantage	Limitation
		<ul style="list-style-type: none"> → The presentation is standardized so that all viewers get the same information in the same way → Films, slides, graphics and other videotaped material can be integrated into the programme → Playback capability of video → recording permits analysis of → on-the-spot action → Permits normally unavailable resources to be presented → Repetitive training can be presented, such as general employee training and re-qualifications training 	
<ul style="list-style-type: none"> → Multimedia Projection 	<ul style="list-style-type: none"> → Provides → information to large and small audiences 	<ul style="list-style-type: none"> → Interactive → Programme can be viewed individually or by groups 	<ul style="list-style-type: none"> → Equipment required → Expensive
<ul style="list-style-type: none"> → Motion Pictures 	<ul style="list-style-type: none"> → Suitable for large audiences (16mm) 	<ul style="list-style-type: none"> → Particularly useful in describing motion, showing relationships, or providing dramatic impact → Emotive, can develop attitudes, pose problems, demonstrate skills → Ensures consistency 	<ul style="list-style-type: none"> → Equipment required → Expensive equipment and production process → Electricity required → For small groups only (8 mm) → Does not

Type	Use	Advantage	Limitation
<ul style="list-style-type: none"> → Closed Circuit Television 	<ul style="list-style-type: none"> → For individual or group viewing of information 	<p>in presentation of material</p> <ul style="list-style-type: none"> → Permits normally unavailable resources to be presented → Allows trainee to see small components or complex processes closely → Portable equipment can function on battery for field recording 	<p>permit self-pacing</p> <ul style="list-style-type: none"> → Films rapidly become obsolete Difficult to transport → Little advantage when communication is primarily verbal → Electricity required → Equipment expensive
<ul style="list-style-type: none"> → Radio Broadcasts 	<ul style="list-style-type: none"> → For small or large audiences in widely separated places 	<ul style="list-style-type: none"> → Conserves instructors' resources by permitting simultaneous broadcast to many classes → Capable of attracting and maintaining attention → Reception equipment relatively cheap and will function on batteries 	<ul style="list-style-type: none"> → Special studio facilities and staff are required for broadcasts → Participants must adapt to fixed schedule → No immediate feedback → Non-interactive
<ul style="list-style-type: none"> → Computers 	<ul style="list-style-type: none"> → Self-paced learning. 	<ul style="list-style-type: none"> → Large amount of educational materials can be stored compactly → Allows individual pace of learning → Can be adapted to individual or group learning → Suited for problem-solving and programmed examination. 	<ul style="list-style-type: none"> → Equipment expensive → Computer skills required → Electricity required.

Sources:

1. Reid, Una V. 1995. *Audio-visual Aids. A Manual*. PAHO/WHO, Bridgetown, Barbados, pp.28-38.
2. Fundamentals of Classroom Instruction. Volume one in the Instructor Training Series, 1983. G.P. Nicholls, East Brunswick, New Jersey, pp.6-35.

3. Oshaug, A., Benbouzid, D., Guilbert, J.-J. 1985. *Educational Handbook for Nutrition Trainers*. WHO, WHO Collaborating Centre, Nordic School of Nutrition, University of Oslo. WHO, Geneva, pp.3.28 –3.34.

Principles of Adult Learning

Adult learning occurs best when it:

a) Is self-directed

Adults can share responsibility for their own learning because they know their own needs.

b) Fills an immediate need

Motivation to learn is highest when it meets the immediate needs of the learner.

c) Is participative

Participation in the learning process is active, not passive.

d) Is experiential

The most effective learning is from shared experience; learners learn from each other, and the trainer often learns from the learners.

e) Is reflective

Maximum learning from a particular experience occurs when a person takes the time to reflect upon it, draw conclusions, and derive principles for application to similar experiences in the future.

f) Provides feedback

Effective learning requires feedback that is corrective but supportive.

g) Shows respect for the learner

Mutual respect and trust between trainer and learner help the learning process.

h) Provides a safe atmosphere

A cheerful, relaxed person learns more easily than one who is fearful, embarrassed, or angry.

i) Occurs in a comfortable environment

A person who is hungry, tired, cold, ill, or otherwise physically uncomfortable cannot learn with maximum effectiveness.”

Preparation for Training

This section of the *Guide* focuses on preparation for, organization, implementation and evaluation of training. The intent is to provide the facilitator with basic educational processes, which will assist in the training.





How to use the Guide

This guide suggests methods of teaching that can be used for relevant topics.

The *Guide* can be presented by a facilitator and/or used by healthcare workers individually or in groups using methodologies that are appropriate to the content of the module. It provides training materials to assist the trainer/facilitator prepare and organize for the necessary materials for Operational Level Health Workers training.

The *Guide* should be read by the trainer or the facilitator before the start of the training and ensure that all the needed training materials are ready. It is divided into four thematic sections, covering in detail how each will be presented, its objectives, content, materials that will be required, methods of training and how each session will be evaluated.

These sections are:

-  Injection Safety Procedures and Practices (including Infection Prevention and Control)
-  Logistics Management
-  Health Care Waste Management)
-  Behavior Change and Communication for Injection Safety

An additional section covering facilitation skills is also included.

The four thematic sections are presented as modules. Each module has information on:

- ➡ Estimated time needed for training
- ➡ Description of the content of the module
- ➡ General and Specific Objectives
- ➡ Content
- ➡ Teaching/Learning Methods
- ➡ Teaching/Learning Aids
- ➡ Exercise (s)
- ➡ Assessment of Learning
- ➡ Training Tips
- ➡ Example (s) of Developed Teaching/Learning Methods
- ➡ Tables, pictorials, and boxes are used in the design of the *Guide*.

Throughout each module, boxes are used to:

- ➡ Highlight key content areas
- ➡ Summarize content at the end of the module
- ➡ Present training tips.

Trainer Preparation

- ➡ The trainer should be adequately prepared for the module or unit s/he is expected to facilitate learning.
- ➡ Training can occur at on-site or off-site facilities. Off-site training occurs away from the healthcare facility or practice setting.
- ➡ On-site training through supportive supervision occurs at practice settings and is more advantageous in that the facilitator can observe actual practice of injection administration. On-site training also provides the opportunity for participants to practice giving injections safely.

- ✚ If on-site facilities are recommended, choose a time and place that has minimum adverse affects on the service provision.
- ✚ To obtain the maximum benefit, it is recommended that the users read the content comprehensively and complete the exercises. Answers to the exercises are provided.
- ✚ Educational strategies, which include related teaching/learning methods, and management strategies, support the implementation of the *Guide*.
- ✚ For further reading, some documents have been included in the Appendices.
- ✚ These references may be used by both facilitators and participants in the pursuit of information on injection safety and infection prevention and control.

Micro-facilitation

Group work:

Divide the participants into groups. Let each group choose a unit from the modules and present it in ten minutes.

Each group should consider the following during presentation:

- ➡ Introduction
- ➡ Objectives
- ➡ Methods and materials
- ➡ Feedback and evaluation (*Use The Checklist From Box 8 Below To Evaluate*)
- ➡ Conclusion

Introductory activities

These activities take place on the morning of the first day of the training.

They include:

1. Welcoming and registering the participants (30 minutes)

This should include providing the participants with nametags and marker pens. Instruct the participants to write their names legibly (and their designation, work station if they wish).

2. Self introductions (20 minutes)

Let each participant self-introduce, giving name, designation, station, years of service, interests/ hobbies etc.

3. Introduction of the course/ training (20 minutes)

- ✚ Reviewing of the training goals and objectives
 - ➡ Briefly review the overall workshop goals and objectives.
- ✚ Reviewing of the training schedule
 - ➡ Go through the schedule for the four days, highlighting the main topics.
- ✚ Reviewing workshop methodology
 - ➡ Mention that the training is intensive and interactive, with a lot of group work, exercises, and demonstrations.

4. Establishing group norms (10 minutes)

- ✚ Let the participants establish their own norms for the workshop
- ✚ Participants should also choose their own leaders (chairperson, rapportuers, spiritual leader etc)

5. Addressing administrative preparations and issues (10 minutes)

These include accommodation and meals, allowances, location of ablution facilities, length of workshop, transport etc)

ADDITIONAL OPTIONAL RESOURCES FOR FACILITATION

Box 5 - LECTURE CHECKLIST

1. Are you using lectures for those occasions when other methods will be less useful to your participants?
2. Have you limited your talk to no more than 20 minutes?
3. Does your talk have a clear beginning, middle and end?
4. Do you always keep to simple key points?
5. Do you support your talk with a clear handout?
6. Do you know your own body language mannerisms and how they affect the lecture?

BOX 6 - TRAINERS'S CHECK LIST: ADULT LEARNING

Instructions

Think about your experiences as a trainer and answer the following questions. Answer YES or NO. Score yourself out of 9.

1. Is the atmosphere of your sessions friendly and encouraging?
2. Have you made any plans to relieve any anxieties your trainees may feel?
3. Do your teaching methods allow learners' previous experiences to be acknowledged or used?
4. Does the work allow participants to measure their own progress?
5. Do you make it clear that you are available for additional help if individuals have difficulties?
6. Are the first few minutes of your sessions always attention grabbing?
7. Do you build in frequent opportunities for reinforcement and practice?
8. Do you avoid lectures or at least limit them to 10-20 minutes?
9. Have you built in regular feedback sessions?

State your strengths and areas to improve below

Box 7 - TRAINERS FEEDBACK CHECKLIST

1. Do you always give feedback immediately?
2. Do you always praise the good points before criticizing the bad?
3. Do you criticize the performance not the person?
4. Do you always give reasons for your feedback?
5. Do you always check if the learner has understood the feedback by asking open ended questions?
6. Do you concentrate on just a few criticisms at a time?
7. Do you create an atmosphere where the trainees can give constructive feedback to each?

Box 8 - Presentation Skills Checklist

Presenter: _____

Evaluator: _____

Put an X everywhere you agree with the statement.

Delivery	Content
➡ The speaker greeted the audience warmly.	➡ The opening got my attention.
➡ I could hear the speaker.	➡ The introduction told me what to expect from the presentation.
➡ I could understand the speaker.	➡ The purpose of the talk was clear.
➡ The talk was delivered with warmth and feeling.	➡ The talk was designed in a logical way from beginning to middle and end.
➡ The talk was delivered with personal conviction from both the mind and heart.	➡ The presentation was well-suited to the audience.
➡ The presentation seemed practiced.	➡ The content was interesting to me.
➡ The presenter involved the audience.	➡ The presenter summarized the main points before finishing.
➡ The presenter handled questions and	➡ The presenter let us know

comments with calm courtesy.	when the talk was over.
➔ The talk contained effective examples and illustrations.	➔ The talk ended on a strong final line or idea.
➔ The presenter defined technical terms and statistics for us.	➔ The presenter ended on time.
➔ Body Language	➔ Visual Aids
➔ The speaker stood during the presentation.	➔ The speaker used visual aids.
➔ The speaker had good eye contact with the audience.	➔ I could read the material from where I was sitting.
➔ The speaker showed no distracting movements or gestures.	➔ The visual aids got the point across in a clear and simple way.
➔ The speaker smiled.	➔ The speaker did not block the screen or flipchart.
➔ The presenter used his/her hands to help communicate ideas visually.	➔ The speaker talked to the audience rather than to the screen or flipchart.
➔ The speaker tried to use verbal focusing techniques.	➔ The visual aids used key words rather than sentences.

After the presentations, summarise by going through the points in Box 9 – Tips for the Facilitator.

The checklists adapted from International Training and Education Centre on HIV website

Box 9 – Tips for the Facilitator

- ➔ The facilitator should arrive at the training site in time to allow for setting up of the training session including checking for the required training equipment and supplies.
- ➔ Select a coordinator to manage the logistics (refreshments, equipment, supplies, etc.) of the training session.
- ➔ Understand how adults learn; therefore limit the time spent in the classroom.
- ➔ Devote greater portion of the course content to demonstration and practice.
- ➔ Demonstrate for the participants the correct procedure.
- ➔ Require the participants to return the demonstrations until you are satisfied that they have mastered the required skills.
- ➔ Conduct practice sessions in areas of the healthcare facilities in which the skills will be used.
- ➔ Select participants based on the purpose and content of the module to be taught. For example, when training on logistics, commodity, etc. the participants should include supply managers, administrators/managers.
- ➔ Use healthcare facilities that perform poor injection safety practices, as well as those with model performance. This will allow participants to observe, assess, and understand the difference between 'good' and 'bad' practice.
- ➔ Conduct pre-training assessment of knowledge prior to training, and post-training assessment at the closure of each training session. Discuss results with the participants.
- ➔ Allow sufficient time after the post-training assessment results and discussion for remedial work.

At the end of each training session, allow time for re-call, plans for improving practice, and closure.

PART 3:

MODULES

MODULE 1 - INFECTION PREVENTION AND CONTROL

Introduction:

This module introduces the topics of infection prevention and control, and injection safety. It also provides an overview of the situation of injection safety nationally, regionally, and globally.

Content:

Unit I: Introduction to Infection Prevention and Control (IPC)

Unit II: Risks Associated with Unsafe injection Practices

Unit I: Introduction to Infection Prevention and Control (IPC)

Duration:

1 hour

Specific Objectives:

At the end of the unit, the participants will be able to:

1. Define the terms *hospital acquired infection*, and *infection prevention and control*;
2. Discuss modes of disease transmission;
3. Define injection safety;
4. Discuss the relationship between infection prevention and control and injection safety.
5. Discuss burden of unsafe injection practice

Materials:

- ✎ Flip-charts
- ✎ Flip-chart marker pens
- ✎ Masking tapes

Method:

↳ Lecture

Content:

1. Definitions:

↳ *Hospital acquired infection* refers to infections acquired during the delivery of healthcare while receiving treatment from or visiting a health facility.

↳ *Infection prevention and control* refers to policies and procedures to minimize the risk of spreading infections, especially in hospitals and human or animal healthcare facilities.

The purpose of infection prevention and control is to reduce the occurrence of infectious diseases.

2. Modes of disease transmission:

- ↳ Inhalation
- ↳ Direct contact
- ↳ Inoculation
- ↳ Ingestion

Injection safety focuses on preventing transmission through inoculation.

3. Injection safety:

Injection safety: A safe injection is one that is given using appropriate equipment, does not harm the recipient, does not expose the provider to any avoidable risk and does not result in any waste that is dangerous for other people.

4. Relationship between infection prevention and control, and injection safety:

Injection safety is an integral component of infection prevention and control

- ↳ It is an element of Standard Precautions

- ✚ It is key element of patient and healthcare worker safety
- ✚ It is supported by infection prevention and control policies and procedures such as:
 - ➔ Hand Hygiene
 - ➔ Housekeeping
 - ➔ Waste Management
- ✚ It is a critical item of the continuous quality improvement (CQI) programme, managed by the healthcare team and specifically the infection prevention and control team in healthcare facilities.

5. Burden of Unsafe Injection Practices:

The estimated proportion of injection administered with reused injection equipment in the absence of sterilization is high in developing and transitional countries. Unsafe injection practices causes infection with Hepatitis B virus (HBV) Hepatitis C virus (HCV) and human immunodeficiency virus (HIV). Each year, in developing and transitional countries, unsafe injections account for 21 million HBV, 33% of new HCV infections, with two million people infected and 5% of new HIV infections with 260 thousand people infected (Table 4).

Out of the more than 16 billion injections are given each year in developing and transitional countries, 90 to 95% of injections are therapeutic; 5-10% is given for immunization. However, 70% of these injections are unnecessary as oral medications could have been prescribed. The consequences of these unsafe injections lead to death and disability with WHO (2003) estimating that over 500 thousand deaths may have occurred because of unsafe injection practices (Table 5).

Socio-economically, each year the annual global burden of indirect medical costs due to hepatitis B, hepatitis C and HIV/AIDS is estimated to be **US\$535 million**. The socio-

economic, psychosocial, and other burden occur at the individual, family, community, and the national levels.

Table 3: Regional Burden of Infections Caused by Unsafe Injections

Infections Due to Unsafe Injections	Africa (AFRO)	Region of the Americas (AMRO)	Eastern Mediterranean (EMRO)	European (EURO)	South East Asia (SEAR)	West-ern Pacific (WPRO)	The World
HBV	10.9%	2.3% -- 9.3%	58.3%	0.9%	22.4% -53.6%	33.6%	31.9%
HCV	16.4%	0.9% --9.2%	81.7%	0.9% -- 21.2%	30.8% -59.5%	37.6%	39.9%
HIV	2.5%	0.2% --1.5%	7.1%	0.6%	7.0% --24.3%	2.5%	5.4%

Source: Hauri, A., Armstrong, Gregory, Hutin, Yvan J. F., *The Global Burden of Disease Attributable to Contaminated Injections given in Health Care Settings*". International Journal of STD & AIDS, 2004, 15: 7-16.

Table 4: Proportion of Infections and Total Burden of Disease Caused by Unsafe Injection Practices Annually, 2000.

Infections	Estimated Burden of Infections Due to Unsafe Injection Practices	Estimated Proportion of Infections Due to Unsafe Injection Practices
Hepatitis B	21 million new cases	32%
Hepatitis C	2 million new cases	40%
HIV/AIDS	260,000 new cases	5%
Deaths in 2000 due to unsafe injection practices in the past, 501,000 deaths		

Source: WHO. *"Safety of Injections. Global Facts and Figures,"* pp.1-2.

Unit II: Risks Associated with Unsafe injection Practices

Duration:

2 hours

Specific Objectives:

At the end of the unit, the participants will be able to:

1. Explain the risks associated with unsafe injection practices;
2. List the diseases/conditions caused by unsafe injection practices;
3. Identify the risk groups;
4. List the conditions causing risks to providers, patients/clients, and communities.

Content:

1. Risks associated with unsafe injection practices include:

- ✎ Transmission of infections: Inoculation of an infectious agent into the patient's body;
- ✎ Paralysis: Injection of a drug into a nerve, which can lead to damage to the nerve. This can result in weakness of the limb (lameness) supplied by the nerve;
- ✎ Drug reactions: Abnormal response of the body to a drug. The most life threatening is anaphylaxis, which is sudden collapse of the circulatory system due to immunological response to the injected drug.

2. Diseases/conditions transmitted or caused by unsafe injection practices:

Hepatitis B	Hepatitis C	
HIV/AIDS	Abscesses	
Hemorrhagic fevers	Malaria	Tetanus

3. Risk groups:

- Patients/Clients, especially immuno-compromised individuals
- Healthcare workers
- Healthcare waste management personnel
- Communities
- Drug users

4. Conditions causing risks to providers, patients and communities (see Table 3):

Table 5: Conditions Causing Risks

Providers	Patients/Clients	Community
<ul style="list-style-type: none">➤ Inadequate supply of appropriate safety boxes➤ Unsafe practices that lead to needlestick injuries when:<ul style="list-style-type: none">➤ Recapping needles➤ Manipulating used sharps (bending, breaking or cutting hypodermic needles)➤ Passing on sharps from one healthcare worker to another➤ Sharps are found in unexpected places like linen➤ Patient/client suddenly moves during administration of injection.	<ul style="list-style-type: none">➤ Receive injections when there are other treatment alternatives➤ Re-use of injection equipment➤ Self-medication➤ Sharps are found in unexpected places like linen➤ Patient/client suddenly moves during administration of injection➤ When contaminated drug is administered➤ When aseptic technique is not observed by healthcare worker➤ Administration of the drug at incorrect anatomical site➤ Accidental switching of drugs➤ Expired drugs➤ Package is damaged or compromised.	<ul style="list-style-type: none">➤ Unsafe waste disposal practices such as:<ul style="list-style-type: none">➤ Non-secure waste site (should be fenced)➤ Improperly placed disposal site (too close to people, crops, water sheds)➤ Improperly disposed waste (pit too shallow, incinerator overflowing, open dumping)➤ Re-used syringes and needles➤ Sharing syringes and needles.

MODULE 2 - SAFE INJECTION PROCEDURES AND PRACTICES

Introduction:

This module provides an overview of existing infection prevention and control, and injection safety policies and guidelines. It is designed to assist participants improve their knowledge, skills and attitude in the practice of safe injection.

Control measures and practices for transmission of bloodborne pathogens are also included.

Contents

Unit I: Infection Control Policies and Guidelines

Unit II: Ensuring Safe injection

Unit III: Unsafe Injection Practices

Unit I: Infection Control Policies and Guidelines

Duration:

20 Minutes

Specific Objectives:

At the end of the unit, the participants will be able to:

1. Discuss the purpose of policy;
2. Discuss the purpose of standards and guidelines;
3. State the components of Standard Precautions;
4. Demonstrate specific IPC skills in Hand hygiene and Housekeeping in relation to injection safety;
5. Discuss the hierarchy of controls and their efficacy;
6. Identify the roles and responsibilities of different partners, national institutions, continuous quality improvement (CQI) team, the community and other members of the healthcare system for infection prevention and control, and injection safety;

Materials:

✚ Flip-charts, Marker pens

✚ Masking tapes

✚ Copy of :

- The MoH National Policy on Infection Prevention and Control
- The MoH National Policy on Injection Safety
- A typical guideline/standard

Method:

🔗 Lecture

🔗 Discussion

Content:

1. Policy:

Policies are organizational statements that govern the limits of operation and Policies give direction for operations. Safe injection policies form the basis for action on injection practice

A policy declaration has the following components

Policy statements on injection safety therefore includes:

- 🔗 Promotion of rational use of injections
- 🔗 Re-use prevention syringes and needles
- 🔗 Disposal of used syringe and needle at point of use
- 🔗 Immediate segregation of waste at the point of generation
- 🔗 Safe treatment and final disposal of used injection equipment

There are global, regional, and national policies that favour safe injection practices.

2. Standards And Guidelines :

A *standard* is a recommended level of quality of care with regard to ensuring safety of injections while *guidelines* refer to procedures for performing a task to ensure the safety of injections.

Standards and guidelines [for injection safety](#) serve the following purposes:

- 🔗 Ensure safety of injection practices
- 🔗 Ensure uniformity of practice
- 🔗 Provide baseline for monitoring and evaluation

🔗 Act as a mitigation tool for law enforcement

3. Standard Precautions

Standard Precautions apply to blood; all body fluids, secretions, and excretions regardless of whether or not they contain visible blood; non-intact skin; and mucous membranes.

Standard Precautions are designed to reduce the risk of transmission of micro organisms from both recognized and unrecognized sources of infection in healthcare settings, and apply to all patients regardless of diagnosis or presumed infectious status.

Standard precautions include:

1. Hand Hygiene (see Box 10)
2. Good Housekeeping (see Box 11)
3. Personal Protective Equipment
 - a. Gloves
 - b. Mask, Eye Protection, Face Shield
 - c. Aprons
 - d. Gown
4. Sharps Management (Occupational Health and Blood borne Pathogens)
5. Post-exposure Management
6. Appropriate Healthcare Waste Management
7. Patient Care Equipment
8. Linen
9. Environmental Control
10. Patient Placement

4. Hand hygiene and Housekeeping in relation to injection safety;

Box 10 - Hand Hygiene:

Hand hygiene is required:

- ✚ Immediately on arrival at work
- ✚ After touching blood, body fluids, secretions, excretions and contaminated items, whether or not gloves are worn
- ✚ Before putting on gloves for invasive procedures
- ✚ Before and after removing gloves
- ✚ Before and after each patient contact
- ✚ Between procedures on the same patient to prevent cross-contamination
- ✚ Anytime micro-organisms might be transferred to other patients, staff, or environments.

Box 11 – Good Housekeeping

Housekeeping aspects related to injection safety involve:

- ➔ Preparation of each injection in a clean designated area, where blood or body fluid contamination is unlikely.
- ➔ All counter tops must be cleaned with methylated spirit or sodium hypochlorite 0.5% at the beginning and end of each shift and as necessary.

5. Control Measures:

Control measures are the hierarchy of actions taken to prevent the introduction and transmission of blood borne pathogens in the workplace. Table 6 shows how to apply the hierarchy of controls framework to bloodborne pathogen hazards.

Hierarchy of controls and their efficacy

Table 6: Application of the Hierarchy of Controls

Method of control	Efficacy of control methods
<p>Elimination of hazard – complete removal of a hazard from the work area. Elimination is the method preferred in controlling hazards and should be selected whenever possible.</p> <p><u>Examples include:</u></p> <ul style="list-style-type: none">➔ Removing sharps and needles and eliminating all unnecessary injections.➔ Jet injectors may substitute for syringes and needles.➔ Elimination of unnecessary sharps like towel clips➔ Using needle-less Intra-venous (IV) systems.	<ul style="list-style-type: none">➔ IV needleless systems were shown to be 78.7 % effective in reducing IV-line-related needle-stick injuries over one year in a Canadian study.
<p>Engineering controls – controls that isolate or</p>	<ul style="list-style-type: none">➔ Sharps containers reduced injuries by

Method of control	Efficacy of control methods
<p>remove a hazard from a workplace. <u>Examples</u> include:</p> <ul style="list-style-type: none"> ➤ Sharps disposal containers (also known as safety boxes) ➤ Needles that retract ➤ Sheathe or blunt immediately after use (also known as safer needle devices or sharps with engineered injury-prevention features). 	<p>two thirds.</p> <ul style="list-style-type: none"> ➤ A review of seven studies of safer needle devices demonstrated a reduction in injuries from 23-100 % with an average of 71 %.
<p>Administrative controls – policies aimed to limit exposure to the hazard such as Universal Precautions.</p> <p><u>Examples</u> include:</p> <ul style="list-style-type: none"> ➤ Allocation of resources demonstrating a commitment to health-worker safety ➤ A needle-stick injury prevention committee <p>An exposure control plan</p> <ul style="list-style-type: none"> ➤ Removing all unsafe devices, and ➤ Consistent training on the use of safe devices. 	<ul style="list-style-type: none"> ➤ Poor safety climate and reduced staffing was associated with a 50 per cent increase in needle-stick injuries and near misses.
<p>Work practice controls – reduce exposure to occupational hazards through the behaviour of workers.</p> <p><u>Examples</u> include;</p> <ul style="list-style-type: none"> ➤ No needle recapping, ➤ Placing sharps containers at eye level and at arms reach, ➤ Emptying sharps containers before they are full, and ➤ Establishing means for the safe handling and disposal of sharps devices before beginning a procedure. 	<ul style="list-style-type: none"> ➤ Elimination of recapping resulted in a two-thirds reduction in needle-stick injuries.
<p>Personal protective equipment (PPE) – barriers and filters between the worker and the hazard.</p> <p><u>Examples</u> include:</p> <ul style="list-style-type: none"> ➤ Eye goggles ➤ Gloves ➤ Masks ➤ Gowns. 	<ul style="list-style-type: none"> ➤ PPE will prevent exposures to blood splashes but will not prevent needle-stick injuries. ➤ Double gloving in the surgical setting reduced punctured puncture of the inner glove by 60-70 %.

Source: ILO and WHO. 2005. *Joint ILO/WHO Guidelines on Health Services and HIV/AIDS. TMEHS/2005/8. Tripartite Meeting of Experts to Develop Joint ILO/WHO Guidelines on Health Services and HIV/AIDS*. International Labour Organization, Geneva, p. 37.

6. Roles And Responsibilities:

Table 7: Roles and Responsibilities

Level	Members Of Ministry Of Health & Partners	Roles & Responsibilities
Central	<ul style="list-style-type: none"> → Development Partners → Ministry of Health 	<ul style="list-style-type: none"> → Provide technical assistance → Provide financial assistance → Provide material assistance → Formulates national policy, regulations and guidelines on infection prevention and control, and safe injection → Provides necessary equipment and supplies → Keeps abreast of technology on infection prevention and control, injection safety, and waste management → Trains healthcare personnel in infection prevention and control, and injection safety
National	<ul style="list-style-type: none"> → National Injection Safety Committee → Quality Assurance Teams (central and institutional levels) 	<ul style="list-style-type: none"> → Coordinates stakeholders working in areas related to injection committees → Implements policies, regulations, and guidelines on infection prevention and control, and injection safety → Monitors plans and activities on infection prevention and control, and injection safety in private and public sectors → Leverages resources among relevant partners and agencies to foster infection prevention and control and injection safety progress → Formulate national standards and indicators for infection prevention and

Level	Members Of Ministry Of Health & Partners	Roles & Responsibilities
	<ul style="list-style-type: none"> → Training Institutions for Health Professionals → Regulatory Bodies: e.g., Nursing Council, Medical Council, Pharmacy Council, Medical Laboratory Scientist Council → Non-governmental organizations 	<p>control, and injection safety</p> <ul style="list-style-type: none"> → Conduct periodic audit for compliance → Develop/institute programmes to ensure compliance → Integrate content on infection prevention and control, and injection safety in curricula → Implement curricula → Regulate for inclusion of infection prevention and control, and safe injection practices in all professional training programmes → Monitor programmes for compliance → Provide: <ul style="list-style-type: none"> → Training → Services → Technical support → Financial assistance
Healthcare Institutions	<ul style="list-style-type: none"> → Infection Prevention and Control Committee → Infection Prevention and Control Nurse/Officer 	<ul style="list-style-type: none"> → Establishes processes in healthcare institutions to ensure compliance with infection prevention and control, and safe injection practices → Follow-up and manages reports of non-compliance → Monitors performance of infection prevention and control, and injection practices → Checks patient records for adverse effects

Level	Members Of Ministry Of Health & Partners	Roles & Responsibilities
	<ul style="list-style-type: none"> → Healthcare Facilities Clinical Staff → Supervisors/Managers → Logistics/Supplies Officer → Waste Management Officer → Housekeeping Supervisor 	<ul style="list-style-type: none"> → Records and report accordingly → Adhere to policy and procedure for infection prevention and control, and safe injection practices → Keep abreast of infection prevention and control, and injection safety technology → Advocate for patient compliance for injection safety → Monitor and evaluate staff performance of infection prevention and control, and injection safety → Ensure the availability of adequate equipment and supplies for injection safety → Develops and manages inventory of infection prevention and control, and injection safety equipment and supplies → Trains staff in the collection, storage, transport and disposal of sharps and other medical waste → Ensures staff compliance → Ensures training of staff in proper housekeeping procedures → Monitors staff for compliance with infection prevention and control policies and guidelines including cleaning and keeping clean designated areas for injection preparation

Level	Members Of Ministry Of Health & Partners	Roles & Responsibilities
Community		<ul style="list-style-type: none"> ➤ Disposes used syringes and needles according to national guidelines ➤ Reduces demand for injections ➤ Creates awareness of the risk of unsafe injections ➤ Complies with infection prevention and control policies and guidelines.

Source: Reid, Una V. *DO NO HARM: Injection Safety in the Context of Infection Prevention and Control, Facilitators' Guide*. Harare, Zimbabwe and Arlington, Va.: WHO/AFRO and MMIS/John Snow

Unit II: Ensuring Safe injection

Duration:

1 hour

Specific Objectives:

At the end of the unit, the participants will be able to:

1. Identify the 'right' ways to give a safe injection;
2. Demonstrate safe injection practices
3. Discuss the elements of 'best' practices in injection safety;
4. List the different injection devices and the advantages and disadvantages of each;
5. Discuss management of exposure and injuries
6. Discuss the requirements for a sharps injury prevention programme

Materials:

- ✎ Flip-charts
- ✎ Marker pens
- ✎ Masking tapes
- ✎ Vial/ampoule
- ✎ Various Types of Injections and Syringes
- ✎ Diluents
- ✎ Antiseptic for hand rub (e.g. spirit)
- ✎ Needle removers
- ✎ Safety boxes
- ✎ Bin liners
- ✎ Case study handouts

Methods:

- ↳ Brainstorming
- ↳ Demonstration
- ↳ Lecture
- ↳ Case study

Content:

1. Right way to give injection:

A *safe injection* is only given when there is no other suitable alternative. Safety is assured when the right drug is given to the patient in the right dose, using the right needle and syringe, at the right site, by the right route.

A skilled healthcare worker should give a safe injection, and the waste from its use should not cause harm to the provider, the recipient or the community (Refer to Table 8 for 'rights'). The key steps of a Safe Injection involves the use a syringe and needle from a new, sealed undamaged packet for every injection;; placing syringe and needle in a safety box immediately after use without re-capping; and managing injection waste safely and appropriately.

Table 8: 'Right' Ways to Give a Safe Injection

Rights	Standards Always check and verify all 'rights'	Method of Verification	Verified By:
1. Right Patient	<ul style="list-style-type: none"> What is the name on the prescription? Is this the right patient? 	<ul style="list-style-type: none"> Ask patient/guardian, etc. to repeat name. 	<ul style="list-style-type: none"> Injection Provider
2. Right Drug	<ul style="list-style-type: none"> Is the name of the drug on the prescription the same as the injection you are about to administer? 	<ul style="list-style-type: none"> Verify name of drug on prescription with injection to be administered. If you are unsure verify with physician or pharmacist. 	<ul style="list-style-type: none"> Injection Provider
3. Right Formulation	<ul style="list-style-type: none"> Could the medication be given orally instead of as an injection? 	<ul style="list-style-type: none"> Discuss with patient available choices. 	<ul style="list-style-type: none"> Injection Prescriber
4. Right Injection Equipment	<ul style="list-style-type: none"> Use only sterile non-re-usable syringes, dental cartridge. 	<ul style="list-style-type: none"> Check to ensure that syringe/needle package is unbroken. 	<ul style="list-style-type: none"> Injection Provider
5. Right Dosage	<ul style="list-style-type: none"> Check dosage against patient's age, weight and the pharmacokinetics of the drug. 	<ul style="list-style-type: none"> Read the pharmaceutical recommendations of the drug. If unsure, verify with the physician/prescriber. 	<ul style="list-style-type: none"> Injection Prescriber and Injection Provider
6. Right Time	<ul style="list-style-type: none"> Follow the specific dose interval. 	<ul style="list-style-type: none"> Be mindful of the action of the drug and why the time interval should be followed. Explain the importance of this to the patient. 	<ul style="list-style-type: none"> Injection Prescriber and Injection Provider
7. Right	<ul style="list-style-type: none"> Be sure to use the 	<ul style="list-style-type: none"> Observe the 	<ul style="list-style-type: none"> Injection

Rights	Standards Always check and verify all 'rights'	Method of Verification	Verified By:
Route	correct route of administration (intra-muscular, intravenous, intra-dermal or subcutaneous).	directions of the prescriber. → Check prescription or other related records.	Provider
8. Right Storage	→ Right temperature, Vaccine Vial Monitor (VVM) shake test.	→ Check cold chain issues including Vaccine Vial Monitor.	→ Pharmacy → Healthcare Worker → Injection Provider
9. Right Method of Disposal	→ Do not recap needle. → Dispose of used syringe and needle immediately after use in appropriate safety box. Or → Use the needle cutter and safety box.	→ Check the safety box for correct method of disposal.	→ Injection Provider

2. Demonstration of safe injection practices

The facilitator should organise for one participant to demonstrate safe practices when giving an injection. A plenary discussion can then follow to discuss if the nine rights in Table 8 were observed.

3. "Best Practice" In Safe Injection:

📁 Select safe medicines

- ➡ Proper handling of medicines, including keeping it in a clean environment.
- ➡ Label clearly

- ➔ Observe proper storage conditions, including temperature and humidity (as recommended by manufacturer)
- ➔ Check expiry dates
- ✚ Use sterile injection equipment
 - ➔ Use syringe and needle from sealed package
 - ➔ Use syringes with re-use prevention features
- ✚ Avoid contamination of equipment and medication (observe aseptic technique)
- ✚ Wash hands or use alcohol-based handrub
- ✚ Prepare on clean surface
- ✚ Do not touch part of needle that will come in contact with patient's tissue
- ✚ Do not leave the needle in the rubber cap of the vial
- ✚ Reconstitute drugs or vaccines safely
- ✚ Use new sterile syringe and needle for each reconstitution
- ✚ Use the correct diluent/water for injection
- ✚ Reconstitute according to the manufacturers' specifications
- ✚ Dispose of injection wastes and sharps appropriately
- ✚ Immediate disposal of syringe and needle in puncture and leak-proof safety box
- ✚ Prevent needlestick injuries
- ✚ Disseminate public health education and information.

Case study - Busy Amos in the Out-Patients Department (OPD)

Instructions for facilitators:

- ➔ Distribute a copy of the case study to the participants
- ➔ Ask one of the participants to read the case study while the rest of the group listen attentively
- ➔ Give the participants 5 minutes to internalize the study
- ➔ Ask participants to work in pairs and write answers to the questions at the end of the study
- ➔ Reconvene after 10 minutes and discuss.

Busy Amos

Amos is the newly trained nurse at the Mutare Provincial Hospital Out-Patients Department, who has just resumed duty at the treatment room on a busy Monday morning. Outside the room is a long queue of patients waiting for treatment.

He gets the card of the next patient, while reading the prescription on the card he is called to answer the telephone.

On returning, the patient whose card he was reading before the phone call had gone to the toilet. He called 'next!' and the next patient in the queue walks in. Amos washes his hands, checks the dose on the card and draws the exact amount of 80mg. Gentamycin into a newly opened 2mls. Vanish Point Retractable syringe from his clean injection trolley.

The patient tried to draw his attention that he had not come for an injection but for a dressing but because Amos is in a hurry to clear the patients, without paying attention, he asked the old man to get behind the screen for the injection the Doctor had prescribed for him.

Amos went ahead and gave the injection at the outer upper quadrant of the left buttock and immediately dropped the used syringe and needle in a safety box supplied by John Snow, Inc. The patient began to sweat and shiver immediately.

Questions to three groups:

What did Amos do right?

Expected Answers:

He:

- ➔ Washed his hands before the injection
- ➔ Gave the right drug
- ➔ Used the right equipment
- ➔ Gave the right dose
- ➔ Through right route
- ➔ Used the right sharps disposal equipment

What did he do wrong?

He:

- ➔ Did not confirm the patient identity
- ➔ Did not listen to his patient
- ➔ Did not screen the patient for drug history to rule out previous reactions
- ➔ Did not talk to nor counsel his patient
- ➔ Did not discuss the numbers of injections on the prescription.

Each of the three groups should report back in plenary.
 Emphasize that **ALL** nine 'rights' must be verified and are essential to a safe injection.
 Buzz Discussion in plenary.

4. Injection Devices:

WHO recommends that injection device security is ensured in all healthcare facilities, including therapeutic service, so that injectable medicines, diluents, single use injection devices and safety boxes are supplied in a timely manner in adequate quantities.

(See Tables 9 and 10 for types of injection devices and commodities).

Table 9: Types of Injection Devices: Advantages and Disadvantages

Type of Device Reuse Prevention	Advantages	Disadvantages
Auto-disable syringes	<ul style="list-style-type: none"> → Cannot be re-used. → They save time for healthcare workers from the burden of sterilization. → Eliminate the patient-to-patient disease transmission caused by the use of contaminated syringes and needles. 	<ul style="list-style-type: none"> → More expensive than standard disposable (but are still affordable). → Have no needlestick prevention features → Need collection and disposal system.
Manually retractable (Not currently available in Kenya)	<ul style="list-style-type: none"> → Cannot be re-used → Needlestick prevention feature: needle retracts inside barrel. → They save time for healthcare workers from the burden of sterilization. → Eliminate the patient-to-patient disease transmission caused by the use of contaminated syringes and 	<ul style="list-style-type: none"> → Not automatic; relies on good will of healthcare worker. → High cost.

Type of Device Reuse Prevention	Advantages	Disadvantages
	needles.	
Automatically retractable	<ul style="list-style-type: none"> → Cannot be re-used. → Automatic safety feature: needle retracts inside barrel. → They save time for healthcare workers from the burden of sterilization. → Eliminate the patient-to-patient disease transmission caused by the use of contaminated syringes and needles. 	<ul style="list-style-type: none"> → Most expensive.
Standard disposable	<ul style="list-style-type: none"> → Less expensive → Available on local market. → They save time for healthcare workers from the burden of sterilization. 	<ul style="list-style-type: none"> → Can be re-used without sterilization. → Have no safety features. → Need sharps safety box or needle remover. → Carry a high risk of infection.

Desirable characteristics of safety devices include:

- ✚ The device is needleless;
- ✚ The safety feature is an integral part of the device;
- ✚ The device preferably works passively (i.e., it requires no activation by the user. If user activation is necessary, the safety feature can be engaged with a single-handed technique and allows one of the worker's hands to be held behind;
- ✚ The user can easily tell whether the safety feature is activated;
- ✚ The safety feature cannot be de-activated and remains protected through disposal;
- ✚ The device performs reliably; is easy to use and is practical;
- ✚ The device is safe and effective for patient care

Table 10: Other Injection Safety Commodities

Type	Description	Use	Advantages	Limitations
Needle Removers	<ul style="list-style-type: none"> ➔ Manually operated units remove the needle from the syringe by cutting the hub of the syringe and/or the needle. ➔ Electrically operated units destroy needles instantly by burning the needle. ➔ Needle removers can be made of metal or plastic. ➔ Needle containers are disposed or emptied into a needle pit. 	<ul style="list-style-type: none"> ➔ Utilize for cutting or destroying needles from used syringes immediately after use. ➔ Reduce community exposure to sharps waste. ➔ Available at point of use. ➔ Segregate waste. ➔ Low initial and operating costs (US\$2 -\$50 i.e. KSh 150 – 3500)); some can be made locally. ➔ Easy to use. ➔ Can facilitate recycling of plastic syringes. ➔ Blade life: 200,000 cuts. 	<ul style="list-style-type: none"> ➔ Reduces occupational risks to waste handlers and scavengers. ➔ Prevent reuse of syringes ➔ Reduce the volume of sharps waste 	<ul style="list-style-type: none"> ➔ Correct use relies on user compliance. ➔ Needles must be disposed of properly. ➔ Syringes disposal method still required. ➔ May not destroy needles completely. ➔ Must be maintained over time. ➔ Constant electricity supply is required for electric models. ➔ Required at each injection location.
Safety Boxes	<ul style="list-style-type: none"> ➔ Made of puncture-resistant and liquid-proof cardboard. ➔ 5L. safety boxes hold up to 100 used syringes and needles. ➔ Are usually 	<ul style="list-style-type: none"> ➔ Utilize for collecting used syringes and needles immediately after use. 	<ul style="list-style-type: none"> ➔ Easy to use. ➔ Reduces occupational risks to waste handlers and scavengers. ➔ Prevent re-use of syringes. 	<ul style="list-style-type: none"> ➔ Requires on-going supply. ➔ Filled boxes require final treatment ➔ Often involves transport to treatment site. ➔ Needlestick

Type	Description	Use	Advantages	Limitations
	'bundled' with syringes and needles to ensure availability at the point of use.		<ul style="list-style-type: none"> → Available at point of use. → Reduce community exposure to sharps. → Low cost. 	<p>injuries remain a hazard during waste handling and transport.</p> <ul style="list-style-type: none"> → In situations where many injections are given, safety boxes accumulate very quickly. → Most boxes manufactured for the international market are liquid-proof, but they disintegrate if they become wet.
Waste Bins	<ul style="list-style-type: none"> → Covered collection containers with appropriate bin liner. → Usually made of durable plastic or metal material with the following characteristics: <ul style="list-style-type: none"> → Well-fitted lid → Leak-proof → Non-corrosive → Washable. 	<ul style="list-style-type: none"> → Use for segregating different categories of healthcare waste. 	<ul style="list-style-type: none"> → Contain the waste. → Used for interim storage of healthcare waste. → Can be re-used. → Can be colour-coded. 	<ul style="list-style-type: none"> → A separate bin needed in each treatment area for each type of waste (infectious, non-infectious). → Attractive for other uses.
Bin Liners	<ul style="list-style-type: none"> → Colour-coded plastic bags for lining waste bins. 	<ul style="list-style-type: none"> → Separate waste categories according to risk. 	<ul style="list-style-type: none"> → Help healthcare workers and waste handlers identify degree of risk of waste. → Contain waste and fluid and keep it 	<ul style="list-style-type: none"> → Not biodegradable. → May be expensive. → May be extra-budgetary item. → Not puncture-resistant

Type	Description	Use	Advantages	Limitations
			away from people and the environment.	→ Require re-supply.

5. Management of exposures and injuries:

A *needlestick injury* is any puncture of the skin caused by an injection needle while a *sharps injury* is an injury caused by puncture of the skin by a sharp object/instrument including an injection needle.

Over 80% of needlestick injuries can be prevented with the use of safe needle devices, which in conjunction with workers' education, training, and work practice controls can reduce injuries by over 90%. Needlestick injuries account for more than 18 thousand new cases of hepatitis annually in the US while the preliminary treatment cost for a single needlestick incident is estimated to be between US\$500 to \$3,000 (KSh. 35,000 to 210,000). However, needleless intravenous (I.V.) systems decrease needlestick injuries related to I.V. administrations by 62 to 88 % (USA) (CDC).

If you sustain an injury:

- 1) Bleed the wound
- 2) Wash with soap and running water
- 3) Alert your supervisor
- 4) Identify source patient
- 5) Immediately report to designated person/facility
- 6) Document the incident
- 7) Get pre- and post-test counselling
- 8) Get post-exposure prophylaxis (PEP) within 72 hours if possible
- 9) Evaluate injuries:
 - a. Immediately

- b. After six weeks
- c. Three months
- d. Six months

10) Conduct follow-up on a six-monthly basis.

Case study - Gloria the diligent laundry worker

Instructions to facilitator:

- Distribute a copy of the case study to the participants
- Ask one of the participants to read the case study while the rest of the group listen attentively
- Give the participants 5 minutes to internalize the study
- Ask participants to work in pairs and write answers to the questions at the end of the study
- Reconvene after 10 minutes and discuss.

Gloria

Gloria is a young woman working in the Wuse hospital laundry for the past year. She is married with 2 children both still in primary school. The husband works as a gardener at the Sheraton Hotels and Towers. They just moved to the city from the village because of the oil spillage so that they could find jobs and fend for their children.

She is a very diligent worker always punctual and willing to do extra work whenever the need arises. On this fateful day at 2 minutes after 5.00pm when she is about to change to go home, a laundry bag from the medical ward was brought in for laundry. The supervisor asked her to please help her sort the laundry before putting it in the washing machine as the wards were running out of clean linen.

Unfortunately, a nurse had left a syringe and needle used for injecting a terminally ill AIDS patient among the sheets to be sorted. Whilst sorting the linen, Gloria unfortunately was pricked by this needle.

She continued and finished sorting the linen then took the syringe and needle to her supervisor. The supervisor advised her to wash her fingers and gave her a note to go and see a doctor immediately.

Gloria went to the Out-Patients Department and saw that the queue for the doctor was too long and she was in a hurry to go and cook for her family. So she just ignored the injury and rushed home.

Ten years later during a programme for Voluntary Counseling and Testing (VCT), Gloria decided to go for testing and she tested positive.

The facilitator will lead a discussion on the following questions:

What did Gloria do right?

- She reported to the supervisor
- Took the syringe and needle to the supervisor
- She washed her hands

What was done wrong?

- The nurse did not dispose of the sharps immediately in a safety box
- The nurse did not segregate, and left the syringe and needle in the bed linen
- The sheets were not put in the right colour-coded linen bags
- The supervisor did not follow-up the next day to make sure that Gloria had been started on PEP
- Gloria did not see the doctor

If Gloria had seen the doctor, what PEP steps should have been taken?

Record responses on a flip chart.

A plenary session follows, discussing about epidemiology of needlestick injuries at the institution, and prevention and management of needlestick injuries.

6. Requirements For Successful Sharps Injury Prevention Programme:

- Commitment from management to reduce bloodborne exposures, including purchasing and implementation of safe devices and procedures.
- A designated multidisciplinary prevention committee with decision-making authority and representation from frontline healthcare workers, infection prevention and control, management, occupational health, and purchasing.

- ✚ The assessment of hazards and use of data to identify highest risk products and procedures.
- ✚ Identification and elimination of injuries.
- ✚ Reporting of injuries.
- ✚ Needlestick injury log containing the situation, and type of device causing injury.
- ✚ Frontline healthcare worker involvement in the evaluation, selection, and implementation of safer needle devices.
- ✚ An Exposure Control Plan containing policies for:
 - Annual revision
 - Post-exposure evaluation and follow-up
 - Placement, checking, and replacement of sharps containers
 - Interactive training for committee and workers.
 - Evaluation of work and efficacy of engineering controls
 - Record-keeping.

Unit III: Unsafe Injection Practices

Duration:

20 minutes

Specific objectives:

At the end of the unit, the participants will be able to:

1. Identify injection practices that harm;
2. List reasons for giving unsafe/unnecessary injections;
3. Identify reasons why patients/clients do not insist on safe injections.
4. Discuss prevention, monitoring, and control of adverse effects.

Materials:

- ✎ Flip-charts
- ✎ Marker pens
- ✎ Masking tapes
- ✎ Vial/ampoule
- ✎ Various Types of Injections and Syringes
- ✎ Diluents
- ✎ Antiseptic for hand rub (e.g. spirit)
- ✎ Needle removers
- ✎ Safety boxes
- ✎ Bin liners
- ✎ Case study handouts

Methods:

- ✚ Brainstorming
- ✚ Demonstration
- ✚ Lecture
- ✚ Case study

Content:

1. Unsafe injection effects:

An unsafe injection is one that harms the recipient, and/or the provider, and/or results in waste that is dangerous to other people.

Unsafe injection practices that harm:

Recipient

- ✚ Contaminated drug is administered
- ✚ Partially opened vials are mixed
- ✚ Multi-dose vials are used
- ✚ Needles are left in rubber cap of vial
- ✚ Expired drugs given
- ✚ Syringes loaded with different medication
- ✚ Drugs and vaccine stored in same refrigerator
- ✚ Applying pressure to bleeding sites with dirty material or finger
- ✚ Drug administered at incorrect anatomical site
- ✚ Infants vaccinated in the buttocks rather than antero-lateral thigh
- ✚ Giving large boluses of intramuscular quinine
- ✚ Un-sterile needles and syringes used
- ✚ Re-use of syringes and needles
- ✚ Loading syringes with multiple doses

- ✚ Healthcare worker not observing aseptic technique
- ✚ Storing used open multi-dose vials beyond recommended period

Healthcare workers

- ✚ Carrying around used syringes and needles before disposal
- ✚ Placing syringes and needles on a surface prior to disposal
- ✚ Recapping needles (two-handed)
- ✚ Reaching into a container of used syringes and needles
- ✚ Manually detaching needles from syringes
- ✚ Manipulating used sharps (cleaning, changing, bending, breaking or cutting hypodermic needles)
- ✚ Passing on sharps from one healthcare worker to another
- ✚ Overfilling safety boxes
- ✚ Using a syringe and needle on an agitated patient without assistance

Community

- ✚ Leaving syringes and needles in areas accessible to the public, especially children
- ✚ Sharing syringes and needles
- ✚ Re-using syringes and needles
- ✚ Receiving injections from informal health sector

2. Reasons For Giving Unsafe/Unnecessary Injections

- ✚ Lack of knowledge of dangers of injections
- ✚ False belief that injections are more effective than oral medication
- ✚ Demand by some patients/clients for injections
- ✚ Perceived belief that patients prefer injections
- ✚ Some clinicians make more money if they give injections

- ↪ Informal providers giving injections

3. Reasons for Patients/Clients not Insisting on Safe Injections

- ↪ Lack of information on injection safety
- ↪ Unequal status with the healthcare workers
- ↪ Belief that healthcare worker knows best
- ↪ Socio-cultural beliefs.

4. Prevention and Control of Adverse Event

An *adverse event* following an unsafe injection is an incident which harms a person receiving healthcare caused by poor injection practices rather than the underlying condition of the patient.

Common adverse events include:

Transmission of bloodborne infections

- ➔ Hepatitis B
- ➔ Hepatitis C
- ➔ HIV
- ← Injection abscesses
- ← Paralysis
- ← Trauma
- ← Shock
- ← Allergic reactions

Tables 11 and 12 provide information on causes and types of adverse events associated with injection safety.

Table 11: Causes of Adverse Events

Source of Error	Types of Errors
Provider	<ul style="list-style-type: none"> → An error in preparing the injection, handling or administration, such as: → Contaminating the drug, diluent or injection equipment, injection site → Giving too much of the drug in one dose → Injecting the medication into a nerve → Using unsterile syringes and needles for each injection
Programme	<ul style="list-style-type: none"> → Using the wrong diluent or the wrong amount of diluent
Recipient	<ul style="list-style-type: none"> → Giving the wrong drug → Administering injection on an agitated patient without assistance → Inadequate screening of patient. → Poor quality control of drug at manufacturer level. → Not observing contra-indications.

Table 12: Types of Adverse Events

Cause of Adverse Event	Types of Adverse Event
Drug: (e.g., vaccine) reaction: Reaction of the patient to the drug.	<ul style="list-style-type: none"> → A reaction can be: → <u>Local</u>: Pain, swelling, pus or redness and/or abscess formation at the site of injection. Allergic reaction: skin rash.
Coincidental: The adverse event occurs after the administration of the injection but is un-related to drugs or its administration.	<ul style="list-style-type: none"> → <u>Systemic</u>: Fever, malaise, muscle pain, headache, or loss of appetite; sepsis. Allergic reaction: shock. → Any of above.
Unknown: The adverse event cannot be directly related to the drug or its administration.	<ul style="list-style-type: none"> → Any of above except sepsis and infection.

Role Play: Peter's accident

Objective:

To identify the risk conditions for a patient/client and healthcare workers during practice.

Procedure:

Select three persons to act as a doctor/physician, a patient/client, and nurse.

Role Play

Mr. Peter sustained multiple injuries from a motor vehicle accident. He was rushed to the nearby healthcare facility.

On arrival, he was seen by a physician who examined him and prescribed the following:

- ➡ Injection of anti-tetanus toxoid 0.5 mls. subcutaneous stat,
- ➡ Injection serum tetanus toxoid,
- ➡ Antiseptic dressing daily for three days, and
- ➡ Anti-pain medication daily for three days.

Mr. Peter went to an injection room for the serum tetanus toxoid and anti-tetanus toxoid and was attended by a nurse who administered the prescribed injections.

While getting the injection, Mr. Peter observed that the vial of the anti-tetanus toxoid and that of serum tetanus toxoid were taken from the fridge and were open then taped. He also observed that the syringe and needle used was not taken from a sealed package and that all injections were administered using the same injection device.

After the injections, he went to a wound dressing room where he was received by a nurse and requested to sit on a bench. The nurse dressed the wounds. While the nurse was dressing the wounds, the patient observed that the nurse neither washed her hands nor did she put on gloves. Moreover, the nurse did not open a new pack for the dressing.

Questions for discussion

- 1 Who is at risk for infection?
- 2 What types of risks does this case study present?
- 3 What should have been done to prevent the risks?

Answers to Questions

1. Who is at risk for infection?
 - The patient and nurse
2. What types of risks does this case study present?

For the patient

- An adverse reaction from an already open vial
- Hospital acquired infection from a contaminated injection device
- Acquired infection from poor aseptic technique, and lack of hand hygiene.

For the nurse

Acquiring blood borne pathogen infection such as HBV, HCV and HIV

3. What should have been done to prevent the risks?

The nurse should have done the following:

- Washed her hands and put on gloves before treatment
- Washed her hands after removal of the gloves at the end of the treatment
- Opened a new vial
- Used a new sealed non-re-usable injection device.

b) Prevention And Management Of Adverse Events following Injection (AEFI)

The prevention of AEFI involves taking appropriate previous drug and medical history; proper reconstitution of drug; observing the Nine 'Rights' of injection safety; and adequate training of staff.

Management of AEFI involves:

- ➔ Have emergency drugs on hand
- ➔ Correct treatment (see Table 13)
- ➔ Logistics: adequate and appropriate supplies for treatment
- ➔ Supervision: monitoring of the situation and feedback
- ➔ Communication: Public education of injection safety

Table 13: Management of Adverse Events

Categories	Management
Shock/anaphylaxis	Adrenaline, hydrocortisone. Consider intravenous re-hydration .
Convulsions	Diazepam
Paralysis	Physiotherapy
Fever	Paracetamol
Abscess	Drainage and antibiotics
Local swelling	Observation, cold compression, aspirin
Skin rash	Observation, chlorpheniramine
Sepsis	Antibiotics

c) Monitoring Of Adverse Events

Every healthcare facility should have a system of monitoring adverse events, whose responsibilities should include:

- ➔ Identify, record and report events

- ✚ Investigate events
- ✚ Manage the events
- ✚ Refer where necessary
- ✚ Follow-up of patient to ensure compliance with treatment
- ✚ Follow-up with Injection Provider to provide required training/supervision.

Case study - Adverse Event that Follows Injections

Story line

A young girl who grew up in a poor village in a polygamous household struggles to get school fees to complete her secondary education. She has always wanted to be a doctor and worked so hard that she passed her 'A' levels with 15 points and is admitted into medical school. The boyfriend from the same village has just graduated as a lawyer and they plan to marry after her internship.

The young medical student accidentally pricks herself with a needle she had used on an HIV positive patient while she was trying to recap it. She tells no one about it.

Five years later MMIS/JSI project was introduced in their hospital funded by the President Emergency Plan for AIDS Relief (PEPFAR) in Africa in collaboration with WHO/AFRO, and in the Caribbean.

She got married as a virgin to her childhood sweetheart, fell pregnant and during ante-natal screening, tested HIV positive. She was devastated and could not figure out how she could possibly have got the virus as she trusted her husband and she herself was faithful to her husband. She is worried and keeps it to herself for some weeks wondering if her husband had been unfaithful. Eventually she confronted her

husband who in turn was angry and turned on her accusing her of being unfaithful with other doctors at the hospital.

In the same year she was asked to facilitate at an MMIS workshop and it was during a presentation that she remembered the needlestick seven years back and realized that must have been the time she got infected with the virus.

Discussion on the case study follows on:

- ➔ Prevention of needlestick injuries
- ➔ Types of safe injection devices
- ➔ Brainstorm on management of needlestick injury
- ➔ Finish discussion by reviewing PEP policies of the various institutions

UNIT 4: BEHAVIOUR CHANGE FOR SAFE INJECTION PRACTICES

Duration: 1 hour

Specific objectives

At the end of the unit, the participants will be able to:

1. Name one unsafe injection practice that harms healthcare worker, patient/client and community;
2. Discuss ways to overcome these unsafe injection practices;
3. Discuss essential information for patient/client and community on injection safety;
4. Practice communication skills and supportive feedback to encourage patients/clients to request safe injections.

Content

1. Unsafe injection practices which harm healthcare worker, patient/client, community
 - Re-use of syringes and needles
 - Overuse of therapeutic injections
 - Lack of oral medications
 - Lack of skills for safe administration of injections
 - Lack of awareness of risks
 - Shortages of injection devices
 - Poor waste disposal practices and lack of appropriate waste infrastructure¹³
2. Ways of overcoming unsafe injection practices

- Reduction of injections
 - Availability of oral medications
 - Training in injection safety practices
 - Supportive supervision
 - Availability of appropriate injection devices
 - Proper disposal of sharps and other waste
3. Essential information to patients/clients and community on injection safety
- Benefits of oral medication
 - Description of safe injection devices and commodities
 - Safe and appropriate waste disposal of syringes and needles
4. Motivation factors for healthcare workers (see Box 10).

¹³WHO. *Safety of Injections. Global Facts and Figures.WHO/EHT/04.04*. Available on the Internet.

Box 10

Motivation Factors for Healthcare Workers to Practice Safe Injections

- Belief that they are protecting both patients/clients and themselves from harm
- Assurance that patients/clients are open to prescription of oral medication
- Availability of oral medication to implement standard guidelines
- Availability of supplies, preventing the need to re-use equipment
- Supportive work environment
- Availability of easy to follow/user friendly guidelines
- Incentives for good professional practices.

BOX 11

Current Behaviour	Expected Behaviour
<ul style="list-style-type: none"> ➡ Health workers often unnecessarily prescribe injections ➡ Patients demand injections or accept injections without questions ➡ Unsafe sharps collection leading to accidental needle prick injuries ➡ Poor record keeping and reporting on consumption of commodities & hence stockouts ➡ Injection waste disposed off in shallow pits, unguarded areas within the health facilities and nearby bushes 	<ul style="list-style-type: none"> ➡ Prescribe oral medication wherever possible ➡ If prescribed an injection ask if medication can be given orally instead ➡ Place syringes and needles in a safety box immediately after use without recapping. ➡ Manage injection waste safely and appropriately

Unit 5: Improved interpersonal communication skills

Duration 4 hours

This unit is designed for those who decide whether patients will receive medicine by injection or other routes to enable them practice interpersonal communication skills with a particular focus on reducing unnecessary injections. The scope and content of the unit was developed based of the following findings from the research conducted in Kenya. Some of the findings are as follows:

- 1) Prescribers say that patients regularly request injections
- 2) Prescribers spend extremely limited time with their patients and have almost no time for counselling
- 3) Prescribers are not in the habit of actively seeking to hear their patients' concerns about their treatments
- 4) Providers are busy and have limited time for training or for practicing new skills.

This module is designed to be a quick, practical skills training to address only the issue of advising patients, and responding to their concerns, about alternatives to injections. This module is not an in-depth training on interpersonal communication and the theories behind it.

The goal of this unit is to equip injection prescribers and injection providers with effective interpersonal communication skills to counsel their clients towards an informed health decision regarding injections.

Learning Objectives

By the end of this session, participants will be able to:

- State reasons for reducing the number of injections they prescribe, and benefits to doing so
- List responses to potential patient concerns about not receiving injections
- Practice interpersonal communication skills to discourage unnecessary injections with their patients

Outline of session

- Introductions and overview
- Discussion: Why reduce injections?
- Discussion: What does this mean for your facility?
- Exercise: Dialogue balloons
- Communication tip: Uncovering the patient's concerns
- Exercise: Practice in pairs interpersonal communication skills

Materials needed

- Flipchart, chalkboard or poster
- Markers and chalk
- 10 dialogue balloons (cardboard or posters that are cut into the shape shown at right) Post dialog balloons on the walls, in 5 pairs with space between each pair
- Scenario cards (copied and cut, 1 for each group (4) Short patient scenario cards descriptions of various patient concerns on cards)



TALKING WITH YOUR PATIENTS TO REDUCE UNNECESSARY INJECTIONS

REASONS FOR REDUCING INJECTIONS

Introduction

The healthcare system must protect patients by ensuring that treatments are safe and effective. This commitment is reflected in the Hippocratic Oath: *First do no harm*.

Injections are a route of transmission for a number of blood borne diseases, and data shows that patients and health workers are being infected because of current practices.

DISCUSSION SESSION

Group discussion questions

Divide the class into four groups and give each group one questions

Questions 1

Give reasons why you think reducing injections is important

Look for such responses as:

- Number of healthworker needle sticks per year;
- Estimated proportion of HIV or hepatitis infections due to unsafe injections;
- Rising number of HIV cases

Question 2

Have you noted any concerns or problems about injections in your facilities or communities?

Look for such responses as:

- Inadequate supplies of injection equipment in health facility or pharmacies

- Untrained injectors in the community; reuse of equipment by these injectors
- Families and patients keep injection equipment for reuse

Question 3

Injectors are often necessary. When are necessary injections required?

Look for such responses as:

- Immunizations
- Inpatient cases
- Depo Provera
- Lack of supplies of oral treatments
- Inability to swallow

Question 4

What treatments with injections you have seen could be treated in other ways. Discuss treatments/diagnoses for which alternatives are possible.

Look for such responses as:

- Vitamins
- Diarrhea in infants or children
- Tonsillitis
- Hypertension
- Stomach ailments
- Viral infections for which antibiotics won't help
- Mild/outpatient cases of bacterial infections for which oral antibiotics or other drugs are effective

Conclusion

The main themes from the discussions above are necessary and alternatives to injections. There are many cases in which oral medication or other treatment besides injection can be used and are as effective. The Standard Treatment Guidelines often list these alternatives (i.e., oral) treatments as the first line of treatment.

BENEFITS OF REDUCING UNNECESSARY INJECTIONS FOR THE FACILITY AND COMMUNITY

Brain storming session

Ask the question:

What benefits or advantages do you see from reducing injections in your facility and community?

Present benefits to reducing injections: As health providers, we need to take responsibility for lowering the risk of disease transmission due to our treatments, namely injections. We all need to make a commitment to try to reduce the number of injections we give, so that we can gain the following benefits:

Benefits

- Reduce risk of abscesses in patients
- Reduce possibility of needlestick injuries in those providing injections
- Reduce risk of infections
- Save sterile equipment for most needy patients
- Produce less sharps waste
- Reduce staff time of giving injections

(Post these benefits on flipchart.)

Acknowledge that making changes in the health facility to reduce injections may be difficult.

Ask the question: What are some of the challenges to reducing injections at your facility? **Post** responses on the flipchart.

Look for such responses as:

- Colleagues continue to prescribe injections
- Patients request injections and may threaten to go elsewhere
- Supplies of other medications inadequate
- Facility flow/systems already in place for injections

Summarize the main themes. **Acknowledge** the difficulties, and that it will take time. Change does not occur overnight. But each injection not given still means less risk.

Point out responses involving patient demand/requests. **Explain:** for the rest of our time together we will discuss communicating with patients.

COMMUNICATING WITH PATIENTS

Exercise: Dialogue balloons

Divide participants into 5 groups (pairs or threes). **Point** out balloon shapes on the walls. **Explain** exercise: In this exercise, you will write up a patient concern or request and then move to another balloon to provide an answer or reassurance to the concern.

Ask each team to go up to a balloon. **Distribute** markers to each team.

Ask team to **write** in one of the balloons a common concern or request from patients about injections.

Give participants 5 minutes to write. **Call** time, and ask teams to **circulate** to next balloon pair.

Ask teams to look at the new balloon and **write** in the other balloon the response from the provider.

Give participants 5 minutes to write. **Call** time, and ask teams to **return** to their seats.

Debrief with the group:

- What are the common things we hear from patients? Are there others you hear often that were not among those mentioned yet?
- What are the underlying concerns or fears in these statements?
- How does what we say in response help provide reassurance about these concerns?

Thank participants for their participation in the exercise.

Communication tip: Uncovering the patient's concern

Reiterate that one of the difficulties of reducing the number of injections is that patients request them or say they prefer them. **Explain** that prescribers must find ways to offer oral treatments to patients so that they will take the full course of medicine correctly. Further, this may mean saying a bit more to the patient about the oral treatment to allay their fears or concerns about the alternative treatment.

APPROPRIATE IPCC SKILLS FOR PROMOTING ONLY NECESSARY INJECTIONS

Interpersonal Communication and Counseling (IPCC)

Definitions

Interpersonal communication is a two-way communication process. It involves one-on-one and small group interaction. Good interpersonal communication skills are essential in the work place, interacting with colleagues and co-workers.

Effective health providers have excellent interpersonal communication skills. *Counseling*, on the other hand, is the face-to-face communication between two people whereby one person helps another person makes a decision or plans and act on it.

Good interpersonal communication skills include:

- ↳ Observation
- ↳ Rapport
- ↳ Listening
- ↳ Questioning
- ↳ Paraphrasing
- ↳ Reflecting

a) Observation

Some of the ways people communicate with each other are words, voice tone, body movement, touching, facial expression, eye contact, and clothing. Even items like houses, furniture, etc. reflect a person's values, perceptions and attitudes. Of these,

much can be learned by paying close attention to non-verbals. They often give deeper insights into true thoughts and feelings.

Disagreement between verbal and non verbal language:

Example: Verbal: “Yes, yes, I have time..... “

Non-Verbal: Looking at the watch several times during conversation.

Not sitting down in the chair.

Observation consists of two parts:

- a) Noticing:- What you actually see and hear verbal and non verbal messages
- b) Interpretation:- Giving your speculation about what you observe or attaching meaning

The health worker should observe a client’s verbal and nonverbal behavior with the intention of identifying discrepancies and mixed messages. What do you see, hear, and feel from the client’s world?

Areas of observation

The health worker organizes the information into three major areas:

- 1) Client non-verbal behavior: Eye contact patterns, body language, vocal qualities, all are important indicators that tell us what is going on inside the client.
- 2) Client verbal behavior: When does the client change topics? What are their key words and descriptions?
- 3) Client discrepancies: An observant counselor will notice when there are conflicts between verbal and nonverbal behavior, between two statements, between what they say and what they do.

b) Establishing Rapport

Rapport is the establishment of a relationship that is harmonious or sympathetic; building trust; liking one another; having each other's best interest in mind; and having mutual respect.

Establishing rapport is essential to the helping process. Without rapport, the client is less likely to express herself adequately and may be less likely to understand the information or comply with the provider thus making tasks very difficult to achieve.

c) The Skill Of Listening

This is the Health Workers ability to hear well and recall accurately all the verbal data presented by the client. Hearing alone is not listening. Hearing must take two levels, the level of words/content and the level of feelings. If you do not listen for feeling you do not understand another person. The purpose of listening is to better understand the specific ways the client is experiencing the world.

Steps Of Listening

- ✚ Know what you are listening for.
- ✚ Listen to specific content (who, what, where, when, why)
- ✚ Suspend your personal judgement
- ✚ *Resist distractions, thoughts, imaginations which take your attention from the client.*

d) Questioning Skills

Table 14: Types of questions

TYPE	EXAMPLE
Close ended: Medical history	"How many children do you have?"
Open ended: To learn about clients' feelings, beliefs, knowledge	"What have you heard about injection safety?"
Probing: Follow-up in response to statement by client	"Can you tell me more about why you think injections are more effective?"
Leading: NOT APPROPRIATE	"Don't you think you should try the injection?"

The tone of voice is important. Always ask questions in a non-judgmental way. Providers should use a tone of voice that expresses interest and concern.

Goals Of Questioning And Listening

- Encourage the client to talk.
- Communicate your interest to the other person.
- Increase your awareness of the other person's feelings.
- Bring out specific information.
- Give a degree of control to the client.

The following can be obtained through questions:

- a) **The general situation** e.g. "What did you want to talk about?"
- b) **The facts** e.g. "What happened?"
- c) **Feelings** e.g. "How did you feel?"
- d) **Reasons** e.g. "Why did you do that?"

e) **Specifics** e.g. "Could you give me an example?"

e) Paraphrasing, Reflecting Skills,

How can you make sure that you understand what the client is saying and feeling? Effective providers listen for cues from the client that need exploring deeper by the provider. They also know that **through reflecting, paraphrasing and summarizing, they can learn more, clarify what they have heard, and feel confident that they understand the client.**

Reflecting

Accurate reflection and acknowledgment of **feelings** are necessary and critical to the counseling process. A client must first believe that the provider hears and understands her/his feelings and individual needs and concerns before they are ready and willing to deal with a situation, listen to options, and make an informed and appropriate decision. Phrases such as 'you seem sad today' or you sound very happy when talking about your children, but otherwise angry. Is this true?

Emotions form the base of much of life experience. Noting key feelings and helping the client clarify them can be one of the most powerful, helpful things a counselor can do.

By observing and listening, providers imagine how a client feels. Then they tell the client what they think those emotions are. For example, when a client sounds and acts confused, the provider can point this out by saying, you seem confused.

This serves three purposes:

- 1) It makes the client think about how he or she feels and why;
- 2) The provider finds out whether or not the client is confused; and
- 3) If there is confusion, the client and provider can clear it up through discussion.

Paraphrasing:

Paraphrasing or reflecting **content** feeds back to the client the essence of what has just been said by shortening and clarifying client comments. Paraphrasing is not parroting; it is using your own words plus the important main words of the client to check accurate understanding of what the client has said.

Paraphrasing involves:

- 1) A sentence stem such as, 'you appear to be saying...' or what I hear you saying are...
- 2) Key descriptors and concepts the client used to describe the situation or person. Use the client's own words for the most important things.
- 3) The essence of what the client has said in summarized form.
- 4) A check for accuracy. Am I hearing you correctly?

Example: **Client:** I don't know what the matter is. I just don't feel well today.

Provider: "You're feeling ill and you're not sure why, is that right?"

Paraphrasing is concerned with feeding back to the client the essence of what has been said. Reflecting feeds back client emotions key feelings the interviewer has observed. When you reflect feelings, you can add to the paraphrase those affective or emotional words that tune into the person's emotional experience.

Counseling Using the GATHER process to promote only necessary injections

Effective counselling consists of six steps, described by the word or acronym "GATHER"

📌 GREET the clients

- ➡ Establish rapport
- ➡ Welcome the client warmly – by his name
- ➡ Shake hands, smile
- ➡ Introduce yourself
- ➡ Request to sit facing you directly - Eye contact
- ➡ Ensure privacy and confidentiality

📌 ASK clients

- ➡ Gather information – bio-data, Hx, etc
- ➡ Arrange for auxiliaries, assistants to gather certain information in waiting area
Have client complete a questionnaire
Ask him to tell you about the assistance he expects from you.
- ➡ Note the non-verbal com **TELL** (provide information)
- ➡ Provide information
- ➡ Use waiting time for distributing all-methods leaflets, show videos, etc
- ➡ Provide only the details that the client wants and needs explained & demonstrate only what the client wants
- ➡ Tell about advantages of orals over injectables

📌 HELP the client




- ➡ To make decision, solve problems
- ➡ Follow an organized approach that ensures good decision process in a short time, i.e.,
Step One: Identify the “**Injection challenge**” or decision that is being made.
Step Two: List three **choices** or options of treatment
Step Three: For each choice, list several positive and negative outcomes or **Consequences**. Being able to predict

consequences is a particularly important skill for people who often forget the negative aspect of a choice they want to make **EXPLAIN**

to the client

- ➡ Explain fully how to use the orals
- ➡ Applying decision to daily life Reality-based questions like: What would keep you from using a oral formulations?
- ➡ How could you prepare to deal with that?
- ➡ Urge to ask questions to cast out any doubts in orals
- ➡ Urge to assist in advocacy for orals ...

RETURN/REFER/REALITY

- ➡ Discuss follow-up
- ➡ Encourage to come at any time if necessary
- ➡ Referrals:
 -  Ensure you have a network for referrals prn
 -  Explain why you have to refer
- ➡ Reality check:
 -  E.g. reconfirm dosage review guideline/job-aid just to be sure....

Exercise: Practice interpersonal communication and counselling in pairs

(30 minutes)

Ask participants to get into pairs. **Explain** that each will take a turn being the prescriber and the patient to practice the communication tips. **Distribute** scenario cards to each participant.

Give instructions for exercise:

- You each have a card that describes a scenario from the patient perspective.
- You will each take a turn being the patient and the prescriber.
- As the patient, tell the provider the information suggested on the card.

- As the prescriber, ask questions to uncover concerns and provide responses to encourage acceptance of an alternative treatment.
- You will have 5 minutes each.

After 5 minutes, **call time** and have participants **switch** roles. When they switch roles, give them different cards with which to practice. The participants need to practice the skills below as they address the issues in the scenario cards.

After 20 minutes, **call time**.

Debrief with group:

- How does the limited amount of time affect your counseling?
- What makes it hard to provide responses to patients?
- What makes it easier to provide responses to patients?
- Who else can assist you in counseling patients?

Thank participants for their participation in the practice.

Briefly acknowledge that there will be patients for whom injections are still required, or patients who will still reject an oral treatment and will still insist on an injection. Patients who are used to injections may be slow to begin to accept other treatments. Prescribers should still use their **best judgment** to ensure that treatment is effective.

Conclusion and closing

Answer any questions from participants.

Repeat that making changes is difficult for both health facilities and patients.

Conclude by reinforcing the importance of the prescriber's role in reducing injections, and therefore chances of needlesticks to fellow health workers and infections for health workers and community. Again **refer** participants to the Standard Treatment Guidelines for more information on what treatments can be alternatives to injections.

Thank participants for their participation.

Provide contact information for participants that want more information or assistance.

Scenario Cards to be used during Role Plays

SCENARIOS:

1. You are an older woman bringing your young grandson in for treatment of diarrhea. You request an injection, as you fear that if the diarrhea lasts much longer, the child will lose too much strength. All your children got injections when they had diarrhea, years ago.
2. You are pregnant with your third child and you have come to the health facility for vitamins for your pregnancy. You ask for an injection, as that is what you received during your other pregnancies. You don't believe that oral vitamins are as strong
3. You are an adult man who does not like injections and has received a very deep cut on your foot while in the shamba. Apart from stitching and treating your wound, your doctor tells you to receive a TT injection for full protection. You ask whether it is possible to get it orally.
4. You are a 60 year old man suffering from high fever. You had come to the hospital yesterday and was given brufen tablets. You have come back accompanied by a friend

who demands that the provider gives you the same injection he had received last month when he came with similar symptoms

Table 15: How to counsel when there is no time

Examples of things counsellors might do WHEN THEY HAVE NO TIME	
(1) Establishing Rapport:	➔ Eye contact, smile
(2) Gathering Information	<ul style="list-style-type: none"> ➔ Arrange for auxiliaries, assistants to gather certain information in waiting area ➔ Have client complete a questionnaire
3) Providing Information	<ul style="list-style-type: none"> ➔ Use waiting time for distributing all-methods leaflets, show videos, ➔ Provide only the details that the client wants and needs explained, demonstrate only what the client wants
4) Decision-making, Problem-solving	<ul style="list-style-type: none"> ➔ Follow an organized approach that ensures good decision process in a short time, i.e., ➔ Step One: Identify the “Injection challenge” or decision that is being made. ➔ Step Two: List three choices@ or options of treatment ➔ Step Three: For each choice, list several positive and negative outcomes or Consequences. Being able to predict consequences is a particularly important skill for people who often forget the negative aspect of a choice they want to make.
(5) Applying decision to daily life	<ul style="list-style-type: none"> ➔ Reality-based questions like: ➔ What would keep you from using a oral formulations? How could you prepare to deal with that?

Duration:

2 hours

Introduction

Supervision is key to injection management

The main objective of supervision is to motivate and improve staff performance

There is need to plan and conduct supportive supervision on regular basis

Learning Objectives

At the end of this session participants will be able to:

1. Discuss the essentials of supervision.
2. Explain the performance and quality improvement process
3. Describe supervisory activities plan
4. Explain implementation of supervisory visit

Contents:

1. The essentials of supervision

Supervision is a process of guiding, assisting, and encouraging staff to improve their performance.

Who Supervises?

- ✚ A person responsible for performance of clinical and non-clinical staff.
- ✚ On site or internal supervisor who conducts who conducts supervisory activities daily.
- ✚ External supervisor makes periodic visits.

Who Is A Supervisor?

A supervisor is one who:

- ✚ Has received some formal training in supervision.
- ✚ Has a title:
 - ➔ In-charge,
 - ➔ Manager,
 - ➔ Supervisor,
 - ➔ Head or
 - ➔ Director.
- ✚ Working at National, Province, District or Rural Health sites and conducts visits.

Supervisor Responsibilities.

- ✚ Identify standards/guidelines and communicate to staff.
- ✚ Assess staff performance.
- ✚ Provide feedback
- ✚ Identify appropriate interventions
- ✚ Mobilize resources

Supervisor Skills.

- ✚ Demonstrate technical competence.
- ✚ Facilitate teamwork
- ✚ Motivate others
- ✚ Provide constructive, timely and interactive feedback
- ✚ Communicate effectively both with staff and decision makers
- ✚ Delegate duties

Supervisor Characteristics

- ➔ Leadership and ability to inspire others
- ➔ Desire to help others achieve their full potential

- ➔ Commitment to the provision of quality care
- ➔ Openness to new and creative ideas

2. Performance and Quality Improvement Process

Performance And Quality Improvement Process involves:

1. Defining desired performance
2. Assessing performance
3. Finding causes of performance gaps
4. Selecting and implementing appropriate interventions
5. Supervising, monitoring and evaluating performance

3. Supervisory Visit activities:

Supervisory Visit Plan

- ✚ Objective of the plan
 - ➔ Activities to be carried out
 - ➔ Responsible persons
 - ➔ Sites to be visited
 - ➔ Time allocation
 - ➔ Resource availability

Implementation Of Visits

- ✚ Observation
- ✚ Collect information using checklist
- ✚ Solve problem
- ✚ Provide feedback
- ✚ Monitor and evaluate activities

Styles Of Supervision

- ➡ Democratic
- ➡ Autocratic
- ➡ Casual

The injection safety and infection prevention and control indicators are outlined in the supervisory checklist attached in the appendices.

MODULE 4 - SUPPLY MANAGEMENT

Introduction:

Injection safety and health-care waste is special in that it has a high potential of infection and injury. Inadequate handling of health-care waste may have serious public health consequences and impact on the environment. Hospitals and health-care establishments have responsibilities and a “duty of care” for the environment and public health, particularly in relation to injection safety and the waste they produce. They also carry a responsibility to ensure that there are no adverse health and environmental consequences as a result of injection practices and waste handling, treatment and disposal activities. Unfortunately, health-care waste management is, in many regions, not yet carried out with a satisfactory degree of safety.

This module aims at transmitting the basic skills for the development and implementation of health-care waste management policy. In this way, health-care facilities can take steps towards securing a healthy and safe environment for their employees and communities.

Description:

This module is intended to improve and strengthen safe injection commodities logistics.

The following units comprise the module:

- Unit 1: Introduction to Logistics
- Unit 2: Inventory Management
- Unit 3: Storage
- Unit 4: Recording and reporting
- Unit 5: Monitoring and Evaluation

UNIT 1: INTRODUCTION TO LOGISTICS MANAGEMENT

Duration:

30 minutes

Teaching Materials

The facilitator should ensure the following are available at the beginning of the unit:

1. Laminated posters for “7 rights”, and “logistics cycle”
2. Flip charts
3. Marker pens
4. Chalkboard/ whiteboard

Teaching/Learning Methods

- 👉 Lecture
- 👉 Discussion

Assessment of Learning

- 👉 Completion of logistics tools
- 👉 Successful completion of exercises

Specific Objectives:

At the end of the unit, the participants will be able to:

1. Define the term logistics;
2. Explain the importance of logistics;
3. Describe the key components of logistics management cycle.
4. Define key terms used in logistics.

Content:

1. Definition of the term “Logistics” (5 minutes)

Logistics: The movement of commodities from one place to another according to schedule

2. Importance of logistics (10 minutes)

Logistics ensure the availability of injection devices in all healthcare facilities, so that injectable medicines, diluents, single use injection devices and safety boxes are supplied according to the seven rights (see Box 16).

Purpose of a Logistics System

Box 16: The “Seven Rights”

WHO recommends that injection device security is ensured in all healthcare facilities, including therapeutic service, so that injectable medicines, diluents, single use injection devices and safety boxes are supplied in a timely manner in adequate quantities.

A good logistics system aims to:

Make available the **Right goods**

Based on product selection and specification

Based on meeting appropriate quality/ standards

Based on suitability to customers

In the **Right quantity**

Based on consumption

Based on amount of time between placing the order and receiving the commodities in your store ready for use

Enough to serve the customer

In the **Right condition**

Not damaged or expired

Stored as per the manufacturer’s product instructions

At the **Right Place**

Accessible to the client

Accessible to the provider in the stores and in the facilities

At the **Right time**

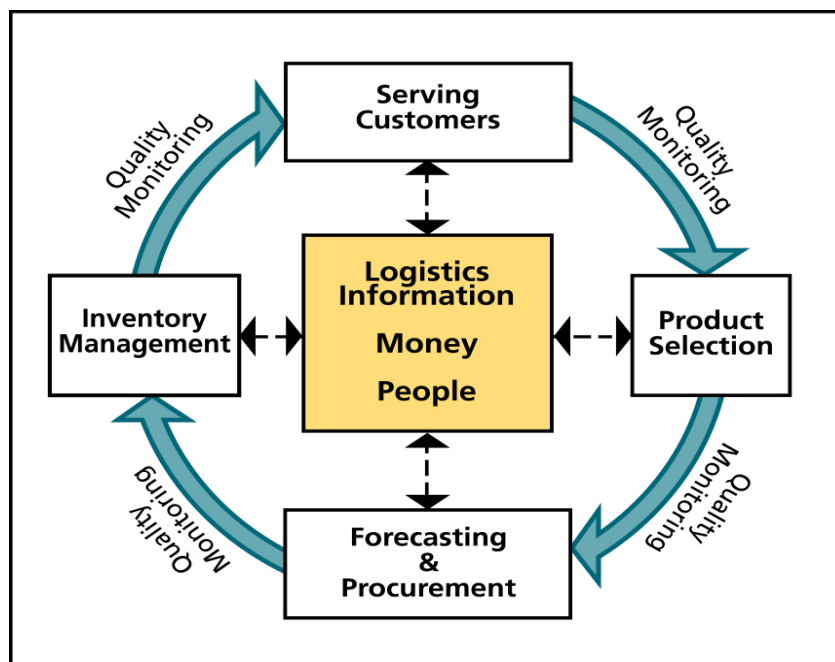
Available when needed

At the **Right cost**
Affordable by the client
Cost effective for the programme
Distributable by affordable modes of transport
To the **Right customer**
Right client for the product
The person responsible for commodity security

3. Components of the logistics cycle (see Figure 3) – 15 minutes

- ✚ Serving customers
- ✚ Product selection
- ✚ Forecasting and procurement
- ✚ Inventory management
- ✚ Logistics information: money, people
- ✚ Quality monitoring.

Figure 3: The Logistics Cycle



Explaining the elements of the cycle:

1. Serving customers

This is the priority of the cycle

2. Product selection

This is dependent on what customers are using or what service providers are prescribing.

Some of the products here are:

- ➔ Single use syringes and needles
- ➔ Re-use prevention syringe
- ➔ Re-use prevention and needlestick prevention syringes
- ➔ Safety boxes
- ➔ Needle removers
- ➔ Bin liners

3. Forecasting and procurement

a) Forecasting is the projection of actual needs based on historical data (consumption data), future programme plans, and the underlying assumptions. It allows the right goods to be acquired in the right quantities and at the right cost.

b) Procurement involves the process of planning, forecasting, specification development, bids, orders, and facilitating delivery and regulatory needs. It entails financial resources, technical skills, and management systems.

4. Inventory management

The process of receiving, storing, issuing, ordering and distribution of injection safety commodities to various sites

5. Logistics information

This is the engine that drives the function of the logistics cycle by providing information used for making logistics decisions, such as when to order and how much to order.

There are people to act on the information on all the injection safety commodities, and, money to run the process

6. Quality monitoring

Surrounding the cycle is quality monitoring, which is concerned with the quality of the products as well as quality of the information and day-to-day logistics decisions. All this needs to operate within a supportive policy environment

4. Key terminologies used in logistics management

Logistic Pipeline

The entire chain of storage facilities and transportation links through which supplies move from one manufacturer to end user, from when it was ordered to when it reaches end user

Pipeline length

The total time it takes a product to get from the top of the pipeline to the customer

Lead-time

The amount of time between placing the order and receiving the commodities in your store ready for use

Push system

A distribution system where the higher-level facilities determine the quantities to order for the lower-level facilities

Also called allocation system, because the higher-level facilities allocate products to client facilities

Pull system

In a pull-distribution system, the lower level facilities decide how much they require and when, and pull the products down

Also called requisition system or indent system

Safety stock

The amount of commodity kept as reserve (buffer) stock to avoid stock outs due to delayed deliveries or increased demand

Working stock

Amount of commodities by name between maximum and minimum stock levels

Stock level status

Current stock levels in relation to the established maximum and minimum stock levels

UNIT 2: INVENTORY MANAGEMENT

Duration:

1 hour 30 minutes

Teaching Materials

The facilitator should ensure the following are available at the beginning of the unit:

1. Handouts of
 - ↳ Boxes 4- 8
 - ↳ Table 16
2. Samples of injection safety commodities (Single use syringes and needles, Re-use prevention syringe, Re-use prevention and needlestick prevention syringes, Safety boxes, Needle removers, Bin liners)
3. Copies of Exercises 1, 2, 3 and 4.

Teaching/Learning Methods

- ↳ Lecture/Discussion
- ↳ Individual assignments
- ↳ Demonstration
- ↳ Visits to healthcare facilities to observe logistics management

Specific Objectives:

At the end of the unit, the participants will be able to:

1. Define the term inventory management;
2. Discuss physical inventory;
3. Conduct physical inventory
4. Determine order quantities
5. Describe the process of receiving commodities

Content:

1. Definition of inventory management:

Inventory management: The process of procurement, receiving, storing, issuing, ordering, and distribution of injection safety commodities to various sites.

Components of inventory management:

- ↳ Determining order quantities
- ↳ Receiving commodities
- ↳ Storage
- ↳ Issuing commodities
- ↳ Records
- ↳ Reporting

2. Definition of a physical inventory:

Box 17. Physical Inventory

Definition

Counting by hand the total number of units of each commodity type in your store and by expiry date.

Importance of conducting physical inventory

- To identify discrepancies between actual supplies and what is recorded in the bin card
- To detect any supplies that have expired, nearly expired or are damaged
- To know how much of each commodity that is in store

Types of physical inventory

1. Complete physical inventory

All products/commodities are inventoried at the same time. Normally done yearly.

2. Partial or sample physical inventory

Some of the products are inventoried at different times for example partial inventory of a specific product is done at each reorder point to verify quantities.

3. Steps in conducting physical inventory:

1. Separate expired/damaged or unusable items from usable ones and make appropriate entry in the registers
2. Count every item of usable stock by commodity type
3. Record findings of the physical inventory on bin cards and stock registers
4. Record date of the physical inventory on bin cards and stock registers
5. Mark expiry dates on carton/box (if not already marked)
6. Reorganize commodities according to 'first-to-expire, first-out' (FEFO); if not already done

7. Re-arrange supplies and equipment that do not expire according to 'first-in, first-out', (FIFO); if not already done
8. In case of discrepancy (shortages/excess) make the necessary adjustments in the record

Demonstration:

The facilitator should have some commodities to have a participant demonstrate how to conduct a physical inventory.

State commodities and explanation!!!!

4. Key measurements in inventory control and their calculation:

Calculations of:

1. Average Monthly Consumption Rate (AMC) (see Box 18)
2. Months of Supply on Hand (MOS) (see Box 19)
3. Minimum/Maximum Stock Levels (see Box 20)
4. Amount of commodity to order (see Box 21).

Maximum-minimum inventory control system ensures a continuous supply of health products at service delivery points, logistics managers monitor stock levels and establish ordering and distribution procedures to maintain stocks between recommended Maximum and Minimum levels.

Determining order quantities:

Before determining amount to be ordered there is need to establish what is in stock. This is done through physical inventory (see Box 5).

Box 18 - Average Monthly Consumption Rate (AMC)

This is called a Maximum-Minimum inventory control system (Max-Min). Ideally, an order is placed when the stocks hit the minimum to avoid stock-out or expiring stock in store.

Definition

Average number of each commodity issued to clients/ patients in a given month

Helps to determine the amount of each commodity that must be kept on hand in order not to stock out

This must be reviewed quarterly and adjusted according to the current consumption trends

How to calculate AMC

$$\text{AMC} = \frac{\text{Total consumption for 3 months}}{3}$$

Example

If you had 500 syringes of 5 ml at the beginning of January, you received 1,000 of the same at the end of February, and you have 300 at the end of March, what will be your AMC assuming there were no stock outs?

Syringes found in stock A = 500

Total number of syringes received B = 1,000

Total number of syringes in stock at the end of stock taking period C = 300

Total consumption = (Total syringes found in stock (A) + Total syringes received (B) - Total syringes in stock at the end of the stock taking period (C))
(A + B) - (C).

(500 + 1000) - 300 = 1,200

Stock taking period = January to March = 3 months

Average monthly consumption = Total consumption/ stock taking period in months
= 1,200/3 = 400

Box 19 - Months of Supply on Hand (MOS)

Definition

It is the actual amount of each commodity on hand expressed in months

Why determine MOS?

Avoid over and under stocking

Always having the right amount of commodity on hand

Helps determine the amount of supplies to order

How to calculate MOS

Take the number of each commodity on hand (physical inventory)

Take the AMC for each commodity

Divide step i (balance on hand) by step ii (AMC). This gives the month of supply on hand

$$\text{MOS} = \frac{\text{Balance on hand}}{\text{AMC}}$$

Exercise 1 (Average Monthly Consumption Rate (AMC))

Facility A in Rioma district used the following 2 ml syringes.

January 2100

February 2800

March 2000

What is the average monthly consumption rate for this facility?

Exercise 2 (Determining Months of Supply on Hand (MOS))

In Store D, there was a balance of 180,000 pieces of syringes and needles at the end of the first quarter; the AMC for the store is 60,000 pieces

How many months of supply on hand does this store have?

Calculation of Minimum/Maximum Stock Levels:

Minimum/Maximum stock level is based on AMC and the minimum/maximum months assigned to each level, which differs by level of facility in the health system

- ✎ Maximum and minimum stock levels are measured in months of stock, and are established depending on the review period and the lead time
- ✎ Maximum months of stock is the amount of commodity by name expressed in months above which the store/warehouse stock level should not exceed under normal circumstances

Minimum months of stock is the amount of commodity by name expressed in months below which a store/warehouse should not go below under normal circumstances

Box 20 - Calculation of Minimum/Maximum Stock Levels

How to calculate Maximum Stock Level

1. Take AMC of each commodity
2. Multiply by maximum number of months of stock to be kept

How to calculate Minimum Stock Level

1. Take AMC of each commodity

2. Multiply by minimum number of months of stock to be kept

Exercise 3 (Maximum/Minimum Stock Level)

In Facility F, the AMC of 2 ml syringes is 125. The maximum months of supply for the facility is two months while the minimum months of supply is one month.

What is their maximum/minimum stock level?

Box 21- Determining the Amount of Commodity to Order

The following steps should be taken to determine the amount of commodity to order:

Calculate **Maximum Stock Level** based on **AMC** and maximum months of supply

Subtract Stock on Hand from the Maximum Stock Level

This gives the amount of injection safety commodities to order

Amount of each commodity to order

= Maximum Stock Level *minus* Stock on Hand

Exercise 4 (Estimating Quantity Needed to Order)

In Bondo District store, the AMC for syringes and needles is 12,000 pieces of 5ml, the store is supposed to keep maximum stock of 3 months.

The ending balance at the end of 2nd quarter 2004 was 5000 pieces.

What quantity does this store need to order?

Receipt of commodities (10 minutes):

How commodities are received?

The following must be done as commodities are received:

1. Ensure supplies received tally with ordering form

2. Dispatched commodities are self-verified
3. Receiving Officer checks on expiry date and batch numbers
4. Arrange commodities in different places on shelves in the store
5. Update record, i.e. bin card/stock registers
6. Sign the issue voucher and file them

Refer to Table 16 for Self-Monitoring Checklist. Let the participants read through the checklist.

Table 16: Self-Monitoring Checklist on Receiving Commodities

Question	Yes	No	Remarks
Did I ensure quantity of commodities received matches the quantity written on the Issue Voucher?			
Did I check the manufacturing and expiry dates of the commodities received?			
Did I check the quality of the commodities received?			
Did I resolve the situation with the supplier if a damaged or expired item was supplied?			
Did I ensure that the supply source authority duly signs copies of Issues/Receipt Vouchers?			
Did I send countersigned copies of Issue/Receipt Vouchers to the supply source?			
Did I store the commodities received following FEFO?			
Did I store the supplies and equipment received following FIFO?			
Did I update records?			
Did I keep a copy of the Issue/Receipt Voucher in the respective file?			

Action to be taken in Case of Excess/Shortages or Quality Problems:

1. Liaise with the source of supply for further advice
2. If excess, commodity returned to source of supply for re-distribution.
3. Update records: damaged goods need to be included here as well

UNIT 3: STORAGE

Duration:

1 hour 30 minutes

Teaching Materials:

The facilitator should ensure the following are available at the beginning of the unit:

1. Storage Guidelines
2. Adequate copies of Exercise 5
3. Samples of injection safety commodities (Single use syringes and needles, Re-use prevention syringe, Re-use prevention and needlestick prevention syringes, Safety boxes, Needle removers, Bin liners)
4. Copies of blank inventory control cards, bin cards

Teaching/Learning Methods:

- ↳ Lecture/Discussion
- ↳ Demonstration
- ↳ Visits to healthcare facilities to observe storage practice

Specific Objectives:

At the end of the unit, the participants will be able to:

1. Learn to store commodities
2. Learn how to maintain inventory control records.

Content:

1.a) Definition of a store (5 minutes):

A store is a structure or room where commodities are kept for safety and are available to users as and when required

b) Purpose of storage:

1. To keep supplies safe and secure from theft and damage until they are issued to health units and the consumer
2. To ensure the quality of supplies by protecting the integrity of the packages and making them easily accessible when needed

c) Storage layout (5 minutes):

Storage Layout:

To make a plan to have the maximum and best use of the available storage space

d) Principles of storage layout:

1. Store fast moving commodities in an easily assessable place
2. Store each type of commodity in the same area
3. Store the unusable and date expired commodities in a segregated place
4. Keep all commodities off the floor (Palleting)

e) Guidelines for proper storage of health commodities (30 minutes):

1. Clean and disinfect storeroom regularly, to discourage harmful insects and rodents from entering the storage area.
2. Store injection safety commodities in a dry, well-lit, well-ventilated storeroom.
3. Protect storeroom from dampness
4. Keep functional fire safety equipment handy.
5. Store latex products away from electric motors and fluorescent lights.
6. Maintain cold storage as required.
7. Limit storage area access to authorized personnel.
8. Stack cartons at least 10cm (4in.) off the floor, 30cm (1 ft.) away from the walls and other stacks, and no more than 2.5m (8ft.) high.

9. Arrange cartons with arrows pointing up and with identification labels, expiry dates and manufacturing dates clearly visible.
10. Store health commodities to facilitate 'first-to-expire, first-out' (FEFO) procedures and stock management.
11. Store health commodities away from chemicals, flammable products and hazardous materials.
12. Separate damaged and expired health commodities from usable commodities.
13. Keep narcotics and other controlled substances in a locked place.
14. Store flammable products separately with appropriate safety precautions.
15. Store topical preparations separately.

f) Issuing commodities (5 minutes):

When issuing commodities, it is important to review the Issue Voucher for the following:

1. Correctness of referenced information
2. Correctness of determining issue quantity
3. Correctness in filing the issue/receipt voucher
4. Completeness of the issue/receipt voucher

g) How commodities are issued (5 minutes):

- ➔ Issued in pieces
- ➔ Issued in boxes
- ➔ Issued in cartons
- ➔ Issued in packs
- ➔ Issued in vials
- ➔ Issued in ampoules
- ➔ Issued in dose

h) Importance of issuing commodities in different units:

- ➔ Easy to count in boxes/packs
- ➔ There is less possibility of mistakes in counting
- ➔ It takes less time to supply
- ➔ Easy to carry
- ➔ Minimizes pilferage

As standard of practice while commodities are distributed in standard packaging such as cartons and boxes, they are accounted for on all records and reports in the smallest unit of issue (piece, vial, tablet, cycle, etc.) and not by those packaging forms.

2. a) Recording and reporting tools (5 minutes):

- Record the quantity of each item dispensed to customers.

Table 17. Types of Recording and reporting tools

Number	Type of Record	Examples	Use
	Stock Keeping	Bin Card	An individual stock-keeping card that keeps information about a single lot of a given product. Bin cards are usually displayed at the bins or shelves where the commodity is found.

Number	Type of Record	Examples	Use
		Inventory Control Card Stores Ledger	An individual stock-keeping card that keeps information about all lots of a product. One inventory card for each product. A bound book used instead of the individual card format
	Transaction Records	Packing List Issue Vouchers Registration and Issue Vouchers	Used to record information on the movement of stocks from one storage facility to another.
	Consumption Records	Daily Activity Register Tally Sheet	Used to record the quantity of each item dispensed to customers. The data contained in this report therefore is user data (i.e. quantity of each product received by a customer) Other data that can be included is service statistics e.g. new patients or continuing users. However, the collection of this kind of data should be kept to the minimum to avoid compromising care to the client This kind of data is considered to be non-essential for logistics Service personnel at service delivery points complete consumption records as supplies are dispensed to the customers Consumption records generally do not move. They usually remain at the service delivery point.

b) How to complete an Inventory Control Card (30 minutes)

When conducting a physical inventory, the stock card must be updated.

Complete the instructions in the following box:

Task: Filling in the stock card

Completed by: Facility In-Charge, District Store In-Charge

Purpose: 1. To maintain a continuous record of all injection safety (IS) transactions
To record results of a physical inventory

When to perform: Each time you—

1. Receive or issue IS commodities
2. Record a loss or adjustment
3. Conduct a physical inventory

Note:

1. Complete one stock card for each IS commodity and other related supplies. Enter only one transaction on each line.
2. After recording a physical inventory on the stock card, skip a line on the stock card, leaving it blank, and begin recording the next month's transactions on the next line.
3. There should be one stock card for each size of syringe or safety box of the commodity you store. When you have completed both sides of a stock card for a product, attach a new stock card to the top of the old card and write the words *Balance Forward* or *B/F* on the first line.
4. Write the quantity brought forward from the old card in the first Quantity on Hand space on the new card.

Step	Action	Notes	Example
1.	Product: Enter the name of the health commodity.	Use one stock card for each health commodity.	Product: 5ml syringe
2.	Date: Enter the date of the transaction.		12/4/2005
3.	Voucher To/From: Enter the delivery note number of the item received or issued.	Get this from the requisition or issue voucher that accompanies the item.	Voucher #: 0039
4.	Quantity Received: Enter the exact amount of the product received on this date in red ink.	Stock received at service delivery points from the district store, and stock received at the district store from KEMSA.	Syringes received: 50

5.	Quantity Issued: Enter the exact amount of the product issued on this date.	Stock that has physically left the storage area.	5ml syringe: 60
6.	Losses/Adjustments: Enter the exact amount of losses or adjustments (additions) to inventory on this date.	<p>Always use a (-) sign to indicate losses and a (+) sign to indicate adjustments (additions).</p> <p>Losses include theft, expiry, damage, or items used for either training.</p> <p>Adjustments include usable stock returned from lower level facilities or transferred from one facility to another, and products returned to the District Store.</p>	<p>Syringes losses/adjustments :</p> <p>(-) 2</p>
7.	Quantity on Hand: Add any receipts or adjustments and subtract any issues or losses from the existing Quantity on Hand to determine the new Quantity on Hand. Write this figure in the Quantity on Hand column for this date.	<p>This column should always represent the amount of this item presently in your store.</p> <p>When conducting a physical inventory, always record the exact amount counted. If the physical count does not match the amount recorded in this column, review the issues and receipts against the delivery vouchers, check the math, note the adjustment in the <i>Losses/ Adjustment</i> column and update the figure in this column.</p> <p>Record losses or adjustments discovered during a physical inventory before and on a separate line from the physical inventory entry. Record the physical inventory on the stock card <i>in red ink</i>.</p>	<p>Quantity on hand = 98</p> <p>Physical Inventory = 98</p>

8.	Remarks: When an item is received, enter the origin. When an item is issued, enter the destination. When there is a loss or adjustment for an item, provide a brief explanation. When conducting a physical inventory, sign your name.		Received (Origin): NMS Issued (Destination): Mecha Loss/Adjustment: Damaged by water Physical Inventory: M.Ted
This task is complete when – <ul style="list-style-type: none"> The Product Name, Date, Voucher To/From, Batch Number, Quantity Received, Quantity Issued, Losses/Adjustments, Quantity on Hand, and Remarks columns are correctly completed. 			

Example - Stock Card (MINISTRY OF HEALTH) Product: 5ml syringes						
Date (A)	Voucher To/From (B)	Quantity Received (C)	Quantity Issued (D)	- Losses/ +Adjustments (E)	Quantity on Hand (F)	Remarks (G)
10/4/05	B/F	-	-	-	110	-
12/4/05	0039	50			160	NMS
20/4/05	121		60		100	Mecha
30/4/05	-	-	-	(-) 2	98	Damaged by water
30/4/05	Physical Inventory				98	M. Ted

B/F - Means balance brought forward

c) How to complete a bin card

Complete the instructions in the following box:

Task: Filling in the bin card

Completed by: Facility In-Charge, Storeman/Supplies Officer In-Charge

Purpose: 1. To maintain a continuous record of all injection safety (IS) transactions

When to perform: Each time you –

1. Receive or issue IS commodities

Note:

1. Complete one bin card for each IS commodity and other related supplies. Enter only one transaction on each line.
2. There should be one bin card for each size of syringe or safety box of the commodity you store. When you have completed a bin card for a product, attach a new stock card to the top of the old card and write the words *Balance Forward* or *B/F* on the first line.

Step	Action	Notes	Example
1.	Description of Item: Enter the item type in this space.	These can include the name and size of the item	AD Syringe 2cc
2.	Unit of issue: Enter the units the item is issued in.	Units of issue include pieces, boxes, vials etc.	Number
3.	Code No. Enter the Code Number of the item.	The code number of each item is unique to that item. If you do not have the number, contact the District Store or KEMSA	
2.	Date: Enter the date of the transaction.		12/4/2005
3.	Reference: Enter the delivery note number of the item received or issued.	Get this from the requisition or issue voucher that accompanies the item.	Voucher #: 0039
4.	Receipt: Enter the exact amount of the product received on this date in red ink.	Stock received at service delivery points from the district store, and stock received at the district store from KEMSA.	Syringes received: 50

5.	Issue: Enter the exact amount of the product issued on this date.	Stock that has physically left the storage area.	5ml syringe: 60
7.	Balance: Add any receipts and subtract any issues from the existing Balance to determine the new Balance. Write this figure in the Balance column for this date.	This column should always represent the amount of this item presently in your store.	Balance = 98
<p>This task is complete when —</p> <ul style="list-style-type: none"> ▪ The Description of Item, Unit of Issue, Date, Reference, Quantity Received, Quantity Issued, and Balance columns are correctly completed. 			

UNIT 4: RECORDING AND REPORTING

Duration:

2 hours

Teaching Materials:

The facilitator should ensure the following are available at the beginning of the unit:

1. Handouts of
 - ➔ Copies of blank tally sheets and DARs
 - ➔ Copies of blank CDRRs
 - ➔ Copies of job aid on filling Tally Sheet/ DAR
 - ➔ Copies of job aid on filling CDRR
 - ➔ Copies of filled DARs and CDRRs
 - ➔ Exercise on filing DAR
 - ➔ Exercise on filling CDRR
2. Samples of injection safety commodities (Single use syringes and needles, Re-use prevention syringe, Re-use prevention and needlestick prevention syringes, Safety boxes, Needle removers, Bin liners)
3. Copies of blank Tally sheet and Daily Activity Registers (DAR)
4. Copies of blank Consumption Report and Request forms (CDRR)
5. Copies of Exercise on filling a DAR

Teaching/Learning Methods:

- ✚ Lecture/Discussion
- ✚ Small Group assignments
- ✚ Individual exercises
- ✚ Demonstration
- ✚ Visits to healthcare facilities to observe logistics management

Specific Objectives:

At the end of the unit, the participants will be able to:

1. Define records
2. Define a report
3. Identify reporting and recording tools
4. Identify logistic data elements
5. Learn how to fill in recording and reporting tools
6. Learn how to compile and forward reports

Content:

1. Definition of a record (10 minutes):

A *record* is a collection of related data items

2. Define a report:

A *report* gives a spoken or written account of something: gather data or information from records and give a regular account or assessment.

3. Recording and reporting tools (10 minutes):

i) RECORDING TOOLS

1. Tally sheet for syringes
2. Daily Activity Register for IS commodities

ii) REPORTING TOOLS

1. Consumption and Request form for IS commodities (Facility)
2. Consumption and Request form for IS commodities (District)

Essential Logistics Data

The three essential logistics data are:

Balance on hand

Losses and adjustments

Consumption data

How to Complete the Tally Sheet & Daily Activity Register (30 minutes):

Part I: The following instructions are for completing the Daily Tally Sheet for IS commodities. This form is completed by the service provider at the service delivery point.

Task:	Completing the Daily Tally Sheet for Injection Safety Commodities
Completed by:	Health Facility Service Providers
Purpose:	To record the usage of injection commodities at injection giving sites of the facility
When to perform:	Daily or whenever an injection is given
Materials needed:	Tally sheets
Steps:	<ol style="list-style-type: none">1. Fill in the Ward Name, Facility Name, Province, and District2. Enter Month and Year.3. Check a circle for each injection given.4. Total up the number of injections given each day for each syringe type and transfer the figure to the Daily Activity Register below.

Part II: The following instructions are for completing the Daily Activity Register for IS commodities. This form is completed by the service provider at the service delivery point.

The following instructions are for completing the Daily Activity Register for IS commodities. This form is completed by the service provider at the service delivery point.

Task: Completing the Daily Activity Register for IS commodities Completed by: Health Facility Service Providers and/or In-Charge Purpose: To record the usage of IS commodities. When to perform: Daily, or whenever an IS commodity is used. Materials needed: Forms booklet with the Daily Activity Register		
Step	Action	Notes
1.	Date (A): Write the date when the commodity was received or used.	Enter as Day – Month – Year.
2.	Voucher to/from (B): enter voucher number.	Only enter when you have received or adjusted using voucher.
3.	BALANCE BROUGHT FORWARD : Write the Ending Balance from the bottom of the previous DAR for each type IS commodity	The Ending Balance from the previous DAR is always the Balance Brought Forward on the current DAR.
4.	QUANTITY RECEIVED(C): Write the total number of commodities, by type received from the district store or KEMSA central warehouse during the period covered by the DAR.	Get this number from the Quantity Received column of the product inventory control card. Only enter the number of commodities received from the district store or central warehouse. Any commodities received from other sources should be recorded as a positive adjustment
5.	QUANTITY USED (D): Write the total number of commodities used during the period by type and size.	Add all daily tallies (used) for each type and size of commodity and enter the total here. Refer to your tally sheet.

6.	LOSSES / ADJUSTMENTS (E): Write the number of commodities by type that were removed from /added to inventory for reasons other than usage or receipts from official suppliers.	Include commodities that were damaged, expired, transferred to/from other facilities, etc. during the period. Also include commodities received from suppliers other than the district store or central warehouse and record them as a positive adjustment.
7.	QUANTITY ON HAND (BALANCE) F: Write the number of commodities that were available for use during the period.	Add the Quantity Received to the Balance Brought Forward, and then subtract Losses/ Adjustments to obtain this number.
8.	REMARKS (G): Write reasons for losses and adjustments.	Losses are always negative while adjustments may be either positive or negative.
<p>This task is complete when—</p> <ul style="list-style-type: none"> ➔ The Date and type of commodity are filled in for every commodity used. ➔ The Quantity Used and Ending Balance are filled in for each type and commodity. 		

Exercise on filling DAR and CDRR (15 minutes):

You are a Facility-in-Charge at Rioma healthcare facility, Ondiri District, Mali Province of Republic of Sowande.

The maximum stocking level for 5ml and 2ml at this facility is 1,500 and 1,000 respectfully.

On 30/04/2005 a physical stock for 5 ml syringes was taken and the balance was 1107

On 30/04/2005, a physical stock was taken for 2 ml syringes and the balance was 728.

Use the information provided to;

a) Fill in Daily activity registers for the month of April 2005 for 2ml and 5ml syringes.

b) Make a report for the month ending 30th April 2005 for both 2ml and 5ml syringes.

5ml

Date (A)	From/To	Received	Used	Quantity on hand (balance)
01/04/2005	BBF	-	-	250
01/04/2005		-	14	
02/04/2005		-	4	
02/04/2005	Main store	600	-	
04/04/2005		-	8	
05/04/2005		-	-	
20/04/2005	Main store	300	-	
21/04/2005		-	7	
30/04/2005		-	10	
30/04/2005		-	-	

2ml

Date (A)	From/To	Received	consumed	Stock on Hand(balance)
01/04/2005	BBF-	-	-	200
01/04/2005	-	-	16	
02/04/2005	-	-	17	
02/04/2005	MAIN STORE	400	-	
03/04/2005	-	-	13	
04/04/2005	-	-	15	
05/04/2005	-	-	-	
20/04/2005	MAIN STORE	200	-	
21/04/2005	-	-	12	
30/04/2005	-	-	4	
30/04/2005	-	-	-	

How to Complete the Consumption Data Report (30 minutes):

The following instructions are for completing the Consumption Data Report & Request for IS Commodities. This form is completed by the Health Facility In-Charge, and District store (for the district store). Prior to completing the Consumption Data Report, the In-Charge should conduct a physical inventory. See Chapter for instructions on conducting a physical inventory.

Task:

Completing the Consumption Data Report for Injection Safety Commodities

Completed by:

Health Facility In-Charge

District store in charge

Purpose:

To report information on stock balances and quantities used by service delivery points and on stock balances and quantities issued by the district store; and to order the quantity of commodities and related supplies required at health facilities.

When to perform:

No later than the fifth day of every month (service delivery points), or the tenth day of the month every two months (district stores).

Materials needed:

To complete this form at a service delivery point, including district stores use the Daily Activity Register for IS commodities and the health facility stock cards.

To complete this form at the district level, use the district store stock cards.

Step	Action	Notes
1.	FACILITY NAME: Write the name of the facility that the Consumption Data Report is	

	being completed for.	
2.	PROVINCE: Write the name of the province the facility is located in.	
3.	DISTRICT: Write the name of the district the facility is located in.	
4.	PERIOD BEGINNING: Write the date of the first day covered by this report.	Enter as day/month/year
5.	PERIOD ENDING: Write the date of the last day covered by this report.	Enter as day/month/year
6.	Column A, BEGINNING BALANCE: Write the total number of commodities available for use on the first day of the reporting period.	The Ending Balance/Physical Count from the previous report is always the Beginning Balance on the current report.
7.	Column B, AMOUNT RECEIVED: Write the number of commodities received from official suppliers during the period covered by the report.	Get this number from the Quantity Received column of the product stock card. Only enter the number of commodities received from the district store or central warehouse. Any commodities received from other sources should be recorded as a positive

		adjustment.
8	Column C, AMOUNT USED: Write the total number of commodities used during the period by type and size.	Add all of the ticked boxes for each type and size of commodity and enter the total here. Refer to your tally sheet.
9.	ADJUSTMENTS: Write the number of commodities that were added to the store or facility's inventory for reasons other than receipts from official suppliers.	Include commodities received from suppliers other than the district store or the central warehouse during the period. Also use this column to record any positive discrepancies between stock records and physical counts discovered during a physical inventory.
10.	Column D, LOSSES: Write the number of commodities that were removed from the store or facility's inventory for reasons other than usage.	Include commodities that were damaged, expired, lost, etc. during the period. Also use this column to record any negative discrepancies between stock records and physical counts discovered during a physical inventory.
10.	Column E, ENDING BALANCE/ PHYSICAL COUNT (CURRENT BALANCE):	This number should always be the same as the result of the physical inventory you conducted

	<p>Write the total number of commodities remaining in the facility at the end of the period.</p> <p>Use this formula to calculate the number:</p>	<p>prior to completing this report.</p> <p>If the number is not the same, there is an error. Recheck the math calculations and losses & adjustments. If necessary, repeat the physical count.</p> <p>If the number is still not the same, use the number obtained from the physical count and adds or subtract the amount of the discrepancy/ Losses in Column D.</p>
11.	<p>Column F, QUANTITY REQUESTED: Write the amount to request in this column.</p>	<p>The Quantity Requested is equal to Maximum stock level minus the Current Balance .</p>
15.	<p>COMMENTS: Explain Losses, Adjustments:</p>	<p>Please include any additional information that could assist in the interpretation of data from your facility/district.</p>
11.	<p>NAME: Write the name of the person preparing this report.</p>	
12.	<p>SIGNATURE: The person preparing this report should sign here.</p>	
13.	<p>DATE: Write the date you are preparing this report.</p>	

This task is complete when:

- All identifying information for the Facility and the Report Period has been filled in.
- All columns of the report have been completed for each commodity used at the facility.
- The Quantity Requested is calculated for each type of commodity.
- The person that prepared the report has written in their name, designation, date, and signed the report.
- The completed report has been submitted to the District injection safety focal person (if the report is prepared from a service delivery point), or when the report has been submitted to the Central level (if the report is prepared from a district store).
- A copy of the report has been filed at the facility

4. Summary of Logistics system activities (5 minutes)

Activities that happen to supplies in a logistics system

There are only three activities that happen to supplies in a logistics system:

1. Supplies can be STORED as inventory
2. Supplies can be DISTRIBUTED from one facility to another
3. Supplies can be DISPENSED to customers at a facility

These are the only three activities that a Logistics Management Information System needs to track in order to support managers in decision-making.

Reporting system

When to Report

- Service delivery points
 - Report to the districts by the fifth day of following month
- District stores
 - Report to the central level by the tenth day of the following month

UNIT 5: MONITORING AND EVALUATION

Duration:

30 minutes

Teaching Materials

The facilitator should ensure the following are available at the beginning of the unit:

1. Handouts on
 - Definition of Monitoring, Evaluation, Supervision
 - Purpose of M & E
 - Steps in M & E
2. Flip charts
3. Marker pens
4. Chalkboard

Teaching/Learning Methods

- Lecture/Discussion
- Demonstration

Specific Objectives

At the end of the unit, the participants will be able to:

1. Define the term monitoring
2. Define the term evaluation
3. Discuss the importance of monitoring and evaluation
4. Describe the purpose of monitoring and evaluation;
5. Understand steps involved in monitoring and evaluation

Content

Definition of monitoring (5 Minutes)

Monitoring

The routine tracking and reporting of priority information about a programme and its intended output and outcomes

Definition of evaluation

Evaluation

A rigorous, scientifically based collection of injection safety activities, characteristics, and outcomes that determines the merit or worth of injection safety practices.

Importance of monitoring and evaluation (5 minutes)

- ✚ Provides important data on the progress of injection safety
- ✚ Permits better injection safety management and decision-making
- ✚ Allows accountability to healthcare workers, clients, and the community
- ✚ Provides appropriate selection of safety devices.

Purpose of monitoring and evaluation (10 minutes)

Monitoring

1. Ensures that clients get the health commodities needed when they need them
2. Ensures that planned logistics activities are carried out according to schedule
3. Ensures that records are correctly maintained and reports submitted in a timely manner for re-supply
4. To provide guidance regarding data collection and reporting for injection safety plans, implementation, monitoring and supervision

Supervision

The process of ensuring that personnel have the knowledge and skills required to carry out their responsibilities effectively, and providing immediate on-the job training as needed (see Box 9).

Box 9 - Purpose of Logistics Supervision

1. To ensure healthcare workers have the knowledge and skills needed to effectively manage the logistics system
2. To identify performance level and take appropriate actions
3. To ensure that established logistics guidelines and procedures are being followed
4. To provide on-the-job training
5. To ensure that personnel at all levels carry out their responsibilities.

Please refer to Appendices 3, 4, 5, for information useful to this Module

Steps involved in Monitoring and Evaluation (10 minutes)

1. Identify the objectives
2. Define the indicators
3. Identify the methods
4. Data collection
5. Data analysis
6. Compile report
7. Feedback

ANSWERS TO THE EXERCISES

Exercise 1 (Average Monthly Consumption Rate (AMC))

AMC: Total number of commodities used/number of months in which they were used

Answer:

Facility A used the following 2 ml syringes.

January 2100

February 2800

March 2000

Total **6900**

What is the average monthly consumption rate for this facility?

$6900/3 = 2300$ 2 ml syringes

AMC for 2 ml syringes = 2300

Exercise 2 (Determining Months of Supply on hand - MOS)

MOS = stock balance/AMC

Answer:

In District store D, there was a stock balance of 180,000 pieces of syringes and syringes at the end of the first quarter; the AMC for the store is 60,000 pieces

How many months of supply on hand does this store have?

$$\text{MOS} = 180,000 / 60,000 = 3.0 \text{ months}$$

Exercise 3

In facility F, the AMC of 2 ml syringes is 125. The maximum months of supply for this facility is two months while the minimum months of supply is one month.

What is their maximum/minimum stock level?

Answer

$$\begin{aligned}\text{Maximum stock level} &= \text{AMC} \times \text{Maximum MOS} \\ &= 125 \times 2 \\ &= \mathbf{250 \text{ syringes}}\end{aligned}$$

$$\begin{aligned}\text{Minimum stock level} &= \text{AMC} \times \text{Minimum MOS} \\ &= 125 \times 1 \\ &= \mathbf{125 \text{ syringes.}}\end{aligned}$$

Exercise 4

In Bondo District store, the AMC for needles and syringes is 12,000 pieces of 5ml, the store is supposed to keep maximum stock of 3 months. The ending balance at the end of 2nd quarter 2004 was 5000 pieces.

What quantity does this store need to order?

Amount to Order = (Maximum Stock) minus (Ending Stock on Hand)

Answer:

$$\begin{aligned}\text{Maximum stock level} &= \text{AMC} \times \text{Maximum Months of supply} \\ &= 12,000 \times 3 \\ &= 36,000\end{aligned}$$

Ending balance = 5000

Amount of 5ml syringes to Order

$$\begin{aligned}&= \mathbf{\text{Max stock} - \text{Ending Balance}} \\ &= \mathbf{36,000 - 5000} \\ &= \mathbf{31,000}\end{aligned}$$

Answer for 2ml Syringe DAR

MINISTRY OF HEALTH

Daily Activity Register

NAME OF SECTION/UNIT: All **sections** FACILITY NAME: **Rioma**

DISTRICT: **Ondiri**

PROVINCE: MALI

MONTH: April

YEAR: 2005

2ml

Syringe Size.		2cc			
Date (A)	Voucher To/From (B)	Quantity Received (C)	Quantity Used (D)	Losses/+Adjustments (E)	Quantity on Hand (Balance) (F)
01/04/2005	B/F	-	-	-	200
01/04/2005	-	-	16	-	184
02/04/2005	-	-	17	-	167
02/04/2005	T776761	400	-	-	567
03/04/2005	-	-	13	-	554
04/04/2005	-	-	15	-	539
05/04/2005	-	-	-	-	539
20/04/2005	T776766	200	-	-	739
21/04/2005	-	-	12	-	727
30/04/2005	-	-	4	-	723
30/04/2005	-	-	-	5	728

Answer for 5ml Syringe DAR

MINISTRY OF HEALTH

Daily Activity Register

NAME OF SECTION/UNIT/WARD: All sections FACILITY NAME: Rioma

DISTRICT: Ondiri

PROVINCE: MALI

MONTH: April YEAR: 2005

5ml

Syringe size.		5cc			
Date (A)	Voucher To/From (B)	Quantity Received (C)	Quantity Used (D)	Losses/+Adjustments (E)	Quantity on Hand (Balance) (F)
01/04/2005	B/F	-	-	-	250
01/04/2005	-	-	14	-	236
02/04/2005	-	-	4	-	232
02/04/2005	T776761	600	-	-	832
04/04/2005	-	-	8	-	824
05/04/2005	-	-	-	-	824
20/04/2005	T776766	300	-	-	1,124
21/04/2005	-	-	7	-	1,117
30/04/2005	-	-	10	-	1,107
30/04/2005	-	-	-	-	1,107

Answer for CDRR exercise

MINISTRY OF HEALTH

Consumption and Requisition for IS Commodities

Facility Name: RIOMA Province: MALI District ONDIRI

Period of reporting: Beginning 01/04/2005 Ending 30/04/2005

Commodity	Beginning Balance (A)	Total Received this period (B)	Total Amount used (C)	Adjustment	Total Losses (D)	Current Balance (E)	Quantity to Order (F)
2ml syringe	200	600	77		+5	728	272
5ml syringe	250	900	43		0	1107	393

Comments

Reporting/Requisition Officer
Name _____ Signature _____ Date _____

MODULE 5 - WASTE MANAGEMENT

Duration:



10 hours



6 hours theory



Hour's practicum

Description

The focus of this module is healthcare waste management. Behaviour change communication is integrated as appropriate.

The following units comprise the module:

Unit 1: Introduction to Healthcare Waste

Unit 2: Management of Healthcare Waste

Unit 3: Healthcare Waste Management Planning for Healthcare Facilities.

UNIT 1: INTRODUCTION TO HEALTHCARE WASTE.

Duration:

2 hours -Theory

Specific objectives:

At the end of the unit, the participants will be able to:

1. Define the term healthcare waste
2. Know risks and hazards associated with HCW handling
3. Identify types of HCW using colour codes
4. Know key steps in waste handling
5. Know the importance of proper healthcare waste disposal

Teaching methods:

- ↳ Lecture & discussions
- ↳ Brainstorming
- ↳ Demonstrations
- ↳ Role play
- ↳ Field visits

Teaching aids:

- ↳ Handouts
- ↳ Flip charts
- ↳ Marker pens
- ↳ Demonstration materials e.g. safety boxes, PPE.

Contents:

Definition of health care waste:

Healthcare waste: WHO defines healthcare waste as the total waste stream from a healthcare or research facility that includes both potential risk waste and non-risk waste materials (see Table 16).

Risk and hazards:

- ✚ Needlestick injuries
- ✚ Transmission of infections or disease, e.g. cholera, dysentery, hepatitis A, B, C, HIV/AIDS
- ✚ Re-use of some types of wastes, e.g. syringes and needles (accidental or intentional)
- ✚ Environmental pollution or degradation, e.g. air, water, soil
- ✚ Exposure to radiation
- ✚ Fires
- ✚ Public nuisance (offensive smells, unsightly debris)

Categories of Waste

- ➔ 80% of waste from healthcare facilities is 'general' waste, and not harmful. It is referred to 'low risk waste.'
- ➔ 20% of healthcare waste can be dangerous, and thus is referred to as 'risk' waste.
- ➔ 1% of risk waste is sharps waste.

Table 18 shows the various kinds of waste by High-Risk and Low-Risk categories.

Table 18:Categories of Waste

Categories	Types of Waste
Risk Waste	<p><i>Infectious Waste:</i> Blood and blood products and other body fluids; items contaminated with blood, serum or plasma; cultures and stocks of infectious agents from diagnostic and research laboratories and items contaminated with such agents; isolation wastes from highly infectious patients (including food residues); discarded live and attenuated vaccines; waste, bedding, bandages, surgical dressings, and other contaminated material infected with human pathogens.</p> <p><i>Anatomical Waste:</i> Human tissues, body parts, foetus, placenta, and other similar wastes from surgeries, biopsies, autopsies; animal carcasses, organs, and tissues infected with human pathogens.</p> <p><i>Sharps Waste (used or unused):</i> Needles, syringes, scalpel blades, suture needles, razors, infusion sets, contaminated broken glass, specimen tubes, and other similar material.</p> <p><i>Chemical Waste:</i> Solid, liquid, or gaseous chemicals such as solvents, reagents, film developer, ethylene oxide, and other chemicals that may be toxic, corrosive, flammable, explosive, or carcinogenic.</p> <p>The types of hazardous chemicals used most commonly in the maintenance of healthcare facilities and are most likely to be found in waste include:</p> <ul style="list-style-type: none"> • Formaldehyde • Photographic chemicals • Solvents • Organic chemicals • Inorganic chemicals. <p><i>Pharmaceutical Waste:</i> Outdated medications of all kinds, as well as residuals of drugs used in chemotherapy that may be cytotoxic, genotoxic, mutagenic, teratogenic, or carcinogenic. Items contaminated by or containing pharmaceutical bottles, boxes.</p>

Categories	Types of Waste
	<p>Radioactive Waste: Any solid, liquid, or pathological waste contaminated with radioactive isotopes of any kind.</p> <p>Genotoxic Waste: Genotoxic waste is highly hazardous and may have mutagenic or carcinogenic properties. Genotoxic waste may include certain cytostatic drugs, vomit, urine, or faeces from patients treated with cytotoxic drugs, chemicals and radioactive material.</p> <p>Pressurized Containers: Cylinders containing gases or aerosols, which when accidentally punctured or incinerated, could explode.</p> <p>Waste with High Contents of Heavy Metals – Batteries, broken thermometers, blood pressure gauges, etc.</p>
Low risk waste	<p>Communal Waste: All solid waste that does not contain high-risk waste types (e.g. infectious, chemical, radioactive). Communal wastes from medical treatment or research centres include uncontaminated wastes such as bottles, office paper, boxes and packaging materials.</p>

Source:

WHO/AFRO/CRHCS. 2003. *Manual of Infection Prevention and Control Policies and Guidelines*, p. 163.

Importance of proper waste disposal

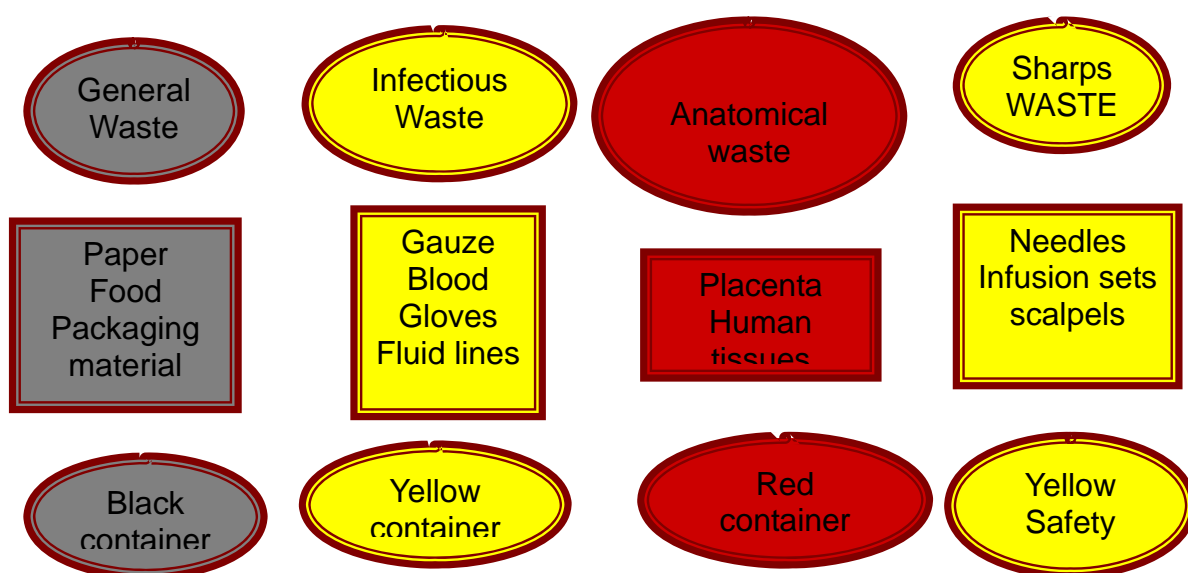
- Minimizes the spread of infections
- reduces the risk of accidental injury to staff, patients, visitors and the community;
- Reduces the likelihood of contamination of the soil or ground water with chemicals or microorganisms;
- Attracts fewer insects, rodents and animals;
- Reduces odours;
- Helps provide an aesthetically pleasing atmosphere

Colour coding:

Table 19: Colour-Coding for Waste Segregation

Category	Examples	Colour of Bin Liner	
Non-infectious	Paper, packaging materials, plastic bottles, food, cartons	BLACK	
Infectious	Gloves, dressings, blood, body fluids, used specimen containers	YELLOW	
Highly Infectious	Anatomical waste, pathological waste	RED	
Chemical	Formaldehyde, batteries, photographic chemicals, solvents, organic chemicals, inorganic chemicals	BROWN	
Radioactive	Any solid, liquid, or pathological waste contaminated with radioactive isotopes of any kind.	YELLOW with radioactive label (see Figure 2).	

If different colour bags are not available, a biohazard label (see Figure 4) may be placed on black bags to indicate their hazardous content.



Hazards marking symbols:

Figure 4: Radioactive Symbol



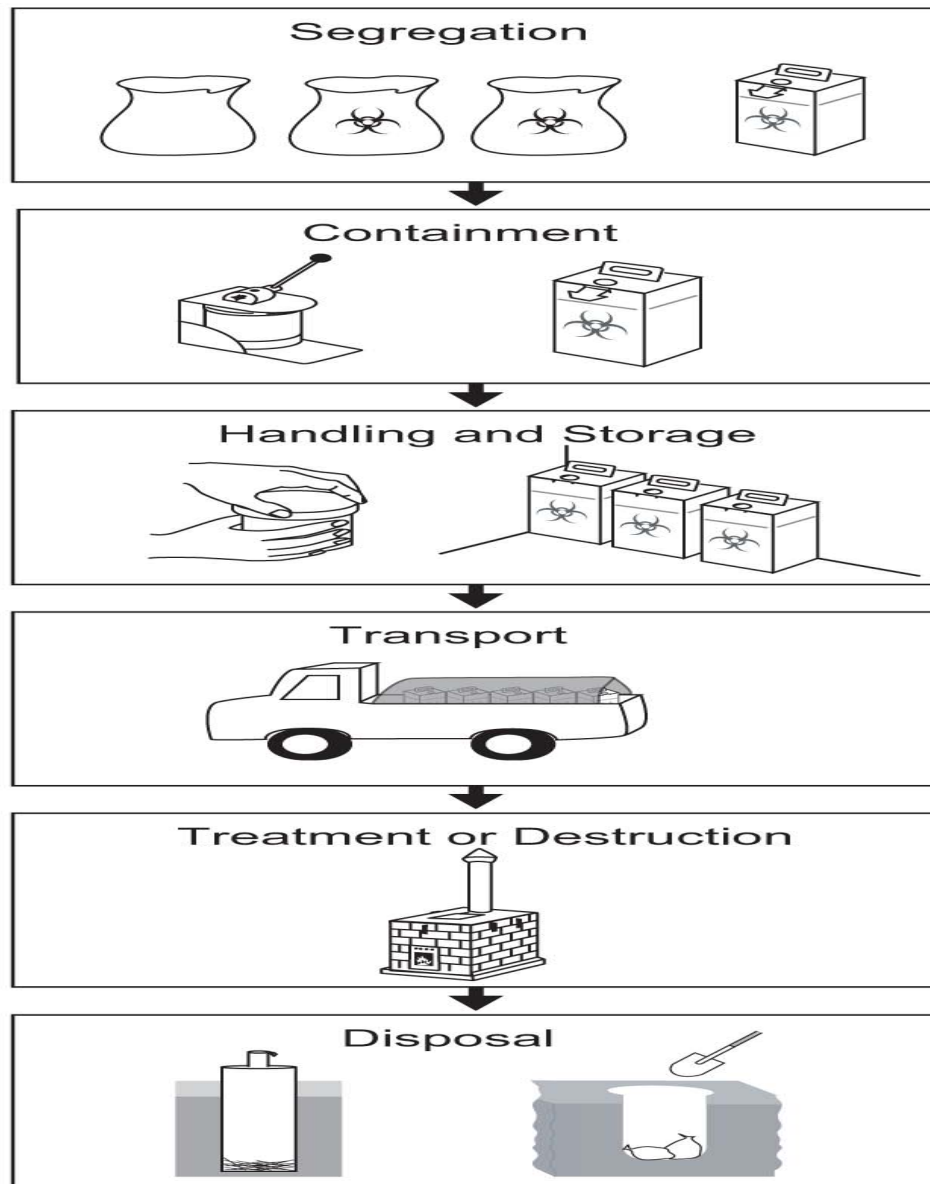
Figure 5: Biohazard Symbol



Key steps in waste management include (see Box 22):

- Segregation
- Containment
- Handling and Storage
- Transport
- Treatment or Destruction
- Disposal

Figure 6: Key Steps in Waste Management



Segregation of Waste

- Providers should segregate waste immediately according to type..
- Segregation should be done at source
- All new Health Workers should be informed on HCWM systems in place.
- Approach on segregation should meet local needs.

Figure 7: Segregation of Medical Waste

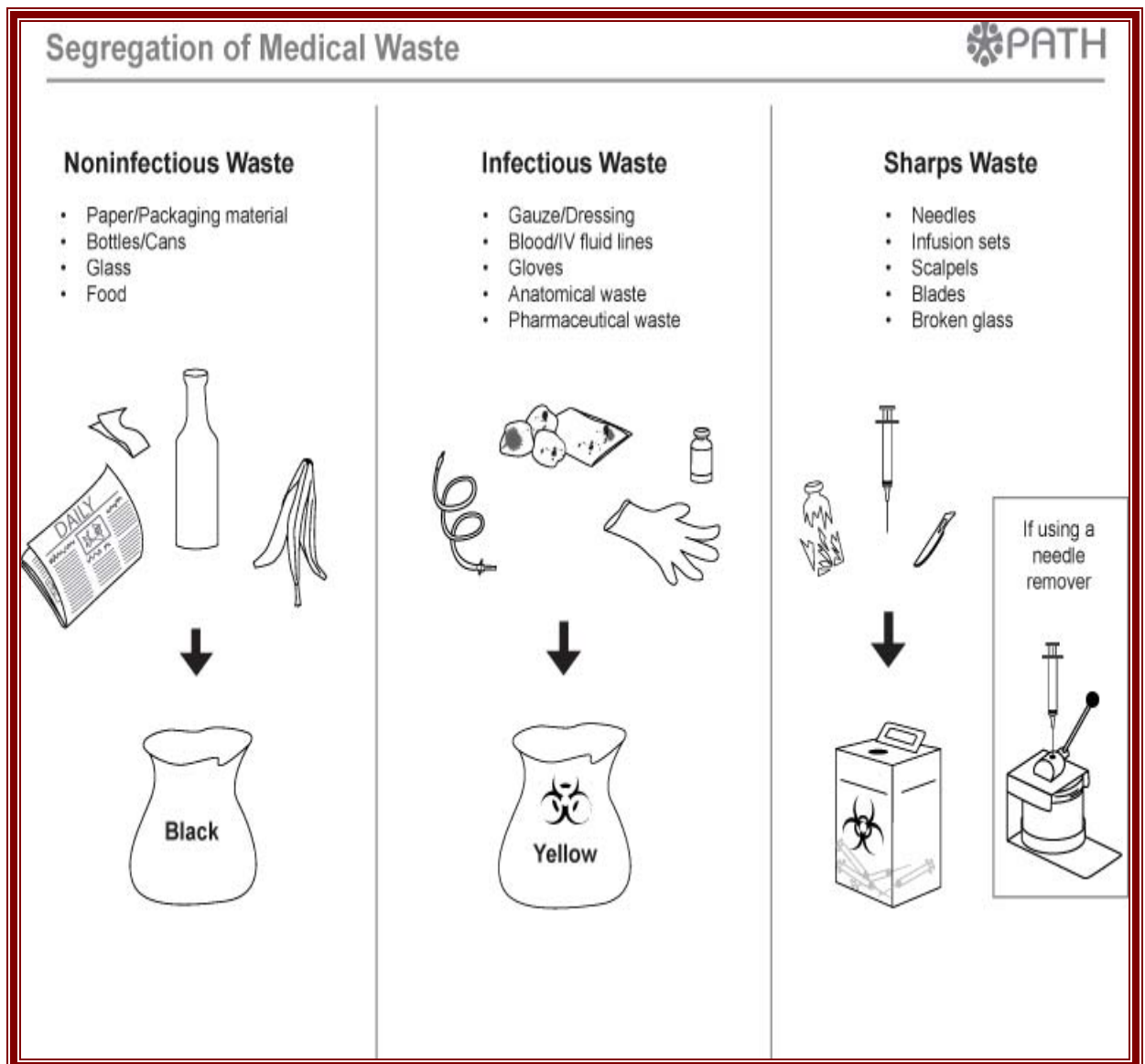


Figure 8: Waste Containers



Figure 9: Needle Remover

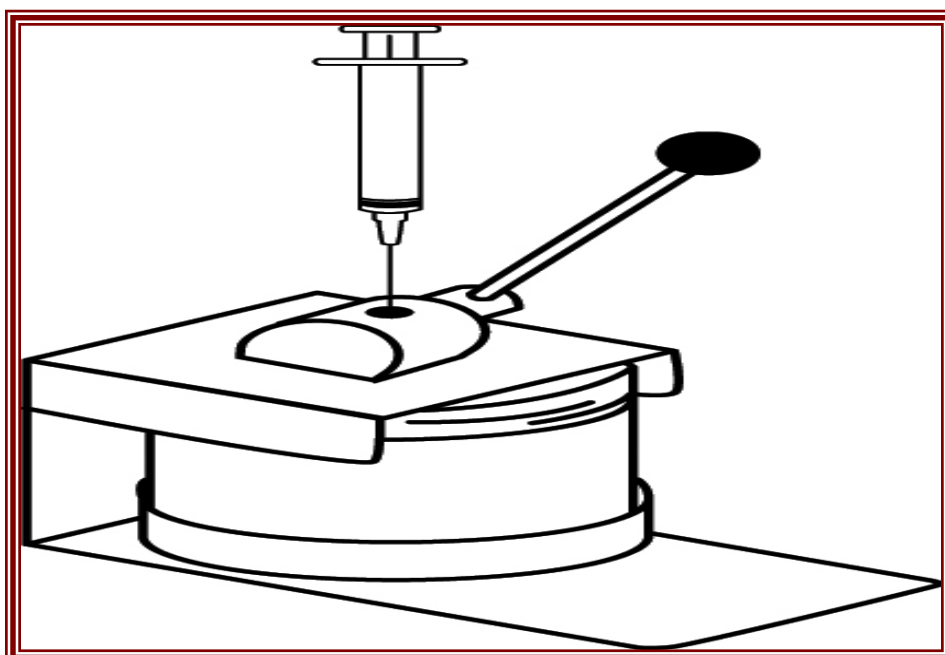


Figure 10: Use of Needle Remover



Using a needle remover

- ➔ Care must be taken when placing the lid on the container to prevent accidental needlesticks.
- ➔ Replace needle container when $\frac{3}{4}$ full.
- ➔ If transporting the needle remover, make sure the lid is on the container.
- ➔ It is important to clean and oil the device regularly and tighten screws when necessary.
- ➔ Empty container into sharps pit or barrel.

Maintenance of needle Remover

- ➔ Designate an appropriate and trained person to maintain the needle removers.
- ➔ Vaseline or any light lubricant may be used to oil the device.
- ➔ Do not use bleach on the blades of the device.

UNIT 2: MANAGEMENT OF HCW

Duration

2 hours theory

2 hours Practicum

Specific objectives:

At the end of the module, the participants will be able to:

1. Practise proper handling of HCW according to existing guidelines
2. Identify and demonstrate the appropriate use of PPE
3. Carryout basic principle operations of an incinerator
4. Demonstrate knowledge and skills on record keeping

Teaching methods:

- ↳ Lecture & discussions
- ↳ Brainstorming
- ↳ Demonstrations
- ↳ Role play
- ↳ Field visits

Teaching aids:

- ↳ Handouts
- ↳ Flip charts
- ↳ Marker pens
- ↳ Board & chalk/ White board
- ↳ Overhead projector
- ↳ Video slides.
- ↳ Demonstration materials e.g. safety boxes, PPE.

Contents:

Collection, weighing, storage, transportation:

Collection:

Removing waste bags from the service point and taking to storage or disposal area.

Weighing:

Quantifying waste by volume or weight, labelling as to its source, and recording. Full safety boxes should also be recorded. (see Appendix 7 for Sample Recording Form). This information can be used to advocate for funds for waste management.

Storage:

Placing waste in a secure place until it can be disposed. The ideal storage area should be designated (for waste only), secure (only authorized persons should have access), kept clean, dry and pest free. Healthcare waste should be stored no longer than 2-3 days, depending on weather conditions. Organic waste should be disposed of daily. Segregation must be maintained throughout until final disposal.

Transport:

Movement of waste from one place to another, either on-site or off-site.

On-site:

Moving waste from one point to another within the healthcare facility. Waste should be moved in a designated trolley or wheel barrel.

Off-site:

Transporting waste outside the health facility. Bins/bags/safety boxes must be kept upright, secured, dry (i.e., protected against rain), and out of direct contact with other supplies. The person responsible for waste disposal must be aware of the schedule for pick up and delivery of waste. It is preferable that the vehicle

should be designated for waste transport only. It is also preferable to have a covered vehicle. The vehicle must be cleaned and sanitized at the end of each day.

Treatment:

Treatment and Disposal:

Healthcare waste is treated to render it non-hazardous. Non-infectious waste does not need to be treated (see Table 20).

Treatment Options

- Incineration
- Autoclave/shredding
- Liquid disinfection
- Melting

Table 20: Treatment of Waste

Types of Waste	Recommended Treatment	Recommended Procedure
Microbiological waste (e.g. cultures, vaccines, specimens)	Autoclave	As per instructions with the machine
Pathological waste (e.g. tissue, organs, blood, body fluids)	Liming	Dig pit, place lime, add waste, more lime, add soil
Infectious fluid	Chemical	0.5% sodium hypochlorite solution Let sit for 15 minutes

Labelling of Waste

- Type of waste contained
- Source (e.g 'wd II')
- Bio-hazard Marking

- Use easy to understand language

Labelling is very important especially if the waste is to be transported to Off-site disposal points

Storage

- Use appropriate receptacles
 - ➔ Meet standards
 - ➔ Colour-coded
 - ➔ Puncture-proof
 - ➔ Liners (appropriate gauge and colour)
 - ➔ Needles and syringes should be placed in safety boxes which should be sealed so as to remain closed when stacked/transported

Transportation

Methods

- ➔ Equipment: wheelbarrow, carts, trolleys, van, tractors with carriers, dumpers, etc

Precautions

- ➔ Avoid spillage
- ➔ Avoid long distances (use on-site disposal)
- ➔ Waste containers should be well covered
- ➔ Labelled all waste containers appropriately

Disposal methods:

Disposal:

Eliminating or transporting healthcare waste from the facility.

All disposal methods used must be agreed upon by key line ministries and stakeholders.

Disposal methods include:

- Burning
- Burying
 - Infectious waste pit
 - Protected sharps pit
 - Ash pit
- Sharps barrel
- Municipal waste/landfill
- Encapsulation
- Recycling

1. Bury:

Waste is placed into a pit and covered with earth.

Building and using a waste burial pit.

1. Choose an appropriate site that is at least 50 metres away from any water source to prevent contamination of the water source.
2. The site should have proper drainage, be located downhill from any wells, be free of standing water, and be in an area that does not flood. The site should not be located on land that will be used for agriculture or development.
3. Consult the appropriate local authority for information about placement of the waste pit.

4. Pits should be dug 1-2 metres wide and to the depth of 2-5 metres, but at least 1.5 metres above the water table. The water table must be measured during the second half of the rainy season. The pit should be fenced to restrict unauthorized access and located away from public areas.
5. Keep waste covered. Every time waste is added to the pit, cover it with a 10 to 30 cm. layer of soil.
6. When the level of waste reaches to within 30 to 50 cm. of the surface of the ground, fill the pit with soil and dig another pit.

NB. Expired vaccines should be encapsulated and buried, and not burned.

Building a sharps pit

1. Identify the appropriate location.

- ➡ Locate protected sharps pit away from ground water sources.
- ➡ Identify a builder and purchase the necessary materials. Follow Figure 18 design drawings “Building a Sharps Pit”.

2. Build the protected sharps pit above the water table.

- ➡ If the pit must be built below the water table, consider installing a sharps barrel.

3. Include drainage holes.

- Leave drainage holes in the sides of the pit to facilitate drainage.

4. Build a fence around the sharps pit.

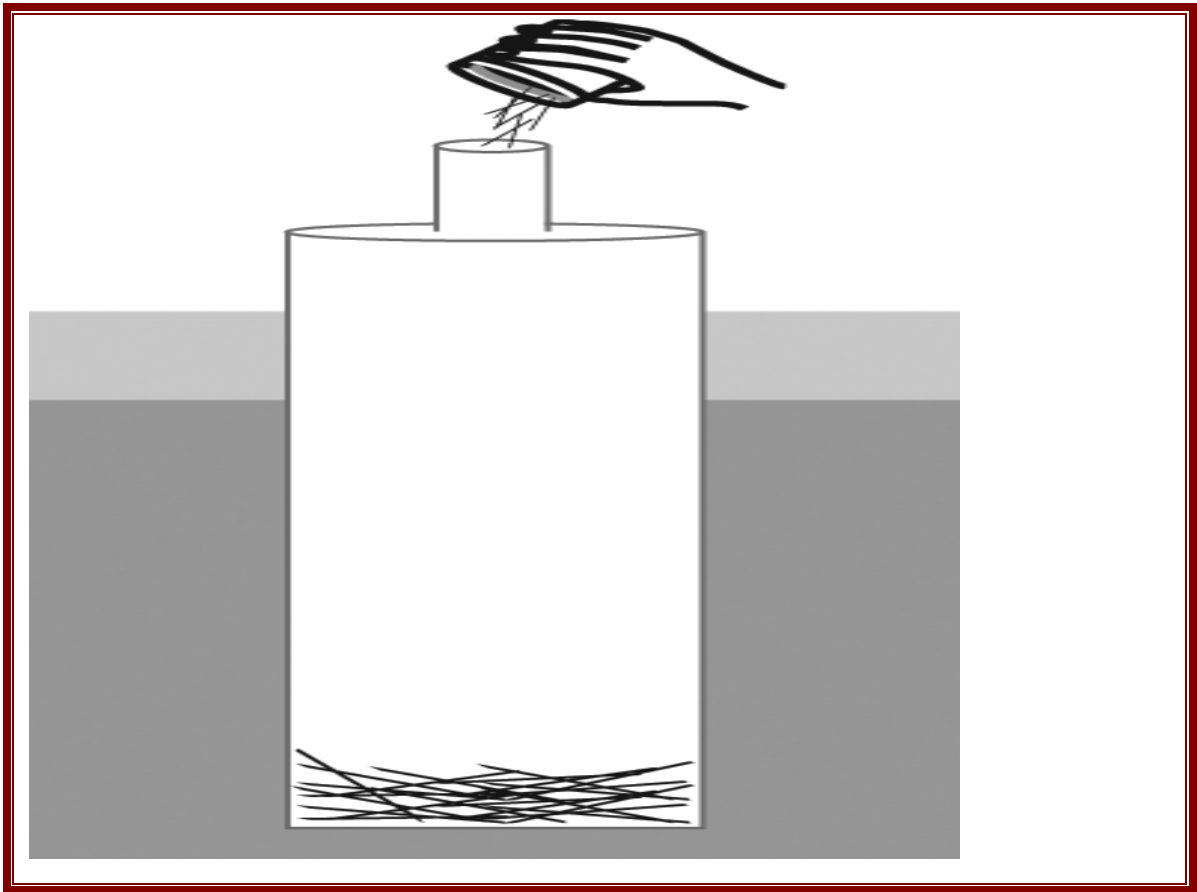
- The sharps pit must be fenced and protected to prevent unauthorized access.

Lid should be kept on the needle chute (pipe) when not in use. This will prevent water from entering the pit.

Protected Sharps pit

A sharps pit is a deep, covered hole where needles or small sharps are placed after being cut with a needle remover.

Figure 11: Protected Sharps Pit



Why use a protected sharps pit?

- Confines hazardous sharps waste at facility.
- Proper use may prevent needlestick injuries.
- A one cubic meter pit will safely contain over 1 million used needles.

Using a Protected Sharps Pit

- Dispose of removed needles carefully in secure sharps pit.
- When transporting the filled needle container to the sharps pit, keep the lid on the container.

- ➔ Empty the needles into the opening in the top.
- ➔ Wearing plastic gloves, clean the needle container with bleach and hot water before reuse.

Final disposal of the sharps barrel or sharps pit

The barrel/pit is expected to hold approximately 150,000 needles before it is full. The fill-level of the barrel/pit can be examined by looking directly down into the barrel/pit through the funnel/pipe.

When it is full, the following steps should be followed:

1. Remove funnel/pipe. The funnel/pipe can be saved and used again for another barrel.
2. Fill the barrel/pit with cement or sand to safely encapsulate the loose needles.
3. Cap the hole of the barrel and transfer to landfill disposal. The pit cannot be moved.

Building a sharps barrel

1. Manufacture a funnel.

- ➔ Identify a sheet metal manufacturer to make the funnel and provide the design drawings in the handout (see Figure 17 “Building a Sharps Barrel.”)

2. Select a barrel and identify an appropriate location.

- ➔ Barrels should be plastic, as metal barrels could rust over time. Health facility supervisors and waste handlers should decide together on a site for the barrel. It should be dry, secure, and convenient.

3. Attach the funnel to the sharps barrel.

- ➔ Screw the metal funnel into the hole on top of the barrel. Rubber cement or other sealant may be used to help secure connection if needed.

Figure 12: Using a protected sharps pit



2. Burn:

- ✎ Waste is placed into a pit and burned on a regular basis (at least once a week, according to volume of waste and size of pit). Waste must be burned thoroughly. Ashes must be covered with earth.
- ✎ Pits should be dug 1-2 metres wide and to the depth of 2-5 metres, but also at least 1.5 metres above the water table. The pit should be fenced to restrict unauthorized access. The burn pit must be located away from public areas, and smoke from burning waste must not affect the surrounding area. The pit should not be dug around watershed areas.

Open burning (outside of a pit, on the ground) should not be practiced.

- ➔ Use a regular community disposal site for general waste. This will conserve both time and resources.
- ➔ Treat the ash as general waste. Bury or otherwise dispose of it in a designated area.
- ➔ Medical waste may not burn easily, especially if it is wet. Add kerosene to make the fire hot enough to burn all waste. Be sure to add the kerosene before starting the fire—adding kerosene after the fire has started might cause an explosion.

3. Incinerate:

- ✚ Incineration is high temperature burning. It reduces the volume of the waste and eliminates pathogens.
- ✚ Large-scale incinerators that can reach very high temperatures are preferred to small scale, lower temperature incinerators.
- ✚ Incineration produces fewer pollutants than open-air burning, and is preferable if a good quality incinerator is available with a well-trained operator.

Figure 13: Diesel powered incinerator



Figure 14: De Montfort incinerator Error!

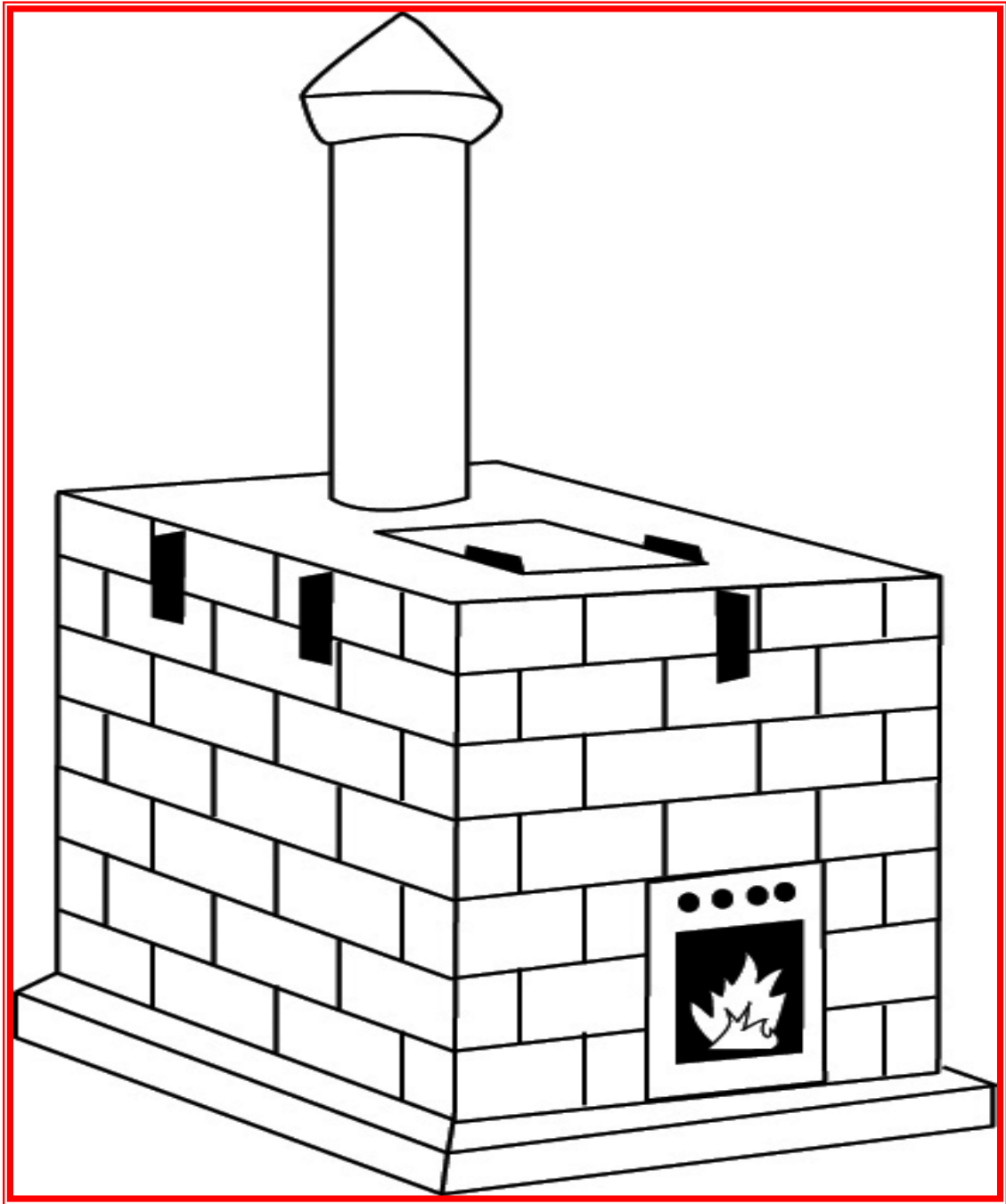


Figure 15: Small scale District incinerator



Critical Maintenance Steps

- Inspect the incinerator every 3 months
- Metal structures inspection and repair
- Chimney
- Site maintenance
- Ash pit

Incineration-operation and maintenance:

For an incinerator to be used properly, it must have the following:

1. Clear operation procedures, which should be posted near the incinerator
2. Trained operators
3. Reliable segregation system, so only infectious and non-polluting materials are incinerated
4. Reliable transport system to get waste to the incinerator
5. Ash pit to safely dump the incineration ash

6. Regular maintenance and repairs
7. Adequate supply of fuel.

Using an incinerator

- ➡ Keep incinerator clean. Remove ash from ash chamber and grate and do not store waste in incinerator
- ➡ Some incinerators need to be preheated by burning general or non-medical waste (paper, packaging material, firewood, coconut shells) and supplemented with kerosene or diesel fuel as may be necessary. This process takes 20-30 minutes before the incinerator reaches the recommended temperature for incinerating healthcare waste (800°C in the burning chamber).
- ➡ Safety boxes and infectious waste should be loaded at a rate that maintains a constant and good, but not fierce fire in the grate.

Things that must NOT be incinerated:

- ➡ PVC plastics (This includes blood bags and IV lines)
✳️**Important! Syringes are NOT PVC plastic**
 - ➡ Mercury thermometers
 - ➡ Batteries
 - ➡ X-ray or photographic materials
 - ➡ Aerosol cans or gas containers
 - ➡ Glass vials (they can explode or if uncapped they melt and could block the incinerator grate).
- ✳️ **Reminder: broken glass goes into a safety box.**

Maintaining an incinerator:

- ✚ A qualified official must inspect the incinerator every 6 months
- ✚ Masonry inspection and repair
- ✚ Check for loose bricks and cracks in mortar, interior and exterior
- ✚ Repair damage or replace bricks
- ✚ Metal and chimney inspection and repair
- ✚ Check doors, hinges, grate, chimney cap
- ✚ Replace if bent or damaged
- ✚ Clean soot from inside chimney
- ✚ Ash pit
- ✚ Ashes must be removed regularly to the ash pit
- ✚ When ash pit is full, cover and dig new pit
- ✚ Site maintenance
- ✚ Extraneous waste should not be left around the incinerator
- ✚ Clear brush from area around incinerator

4. Encapsulate:

- ✚ Encapsulation involves filling containers with waste and adding an immobilizing material (cement, sand or clay) and sealing the containers. This is the appropriate method for disposing of expired vaccines.

How to encapsulate expired vaccines

1. Use an empty tin can
2. Pour 2 cm concrete into the bottom
3. Place vials of expired vaccines on the layer of concrete, keeping them separated.

4. Burying-using the sharps barrel pg 118 Using a sharps barrel and sharps pit fig. 16 –pg.181
5. Using a sharps barrel or sharps pit (see Figures 15 and 16 “Using a Sharps Barrel” and “Using a Protected Sharps Pit”):
6. Remove the filled needle container from needle remover and immediately secure lid.
7. Keep the lid on the container when transporting the filled container to the sharps barrel or sharps pit.
8. Unlock and lift lid.
9. Empty needle containers into funnel/pit with care to avoid spilling. Do not use the barrel/pit for any other kind of waste.
10. Lid should be kept closed and locked when not in use.
11. Occasionally the barrel may be gently rocked to settle the contents evenly inside. Needles will tend to stack directly underneath the funnel opening, rocking helps to ensure that the entire barrel volume is being used.
12. Wearing plastic gloves, clean the container with 0.5% sodium hypochlorite and hot water before re-use.

Table 21. METHODS OF DISPOSAL –Strengths and Weaknesses

Method	Strengths	Weaknesses
Waste Burial	<ul style="list-style-type: none"> ➡ Inexpensive ➡ Simple (low tech) ➡ Prevents unsafe needles and syringe reuse 	<ul style="list-style-type: none"> ➡ Potential of being unburied ➡ Volume of wastes is not reduced ➡ Wastes not disinfected ➡ Pit will fill quickly ➡ Not suitable for non-sharps infectious wastes ➡ Present a danger to the community if not properly buried ➡ Inappropriate in areas of heavy rain or if water table is

		near the surface
Burning and Burial (400 Degrees Centigrade) Pit burning Drum Burning Brick Burning Furnaces	<ul style="list-style-type: none"> ➤ Relatively inexpensive ➤ Minimum training is required ➤ reduction in wastes volume ➤ Reduction in infectious material 	<ul style="list-style-type: none"> ➤ Incomplete combustion ➤ may not be completely satirize ➤ Environmentally not friendly results in heavy smoke, high potential for toxic emissions (i.e. Dioxins, furans) ➤ If not dry the wastes may require fuel to start burning.
Incineration (above 800Degrees Centigrade)	<ul style="list-style-type: none"> ➤ Almost complete combustion and sterilization of used equipment ➤ Reduces risks of toxic emissions ➤ Greatly reduces volume of wastes ➤ Greater compliance with local environment laws 	<ul style="list-style-type: none"> ➤ Relatively expensive to build, operate and maintain ➤ Requires trained personnel to operate ➤ May require fuel or dry wastes to start the burning ➤ May produce low levels of dioxins/Furans

UNIT 3: HEALTH AND SAFETY DURING WASTE HANDLING.

Duration:

2 hours –Theory

2 Hours Practicum

Specific objectives:

At the end of the module, the participants will be able to:

1. Understand Safety considerations
2. Discuss way of Reducing risk
3. Describe Reporting injuries & illnesses associated to handling HCW
4. List Personal Protective Clothing
5. Discuss Roles and responsibilities in Health care waste management

Teaching methods:

- ↳ Lecture & discussions
- ↳ Brainstorming
- ↳ Demonstrations
- ↳ Role play
- ↳ Field visits

Teaching aids:

- ↳ Handouts
- ↳ Flip charts, Marker pens
- ↳ Board & chalk/ White board
- ↳ Overhead projector
- ↳ Video slides.
- ↳ Demonstration materials e.g. safety boxes, PPE.

Contents:

Safety considerations

1. Prevention of exposure to molten plastic and flowback heat from combustion chambers
2. During loading
3. Safe handling of sharps in ash and debris after burning /incineration
4. Low levels of exposure to emissions from waste gasses and smoke
5. Protection from hot surfaces likely to cause burns

Reducing Risk

1. Wash hands after working with waste or infected material.
2. Handle all sharps with care to minimize needlestick injury.
3. If you handle waste, wear appropriate protective clothing, including a water-resistant apron, thick gloves, boots or closed-toe shoes, and eye protection.
4. Do not sort waste or open waste containers to sort waste.
5. Be aware of procedures for treatment of injuries, cleaning of contaminated areas, and reporting sharps injuries or accidents.
6. Report sharps injuries to the appropriate personnel.
 - i. Injuries should be followed up by post-exposure prevention treatment. Know steps for treating injuries.
7. Managers should maintain a log of all accidents.

8. A full course of hepatitis B and tetanus vaccination will protect you from the hepatitis B virus and tetanus—anyone handling sharps should be vaccinated.

9. Keep facility clean inside and out.

Post Exposure Prophylaxis.

Health workers are at risk of accidental needlestick or other injuries from sharps. World health Organization (WHO) recommends following the steps below after a needlestick injury:

1. Immediately bleed the wound and wash the area with soap under clean running water.
2. If blood or body fluids have gotten into eyes, splash eyes with clean water.
3. Immediately report the incident to a designated person.
4. Retain, if possible, the item involved in the incident; get details of its source for identification of possible infection.
5. Seek additional medical attention in an emergency health department as soon as possible, including evaluating the exposure for its potential to transmit HIV infection (based on body substance and severity of exposure).
6. Initiate post-exposure prophylaxis, if available and appropriate.
7. Get blood tests or other tests and counseling, if indicated.
8. Record the incident.

9. Investigate the incident, identify, and implement remedial action to prevent similar incidents in the future.

Protective Clothing

Health workers protect themselves by establishing a barrier between themselves and the infective agent. The type of protection needed depends on the worker's activities.

Protective clothing must be worn at all times when working with health care waste. It must be properly maintained and kept clean. The clothing should not be taken home; it must remain at the health facility to avoid possible contamination of the community.

Demonstration:

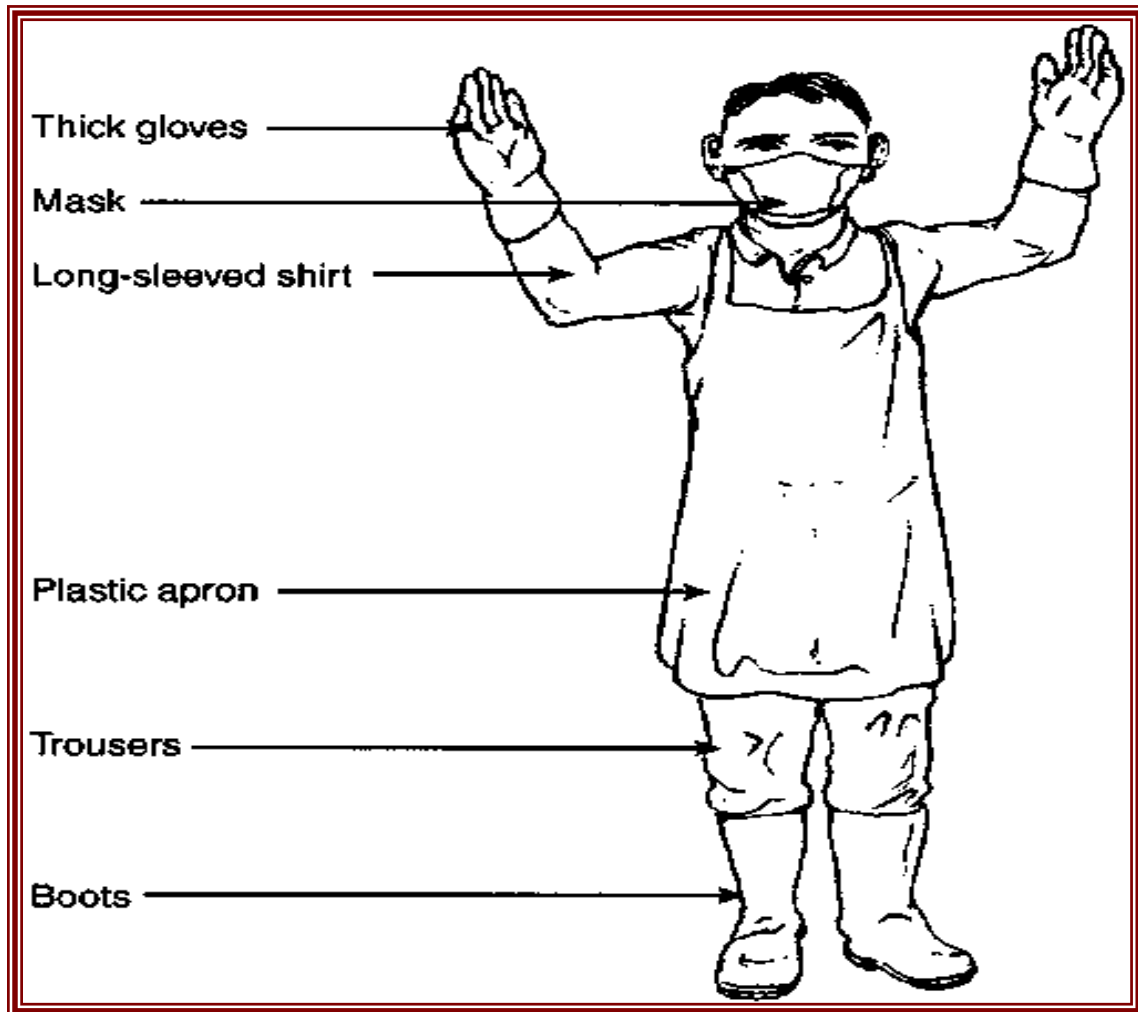
- ➔ **Demonstration of PPE**
- ➔ **Participants identify each equipment and its functions (Refer to figure in participants' manual)**

What to wear:

- ➔ **Gloves:** always wear gloves when contaminated items are handled. Puncture-resistant gloves should be used when handling sharps containers or bags with unknown contents.
- ➔ **Boots or closed-toe shoes:** rubber boots or leather shoes provide extra protection to the feet from injury by sharps or heavy items that may accidentally fall. They must be kept clean. When possible, avoid wearing sandals, thongs, or shoes made of soft materials.
- ➔ **Aprons:** rubber or plastic aprons provide a protective, waterproof barrier to the body.

- ➡ Goggles: plastic goggles can protect the eyes from accidental splashes.

Figure 16. Personal Protective Equipment (PPE)



When to wear it:

- ➡ At all times when working with health care waste.

Keep it in good condition:

- ➡ Clean clothing after each use.
- ➡ Leave at facility; do not take home.

UNIT 4: INSTITUTIONAL HEALTH CARE WASTE MANAGEMENT

Duration:

2 hours –Theory

2 Hours Practicum

Specific objectives:

At the end of the module, the participants will be able to:

1. Discuss roles and responsibilities in health care waste management
2. Design institutional health care waste management plans
3. Understand Monitoring of HCWM plans
4. List laws and regulations dealing with health care waste

Teaching methods:

- ↳ Lecture & discussions
- ↳ Brainstorming
- ↳ Demonstrations
- ↳ Field visits

Teaching aids:

- ↳ Handouts
- ↳ Flip charts, Marker pens
- ↳ Overhead projector
- ↳ Video slides.
- ↳ Demonstration materials e.g. safety boxes, PPE.

1. Roles and Responsibilities for Waste Management

Be sure you know what your and other staff's responsibilities are with regard to management and disposal of sharps waste. Here are some common responsibilities:

Managers

- ✚ Obtain and be familiar with national waste management policies.
- ✚ Develop facility waste management plan (goal, budget, personnel, roles, supervision, training, reporting).
- ✚ Ensure supply of safety boxes, needle removers, or other sharps containers; designate appropriate and secure storage for used sharps.
- ✚ Identify and budget for final disposal method including transport and fees.
- ✚ Create climate of support for needlestick injury reporting.
- ✚ Develop protocol for management of needlestick injury.
- ✚ Advocate for health worker safety.

Injection Providers

- ✚ Follow waste management policies.
- ✚ Follow color-coded waste segregation system.
- ✚ Place sharps containers properly.
- ✚ Immediately dispose of sharps in closed container.

- ✚ Record keeping—record number of filled sharps containers, identify supply needs, report stock outs.
- ✚ Store sharps waste in secure location.

Waste Handlers

- ✚ Know colour-coding system.
- ✚ Collect filled sharps containers.
- ✚ Ensure waste is securely stored until disposal.
- ✚ Use protective equipment when handling sharps.
- ✚ Maintain segregation.
- ✚ Ensure a clean environment at the facility.
- ✚ Safely transport waste to final disposal site.
- ✚ Dispose of waste in safe and acceptable manner.

2. Institutional Health Care Waste Management Plan

Include:

- Plan of the hospital showing points of waste generation
- Detail of resources required for waste management annually
- Timetable for waste management procedures
- Duties and responsibilities for all members of staff
- Special procedures
- Contingency plans and emergency procedures
- Training programs

Steps in developing WM plans:

- Define Staff Roles
- Outline Current HCWM Status at Facility
 - Define type and amounts of waste generated.
 - Outline HCWM practices used currently.
- Outline Ideal Practices: Establishing Standards
- List Improvements Needed
- Outline Monitoring Schedule

3. Monitoring of HCWM plans

the following are important in the monitoring of a HCWM plan:

- Waste generated each month, by waste category:
 - In each department;
 - Treatment and disposal methods.
- Financial aspects of health-care waste management:
 - Direct costs of supplies and materials used for collection, transport, storage, treatment, disposal, decontamination, and cleaning;
 - Training costs (labour and material);
 - Costs of operation and maintenance of on-site treatment facilities;
 - Costs for contractor services
- Public health aspects:
 - Incidents resulting in injury, “near misses”, or
- Failures in the handling, separation, storage, transport, or disposal system,
- Should also be reported to the Infection Control Officer; this will be the basis for preventive measures to prevent recurrences

4. Laws related to wastes management

- EMCA 1999-Environment management Control Act
- Biomedical Waste Regulations (Draft)
- Public Health Act –Cap 242
- Cap 265
- Cap 496

Basel Convention

- Global treaty that applies to international transportation of hazardous wastes.

- ➡ Instigated to prevent industrialized nations from dumping their toxic waste in developing countries.

Stockholm Convention

- ➡ Global treaty to protect human health and environment from Persistent Organic Pollutants (POP), specifically dioxins and furans.
- ➡ Commits all parties to reduce the releases of dioxins with the goal of continued minimization and, where feasible, ultimate elimination.

United Nations Packaging Requirements

- ➡ Guidelines for proper packaging and international transport of infectious substances.
- ➡ Defines both inner and outer packaging composition requirements (*Please see Appendix 6*).

GLOSSARY

Abscess: A focal collection of pus resulting from necrosis of tissue, sometimes observed at the site of an injection.

Administrative controls: A method of controlling employee exposures through enforcement of policies and procedures, modification of work assignment, training in specific work practices, and other administrative measures designed to reduce the exposure (OSHA).

Auto-disable (A-D) syringe: A specially modified plastic syringe with a fixed needle, which is automatically disabled after a single use.

Biohazard: A biohazard (biological hazard) implies a risk to the health of humans caused by exposure to harmful bacteria, viruses, or other dangerous biological agents or organisms, or by a material produced by such an organism. Biohazards can present their risk either directly through infection or indirectly through damage.

Bloodborne pathogens: Pathogenic micro-organisms that are transmitted through exposure to blood or blood products, and are present in human blood and cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV). Hepatitis C virus (HCV), and human immunodeficiency virus (HIV) (OSHA) (CDC).

Burden of disease: The health and socio-economic cost of a given medical condition on a society.

Colour-coding: Designates the use of different colours for the storage of different categories of healthcare wastes.

Disposal: Intentional burial, deposit, discharge, dumping, placing or release of any waste material into or on any air, land or water.

Encapsulation: Pre-treatment consisting of filling containers with waste, adding an immobilizing material (, mortar, bituminous sand, clay material) and sealing it before disposing of it in a landfill site or burying it in a small burial pit.

Engineering controls: In the context of sharps injury prevention, means control (e.g., sharps disposal containers; safer medical devices, such as sharps with

engineered sharps injury protections and needleless systems) that isolate or remove the bloodborne pathogens hazard from the workplace (OSHA).

Hazard elimination: Rather than using injections, administer medications another way, such as by using tablets, inhalers, etc.

Hepatitis B: Hepatitis caused by a virus and transmitted by exposure to blood or blood products or during sexual intercourse. It causes acute and chronic hepatitis. Chronic hepatitis B can cause liver disease, cirrhosis, and liver cancer.

Hepatitis C: Hepatitis caused by a virus and transmitted by exposure to blood or blood products. Hepatitis C is usually chronic and can cause cirrhosis, and primary liver cancer.

HIV/AIDS: Human Immunodeficiency Virus, a virus mainly transmitted during sexual intercourse or through exposure to blood or blood products. HIV causes the Acquired Immunodeficiency Syndrome (AIDS).

Hierarchy of controls: Concept used by the industrial hygiene profession to prioritise prevention interventions. Hierarchically these include administrative controls, engineering controls, personal protective equipment and work practice controls (CDC).

Incineration/burning: The controlled burning of solid, liquid or gaseous combustible wastes in a specific facility (incinerator) at a minimum of 800°C to produce gases and residues containing little or no combustible material and minimize the creation of toxic air pollutants such as dioxin. Open fire burning cannot ensure complete disinfection of waste.

Infection prevention and control: The activities aiming at the prevention of the spread of pathogens between patients, from healthcare workers to patients and from patients to healthcare workers in the healthcare setting.

Injection: The administration of a substance into the skin, subcutaneous tissue, muscle tissue or veins.

Intra-dermal injection: An injection given within the substance of the skin.

Intra-muscular injection: An injection given into the body of a muscle.

Intravenous injection: An injection given into a vein.

Jet injector: A needle-free device that allows the injection of a substance through the skin under high pressure.

Needlestick: Penetrating stab wounds caused by needles (CDC).

Pathogen: A micro-organism capable of causing disease.

Personal protective equipment (PPE): Specialized equipment worn by an employee to protect against a hazard.

Recapping: The act of replacing a protective sheath on a needle. The OSHA bloodborne pathogens standard prohibits recapping needles unless the employer can demonstrate that no alternative is feasible, or that such action is required by a specific medical or dental procedure (OSHA).

Safety device/Sharps engineered sharps injury protections (ESIPS): A non-needle sharp or needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built in safety feature or mechanism that effectively reduces the risk of an exposure incident (OSHA).

Safe injection: An injection that does no harm to the recipient, does not expose the healthcare worker to any risk and does not result in waste that puts the community at risk.

Safety (Sharps) box: A puncture-resistant, liquid-proof container designed to hold used sharps safely during collection, disposal and destruction.

Safety syringe: Modified, disposable plastic syringe designed so that the healthcare worker can disable it in such a way that the needle is protected and cannot be re-used.

Sanitary landfill: Characterized by the controlled and organized deposit of wastes, which is then covered regularly (daily) by the staff present on site. Appropriate engineering preparations of the site and a favourable geological setting (providing an isolation of waste from the environment) are required.

Septicaemia: Severe generalized infection resulting from dissemination of pathogenic micro-organisms and their toxins.

Sharps: Any object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

Sharps injury: An exposure event occurring when any sharps penetrates the skin.

Single use syringe: An all plastic syringe designed for a single use, with a separate, steel needle. However, because there is no mechanism to prevent re-use, this type of syringe may in fact be used more than once.

Solid sharps: A sharp that does not have a lumen through which material can flow, e.g., suture needle, scalpel.

Syringe with re-use prevention feature: A specially modified plastic syringe that includes a mechanism to discourage re-use.

Sterile: Free form living micro-organisms.

Sterilizable syringe: Either all plastic or all glass syringe with steel needle. This type of syringe is designed for re-use after proper cleaning and sterilization in a steam sterilizer or autoclave. The use of these syringes is associated with infection and is not recommended.

Standard Precautions: An approach to infection prevention and control recommended by the Center for Disease Control and Prevention since 1996. Standard precautions synthesize the major features of **universal precautions** (designed to reduce the risk of transmission of bloodborne pathogens from blood and body fluids) and **body substance isolation** (designed to reduce the risk of transmission of pathogens from moist body substances). Standard precautions apply to: (1) blood; (2) all body fluids, secretions and excretions, regardless of whether or not they contain visible blood; (3) non-intact skin; and (4) mucous membranes. Standard precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in healthcare facilities, and apply to all patients regardless of their diagnosis or presumed infectious status.

Subcutaneous injection: An injection delivered under the skin.

Toxic shock syndrome: An acute, sometimes fatal, intoxication by an infectious agent during which organ activity is blocked causing severe shock and hypotension.

Universal precautions: An approach to infection control that treats all human blood, body fluids and other potentially infectious materials as if they were infectious for HIV and HBV or other bloodborne pathogens.

Vaccination: The administration of vaccine either orally or by injection to produce active immunity to a disease.

Work practice controls: Actions that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., visual inspection of a sharps container for hazards before attempting disposal).

APPENDICES

A – Bin Card

HEALTH CENTRE AND DISPENSARIES

UNIT OF ISSUE ...NUMBERS..... CODE NO.

Date	Reference	Receipt	Issue	Balance
30/6/2005	B/F	-	-	100
1/7/05	BDH STORE	500	-	600
2/7/07	MCH	-	10	590
3/7/05	MCH	-	20	570
17/7/05	BDH ST	200	-	770
	C/F			

B – Stock Card

Stock Card

MINISTRY OF HEALTH

Code:		Product:				
Date (A)	Voucher To/From (B)	Quantity Received (C)	Quantity Issued (D)	–Losses/ + Adjustments (E)	Quantity on Hand (F)	Remarks (G)

C – Tally Sheet and Daily Activity Register



MINISTRY OF HEALTH

MAKING MEDICAL INJECTIONS SAFER (MMIS) PROJECT

Syringes Utilization Daily Activity-Tally Sheet

MONTH _____ YEAR _____

NAME OF SECTION/UNIT/WARD _____ FACILITY NAME _____ DISTRICT _____ PROVINCE _____

PART-I

NOTE: Daily tally all syringes used whether for reconstitution or for injection

Days of the Month(Date)																					TOTAL
Syringe sizes																					
2 cc	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	
Total for 2 cc																					
3 cc	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	
Total for 3 cc																					
5 cc	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	
Total for 5 cc																					
10 cc	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	
Total for 10cc																					
20 cc	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	
Total for 20cc																					
	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	

PART II

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D – Consumption Data Reporting And Request Form



XXXX

MINISTRY OF HEALTH

Consumption and Requisition Form for IS Commodities

Facility Name _____ Province _____ District _____

Period of reporting Beginning _____ Ending _____

Commodity	Beginning Balance	Total Received this Period	Total Amount used	Adjustment	Total Losses	Current Balance	Quantity required
2 cc -							
3 cc -							
5 cc -							
10 cc -							
Safety Boxes							

Comments

Reporting/Requisition officer.

Name _____ Signature _____ Date _____

Appendix 2 - TEACHING AIDS GUIDELINES

TEACHING AIDS

The following guidelines will assist in the development of good teaching aids:

1. **Attractiveness.** Does it have eye appeal? Is it realistic looking? Has colour been used for appearance that is more effective?
2. **Usefulness.** Is it truly relevant to the subject? Will it reduce the time required to teach the subject? Is the aid (including the wording) large enough to be seen by the entire class? Is it self-explanatory?
3. **Durability.** Will it withstand repeated use? Can the average teacher satisfactorily use it?
4. **Portability.** Can it be quickly readied for class use? Are the size and weight convenient for handling and storage? Is it for individual instruction or class demonstration?
5. **Cost.** Can it be duplicated economically? Can it be duplicated by the average Squadron with readily available equipment and/or material?

Source: P/D/Lt. C. John J. Rodgers, S TAO, D27

http://www.usps.org/localusps/d27/teaching_aids.htm

Appendix 3– NORMS AND STANDARDS



MAKING MEDICAL INJECTIONS SAFER

Norms and Standards for Injection Safety to be Included in the Training Materials and Reinforced during Supervision Visits:¹

WHO Definition: A safe injection does not harm the patient that receives the injection, does not harm the injection provider or the community

Eliminating unsafe and unnecessary injections represents the highest priority to prevent the risks of infection associated with injections. When injections are medically recommended, they should be administered in a safe manner. These norms and standards of best practices have been defined by experts as the best ways to prevent the transmission of blood-borne pathogens through injections and the best practices to protect patients, health workers, and the community.

USE STERILE INJECTION EQUIPMENT


1. Use a new sterile standard or safety² syringe and needle from a sealed pack for each injection. Use disposable, single-use syringes.³ Use of a non-sterile needle and needle stick injuries put patients and injection providers at risk of HIV, hepatitis B and hepatitis C infections, among others. 
2. Never re-use disposable syringes. They are only designed to be used once.
3. Use a new sterile standard or safety⁴ syringe and needle from a sealed pack for the reconstitution of injectable medications and vaccines.
4. Verify the integrity of the packet of the disposable syringe and needle. Do not use a syringe or a needle coming from a damaged packet or exposed to humidity or water. Open the package (or take off the caps if it is fitted with caps at both ends) in front of the patient. 

¹ This document is an adaptation and expansion of Appendix A “Best Infection Control Practices for Skin Piercing Intradermal, Subcutaneous, and Intramuscular Needle Injections” in WHO’s A Guide for Supervising Injections, Final Version, Feb. 12, 2004.





² Safety syringes include ones with re-use prevention (commonly referred to as auto-disable or AD syringes) and those with both re-use and needle stick prevention (commonly referred to as retractable syringes).

³ Re-used sterilizable needles are not considered sterile unless they have been sterilized in an autoclave or steam sterilizer.

⁴ See Footnote #2 above.

5. If patients bring in their own injection equipment from home, use it to give injections only if it is a new device from a sealed pack. Advise patients that they should not re-use injection equipment on themselves or family members. Every injection should use a new device. 
6. Educate patients that there is a potential risk of contracting diseases like AIDS, Hepatitis B and Hepatitis C from re-used injection equipment, so they should always insist on having a new, unopened package with a disposable needle and syringe whenever they get an injection.

Prevent contamination of injection equipment and medication


1. Prepare each injection in a clean⁵ designated area, where blood or body fluid contamination is unlikely. Make sure you have enough spaces to work. Injections should be given in a clean area where health providers can get needle stick injuries when they are working in tight quarters. 
2. With multi-dose vials, always pierce the septum with a sterile needle. Remove needles from multi-dose vials between injections. 
3. Use a clean protective barrier (e.g., small gauze pad or cotton ball) to protect fingers when opening a glass ampoule. 
4. Inspect and discard medications with visible contamination, cracks, or leaks.
5. Discard medications whose expiration date has passed.
6. Discard a needle that has touched any non-sterile surface. This means that any accidental contamination of the needle or syringe prior to the injection (including the health worker accidentally sticking him/herself in the process of preparing the injection) means that the health worker must throw out that syringe and needle. 



Maintain the effectiveness and safety of injectable preparations





1. Follow product-specific recommendations for use, storage and handling.

⁵ “Clean” means that no infectious waste is present; visually “clean” in other words, not necessarily sterile.

2. Use diluent from the same manufacturer when preparing reconstitutable vaccines and other medicines. 
3. Keep heat sensitive vaccines and medication at the proper temperature.
4. Follow standard treatment guidelines.
5. Do not use reconstituted vaccines more than 6 hours after the initial reconstitution.



Prevent needlestick injuries to the provider

1. Anticipate and take measures to prevent sudden patient movement during and after injection.
2. Do not recap needles after giving injections. Not with one hand, not with two, not at all! 
3. Dispose of used sharps in a safety box immediately after injection. Do not recap them before disposal. Do not carry them around or set them anywhere before putting them in the safety box. 
4. If the syringe is a retractable one, make sure to engage the retraction feature before disposing of the syringe.
5. Collect used syringes and needles at the point of use in an enclosed sharps container (safety box) that is puncture-and leak-proof. 
6. Do not use boxes that are open, overflowing or punctured. Get a new one. 
7. Seal safety boxes before they are completely full. Do not overfill them.

Prevent access to used needles

1. Seal sharps containers for transport to a secure area in preparation for disposal. After closing and sealing sharps containers, do not open, empty, re-use, or sell them.

2. Manage sharps waste in an efficient, safe and environment-friendly way to protect people from voluntary and accidental exposure to used injection equipment.
3. Store full safety boxes awaiting final disposal in a secure area that is accessible only to health facility staff and not to the general public.



Handle Waste Safely

1. Use the protective equipment you have been given. You need it to protect yourself from injuries! Remember to wear this equipment, including heavy-duty gloves if you have them, when you are carrying full sharps containers to waste storage areas and when preparing waste for final disposal.
2. Segregate different types of waste into their respective colour-coded containers. Do not put non-sharps waste into safety boxes.
3. Use good waste disposal practices so that there is no loose biological waste (including dirty swabs and used injection equipment) lying around health facilities.



Plan Ahead

1. Plan ahead on procuring commodities you need for your work like safety boxes and new sterile standard or safety syringes.
2. Tell your supervisor if you run out of safety boxes or disposable needles and syringes.

Reduce unnecessary Injections



1. Encourage patients to accept oral medications when possible. Injections should be given only when necessary. Explain to patients the need to take oral drugs as prescribed and review these instructions with them.

Other practice issues

1. Remember to practice good hand hygiene with soap and running water or an alcohol-based preparation before beginning an injection session and where there is

any contact with soil, blood or body fluids. The need for hand hygiene between each injection will vary based on the setting and whether there was contact with soil, blood or body fluids.



2. Avoid giving injections if your skin integrity is compromised by local infection or other skin condition (e.g., weeping dermatitis). Cover any small cuts you have.
3. Gloves are generally not needed for injections, but if there is a risk of contamination with blood or other body fluids during patient contacts, wear disposable gloves. Single use gloves may be indicated if excessive bleeding is anticipated.
4. Swabbing of clean vial tops or ampoules with an antiseptic or disinfectant is not necessary. If you are swabbing with an antiseptic, use a clean, single-use swab and maintain product specific recommended contact time. Do not use cotton balls stored wet in a multi-use container. 
5. Skin preparation before injection. Wash skin that is visibly soiled or dirty. Swabbing of clean skin before giving an injection is unnecessary. If you are swabbing with an antiseptic, use a clean, single-use swab and maintain product-specific recommended contact time. Do not use cotton balls stored wet in a multi-use container. 
6. Educate patients on the potential side effects of medications you are giving them.

Appendix 4 - INFECTION PREVENTION AND CONTROL

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Purpose and Acknowledgements

Physicians for Human Rights (PHR) has developed a list of infection prevention and control supplies and brief recommendations on their use. This list details some of the most basic requirements to ensure a safe healthcare environment for both staff and patients. It includes supplies to ensure that hand washing can be performed, adequate personal protective equipment is available, injections are safe, medical waste is properly disposed, and equipment is available to ensure the sterility of supplies that will be reused. In addition to the items contained in this list, the anti-retroviral medicines needed for post-exposure prophylaxis (PEP) should be available.

When developing this list, PHR sought feedback from health workers in resource-poor settings as well as experts on infection prevention and control, including through the Safe Injection Global Network listserv, the Safe Health Care and HIV/AIDS Working Group, and from World Health Organization officials.

PHR is grateful to officials at the World Health Organization for developing the Aide-Memoire for infection control and prevention in a healthcare facility, an important source of information for this list. We also thank everyone who took the time to review this list, and want to especially thank for their valuable comments:

Yves Chartier (World Health Organization, Water, Sanitation and Health) Philippe Duclos (Immunization Safety Priority Project, World Health Organization), Yvan Hutin (World Health Organization, Safe Injection Global Network), Souleymane Kone (World Health Organization -- Côte d'Ivoire), Sophie Logez (World Health Organization, SIGN Secretariat), Jules Millogo (John Snow, Inc.), Paula Nersesian (John Snow, Inc.), Una V. Reid (human resource development consultant), Donna Simonton (George Washington University Medical School), and Alicja Trocha (Partner's AIDS Research Center).

This list was prepared by Douglas P. Olson, with assistance from Eric A. Friedman. Initial research for the list was conducted by Wasana Punyasena.

A. HAND HYGIENE

Having clean hands, along with the handwashing to ensure clean hands, is one of the oldest, most well-known methods of preventing disease transmission. The essential supplies in this section are necessary to ensure that hand cleanliness can be achieved by healthcare personnel. [1]

1. **Soap** (preferably mounted and liquid) and clean water
Mounted liquid soap or soap with a pump dispenser is optimal because it is dispensed by a single hand. Bar soap may contain residue from the previous user, but will suffice if it is the only option.
2. **Vessel** for pouring water if no running water available.
3. **Towels**
Single-use paper towels are preferable since reused cloth towels can retain germs.
4. **Alcohol-based solutions**
When running water is not available, alcohol-based disinfectant lotions can be used alone. They can also be used together with soap and water as a handwashing adjuvant.
5. **Antiseptics**
An example of an antiseptic is an alcohol wipe such as those used to clean a patient's skin before needle or cannula insertion. Antiseptics are also contained in some soaps for handwashing, an example of one such antiseptic being chlorhexidine gluconate.

B. PERSONAL PROTECTIVE EQUIPMENT

Physical barriers between healthcare workers and their patients – in the form of gloves, eye goggles, or lab coats – are necessary to protect both the worker and the patient if there is a risk of body fluid exposure. The supplies in this section are the minimal supplies necessary. [1] [2]

1. Disposable gloves

Gloves help protect health workers from exposure to blood and body fluids. Research has shown that wearing one pair of gloves reduces the risk of HIV transmission from a needlestick by 50%, and the use of 2 gloves (so-called “double gloving”) reduces HIV transmission from a needlestick by 80%. [3]

2. Protective eyewear: eye shields, goggles, visors

Protective devices should be used by healthcare workers anytime they work with blood that has a potential to spill or splatter. Health facility staff who work with blood after it is obtained – laboratory workers and housekeeping staff, for example – should wear protective eyewear regularly, as should those working in the emergency and operation rooms departments. [21]

3. Face masks

A. Surgical/disposable face masks protect the healthcare workers’ oral and nasal mucous membranes from blood or body fluid splatter. Face masks should be worn routinely by staff working in the laboratory, or emergency and surgical departments. It is unnecessary for most direct clinical care interactions unless clinical precautions have been put in place. These prevent splash contamination but are not effective in protecting against airborne infectious diseases. [21] [5]

B. Respirator masks, which provide protection against airborne infectious diseases, such as tuberculosis, should be used in settings where risk for contracting tuberculosis is high, such as in isolation rooms for patients with tuberculosis, during sputum induction or other cough-inducing procedures, in bronchoscopy suites, in autopsy areas, and in spirometry rooms. WHO recommends that the respirator masks have at least 95% filter efficiency (i.e., N95 masks) for particles with a diameter of 0.3 micron. These masks are relatively expensive, and must be used in conjunction with other administrative and control measures to prevent the spread of tuberculosis and other airborne infectious diseases in health care settings. [5]

4. Overshoes protectors

Shoe covers should be available to be worn in two instances. First, they should be included in a biohazard spill kit, in case blood or other body fluid is spilled in the laboratory or clinic – “surgical caps or hoods and/or shoe covers or boots shall be worn in instances when gross contamination can reasonably be anticipated”. [20] A significant spill of blood or other body fluids increases the worker’s risk for exposure.

Wearing protective footwear will minimize contact with the bodily fluid. The second instance is in settings where people commonly wear sandals. Most of the biosafety

Recommendations were developed in the United States, where shoes and sneakers are commonly worn; people in many other areas of the world commonly wear sandals, due either to cultural norms or the unavailability of sneakers or shoes. The US CDC states, “For general biological lab use, comfortable shoes such as tennis shoes or nurses shoes are used extensively. Sandals and other types of open-toed shoes are not permitted in labs using biohazards or chemicals, due to the potential exposure to infectious agents or toxic materials as well as physical injuries associated with the work.” [7] Foot protective wear should enable staff who wears sandals to comply with this recommendation.

5. Lab Coats/Gowns/Plastic aprons

These should be worn by staff whenever working with blood that has the potential to spill or splash. Typically, direct service providers will wear lab coats, while gowns or plastic aprons will be worn by lab and cleaning staff. [22] [23]

C. INJECTION SAFETY/SHARPS MANAGEMENT

Patients have the basic human right to the highest attainable standard of health, which includes safe healthcare. Part of this right entails ensuring that medical equipment is sterile, and so not contaminated. The healthcare worker likewise has a right to a safe working environment, one where used needles should be disposed of properly with minimal chance of injury via an accidental exposure. The items in this section are the minimal supplies necessary to ensure a safe environment for both patient and worker.

1. **Syringes** (single use disposable syringes, auto-disable syringes, syringes with re-use prevention devices for general use, and syringes with engineered safety features)

The World Health Organization estimates that reuse of needles for injections leads to an estimated quarter million HIV infections per year, along with millions of infections of hepatitis B and hepatitis C, all of which can be prevented by the proper use of single-use (disposable) syringes and needles. While simply ensuring adequate supplies of single-use syringes should lead to considerable improvement in injection safety, factors that may include financial incentives to reuse syringes and a mindset of reuse borne of resource-poor settings will cause some reuse to continue even if adequate supplies are available. Therefore, syringes with engineered safety mechanisms offer even greater protection, and WHO/UNICEF/UNFPA guidelines recommend auto-disable syringes should be used for all immunizations.

New designs of syringes for curative injections with both re-use prevention devices to protect the patient and integrated safety features to protect the health care worker and community are becoming available at affordable prices. As safer, effective, and cost-effective technologies become available for curative injections, they should replace standard single-use syringes. Some syringes require the reuse prevention device to be controlled by the health worker, but in resource-poor settings, syringes that automatically disable after use are most desirable. [8] [9] [10] [11] [26]

Where possible, syringes that incorporate safety features should be used. An example of a reuse prevention feature controlled by the health worker is a syringe with a hard plastic sheath that can cover the tip of the needle after an injection is given. The device then locks in place, preventing the needle from being reused. Since the needle is covered, it also provides increased protection to the health care provider and waste-removal workers. United States law requires the use of engineering controls, such as the sharps with safety devices, to minimize the risk of occupational exposure. [12]

2. **Sharps disposal boxes** (puncture-proof, water resistant)

Safety boxes, as they are also called, protect both the workers who use sharp devices in clinical care, as well as the personnel responsible for disposing the sharps. [1] [10]

3. **Blunt suture needles**

Blunt suture needles should be used when tissue can be sewn effectively using this new technology, particularly when suturing low-density tissue such as muscle and connective tissue. Using blunt needles has been shown to significantly reduce risk of needlestick injuries: “use of blunt needles was associated with statistically significant reductions in [percutaneous injury] rates, [and] minimal clinically apparent adverse effects on patient care.” The use of this needle is at the discretion of the surgeon, who should be well informed about the risks of using a non-blunted (i.e., sharpened) needle. [13]

4. **Plastic or plastic-wrapped capillary tubes**

These devices are safer alternatives to glass capillary tubes. The use of glass capillary tubes has been addressed by a multi-agency advisory panel in the United States, with representatives from the Food and Drug Administration (FDA), the National Institute for Occupational Safety and Health (NIOSH) of the Centers for Disease Control and Prevention (CDC), and the Occupational Safety and Health Administration (OSHA). These agencies have declared that potentially upwards of 2,500 injuries occur each year in the United States due to glass capillary tubes, and these injuries have been linked to HIV transmission. These organizations suggest using safer alternatives to glass capillary tubes, such as capillary tubes not made of glass, or glass capillary tubes wrapped in puncture-resistant film. [14]

5. **Sharps injury log**

Each health facility should maintain a log of injuries to staff caused by contaminated sharps. The log should include the type of device that caused the injury and how the injury occurred. Lessons from these experiences should be used to improve safety. Before introducing a sharps injury log at a health facility, information, education, and communication (IEC) work will often be necessary to eliminate the frequently held but false notion that a sharps injury implies poor performance. [25] [27]

D. DISINFECTION/STERILIZATION

Various devices and solutions are used to either disinfect used medical devices before re-sterilization or to sterilize devices before reuse. The supplies in this section are used to ensure adequate disinfection and sterilization of medical equipment. [1]

1. Autoclaves (compatible with local power supplies, and with spare parts)

An autoclave is a device used for the sterilization of medical instruments. Autoclaves are essential in ensuring that reusable medical equipment is sterile when being reused. Autoclaves act by using a chemical [less common] or high temperature and steam [more common]. Where local power supply allows, a steam autoclave should be installed. Spare parts should be available in case the device malfunctions. Staff must be trained to maintain and repair the autoclaves. [15]

2. Time-steam saturation-temperature (TST) indicators/Test strips for autoclaves

TST indicators are chemically-impregnated strips of paper or tape. These chromatographic devices change colour when exposed to sufficient temperatures for sufficient periods of time to sterilize items. If autoclaving is performed for a sub-optimal time period or insufficient temperatures are met, the paper or tape will not change colour. These indicators are essential in order to ensure that all instruments or devices in which they are contained or on which they are placed are properly sterilized. These inexpensive bulk papers/tapes are essential to maintain safe autoclave quality control, and must be used each time the autoclave is used. They are the least expensive method to ensure the equipment is functioning properly and sterilization is adequate. [16]

3. Chemicals

The most common chemical used to disinfect devices is sodium hypochlorite, the active ingredient in common bleach. Bleach is used to inactivate or kill live viruses and bacteria. Bleach sold in the market is normally [minimally] 5-6% sodium hypochlorite, but this varies among countries. Concentrations ranging from approximately 500 ppm (1:100 dilution of household bleach) sodium hypochlorite to 5,000 ppm (1:10 dilution of household bleach) are effective depending on the amount of organic material (e.g. blood, mucus) present on the surface to be cleaned and disinfected. If there is doubt, a higher concentration [1:10] should be used to be certain of disinfection. Additional disinfectants with disinfection capabilities against bacterial and viral pathogens can be used as well. [17] [18]

E. HEALTH FACILITY WASTE MANAGEMENT

These suggestions are used to ensure that healthcare waste is properly discarded and stored before being removed from the healthcare facility and to protect waste handlers who are responsible for its collection and transport. Methods to ultimately dispose of waste are not included here, necessary to protect the community, but can be found online (e.g., http://www.who.int/water_sanitation_health/medicalwaste/en/167to180.pdf).

1. Colour-coded plastic garbage bags

Infectious and non-infectious waste should be segregated based on potential risk, and using colour-coded bags is a simple, inexpensive way to accomplish this. Other comparable methods can also be used. The bags must be impervious to blood and other materials to avoid spills. [24]

2. Buckets with lid and liners

The buckets should have firm-fitting covers so that in case they are knocked or tipped over, they will not spill their contents onto the floor. This prevents spillage of waste and infestation of disposed body-fluids in hot climates.

3. Appropriate safety signs for dangerous wastes

These signs should be part of a larger system of lab safety that encompasses other aspects of HIV safety such as waste containment and staff education. [6]

4. Strong gloves

These are used by people transporting the waste, and must be strong to withstand the stress of loading heavy bags. [24] Rubber-coated industrial gloves are ideal

5. Goulashes/Industrial strength foot protection

These should be worn by waste disposal personnel, as bags might break if over-filled with medical waste, if stressed by movement, or if they have been sitting for a long time before being picked up for disposal. Unlike foot covers for clinical and lab staff, these should be required.

E. HOUSEKEEPING

1. Colour-coded laundry bags

A system utilizing different colour bags or signs to indicate what laundry is soiled with blood or other body fluids and what laundry is not should be established and kept constant for laundering. [19]

2. Cleaning items (selection of brooms, brushes, mops, cloths, buckets, and housekeeping gloves)

Mops should only be used wet. [24]

3. Disinfectants

Different disinfectants should be available for different surfaces, such as tables, metallic surfaces, and floors. [24]

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Appendix 5– PREVENTION AND CONTROL TOOLKIT – FRAMEWORK FOR COSTING

WHO/AFRO/CRHCS INFECTION

PREVENTION AND CONTROL TOOLKIT

FRAMEWORK FOR COSTING

Key infection prevention and control interventions for health care facilities at a glance

Specific interventions	Equipment and supplies needs	Quantity	Unit cost	Total cost /Comments
Hand Hygiene	Soap --mounted liquid preferably <ul style="list-style-type: none"> • Handwipes • Running water • Towels – disposable preferably 			
Personal Protective Equipment	Gloves <ul style="list-style-type: none"> • Gowns • Masks • Gumboots • Goggles/glasses 			
Re-use prevention equipment	Re-use prevention syringes <ul style="list-style-type: none"> • Re-use prevention syringes with needlestick with prevention features (retractable) 			

Specific interventions	Equipment and supplies needs	Quantity	Unit cost	Total cost /Comments
Cleaning & Disinfection	Cleaning fluid (disinfectants, antiseptics) <ul style="list-style-type: none"> • Cleaning equipment • Disinfectant equipment 			
Sharps Management	Puncture-resistant sharps containers (safety boxes) <ul style="list-style-type: none"> • Needle removers 			
Waste Management	Waste bins <ul style="list-style-type: none"> • Bin liners • Containers for interim storage • Biohazard labels 			
Disposal	Incinerator <ul style="list-style-type: none"> • Incinerator maintenance • Fuel for burning or incinerator • Pit construction and maintenance • Fencing for pit • Needle pit • Needle barrel 			
Transport	Vehicle <ul style="list-style-type: none"> • Maintenance • Driver's salary • Fuel 			

Dr. Una V. Reid

Appendix 6 -MMIS SUPPORTIVE SUPERVISION CHECKLIST

Quarter: _____ Facility: _____ Date of the visit: _____

Name of the supervisor completing the checklist: _____

Circle **Yes** or **No** or **Not Applicable (N/A)** for each question below in each of the sites visited. If you are unable to observe an item, circle the question mark (?).

Question or Observation to Make	Sites			
Interview with the health facility director. (Please wait around and observe several injection administration areas at and summarize the checklist below)				
Explain the purpose of the visit. Identify all sites where injections are given. Choose 4 of these injection areas to visit. If the facility is small and injections for multiple conditions are given in the same room, write the type of injection observed rather than the name of the area. Write the names in the spaces to the right (for example: EPI, TB, MCH, pediatrics, adult health, family planning, etc.)	Injection area 1:	Injection area 2:	Injection area 3:	Injection area 4:
1. How many injections are given in one month in each of these four sites? (Record the estimated response for each site that has been selected in the box corresponding to that site. Note that this item does not count in the totals at the end of the checklist.)				
Observations in the injection administration areas. Ask the Director to introduce you to the injection providers and ask their permission to observe some injections.				
2. Is there a puncture-proof and leak-proof sharps container in each area where injections are given?	Yes No ?	Yes No ?	Yes No ?	Yes No ?
3. Are all of the sharps containers being used in this injection area /Sharp boxes? (If any sharps containers are <u>not</u> safety boxes, mark as "no.") Please specify if it is a safety box (project areas) Definition: Sharp box or Safety box – Sharp resistant/puncture- proof, liquid- proof	Yes No ?	Yes No ?	Yes No ?	Yes No ?

Question or Observation to Make	Sites			
4. If a glass ampoule was used, did the provider use a clean barrier (e.g. sponge, cotton, gauze) to protect his/her fingers when breaking the ampoule? <i>(If no ampoules were used, mark as not applicable: "?".)</i>	Yes No NA*	Yes No NA	Yes No NA	Yes No NA
5. Are injections prepared in a dry, "clean" area where contamination of the equipment with blood, dirty swabs or other biological waste is unlikely? ⁶	Yes No ?	Yes No ?	Yes No ?	Yes No ?
6. Did the injection provider wash his/her hands with soap and running water or an alcohol-based hand sanitizer before beginning the injection session or where there was a risk of contact with soil, blood, or body fluids?	Yes No ?	Yes No ?	Yes No ?	Yes No ?
7. For each injection given, were the needle and syringe either taken from a new sealed sterile pack or fitted with two caps? ⁷	Yes No ?	Yes No ?	Yes No ?	Yes No ?
8. For each reconstitution, were the needle and syringe either taken from a new sealed pack or fitted with two caps?	Yes No ?	Yes No ?	Yes No ?	Yes No ?
9. Was the needle removed from the rubber cap of each multi-dose vial after withdrawing a dose for administration? <i>(If no multi-dose vials were used, mark as "not applicable".)</i>	Yes No NA	Yes No ?	Yes No ?	Yes No ?
10. For reconstitutable medicines and vaccines, was the reconstitution done with appropriate diluent (same manufacturer)?	Yes No ?	Yes No ?	Yes No ?	Yes No ?
11. After completion of the injection, was the syringe recapped?	Yes No ?	Yes No ?	Yes No ?	Yes No ?
12. After each injection observed, did the provider immediately dispose of the used needles and syringes in an appropriate sharps container or use a needle remover?				
13. Another question for needles lying around.	Yes No?	Yes No?	Yes No?	Yes No?

⁶ The injection area is not an area used for procedures that may lead to blood contamination (e.g. blood sampling, wound dressing, etc.)

⁷ If reuse of injection equipment is about to occur immediately intervene to interrupt the procedure as tactfully as possible, and mark "No" on the checklist.

Question or Observation to Make	Sites			
14. Are all full safety boxes closed and stored in a locked area that is inaccessible to the public?	Yes No?	Yes No?	Yes No?	Yes No?
15. Are there reminders and/or job aids posted that promote the rational use of injections at this facility?	Yes No?	Yes No?	Yes No?	Yes No?
Interview with injection provider. Wait until the patients leave to interview the injection provider(s) in private. (Interviewed/ not interviewed – if not interviewed skip 16)				
16. Have you had any needle-stick injury in the last 3 months?	Yes No?	Yes No?	Yes No?	Yes No?
Thank the injection provider and ask to speak with the person who manages the stock room.				
Interview with the person who manages the stock room. (Interviewed/ not interviewed – if not interviewed skip 17 and 18)				
17. In the last 3 months, have you been out of stock of single-use disposable syringes (including standard, AD or retractables)? Purpose of question is not clear – another question for – sizes, Stock out period or duration?	Yes No Not interviewed?			
18. In the last 3 months, have you ever been out of stock of safety boxes? Stock out period or duration?	Yes No Not interviewed?			
Observations in the stock room / storage area.				
19. Are there enough standard disposable syringes or syringes with reuse and/or needle stick prevention features (i.e.: AD or retractables) for one month? (Compare the stock to the estimate given by the person in charge of the facility.)	Yes No Not observed?			
20. Is there an adequate number of appropriate sharp container for the number of syringes in stock? (<i>Estimate this from stock cards and/or a physical count of the inventory.</i>)	Yes No Not observed?			
Observations on waste management outside the facility.				
21. Are all used safety boxes awaiting final destruction securely closed? (<i>Circle “no” if there are any overflowing ones..</i>)	Yes No Not observed?			
22. Are any safety boxes overfilled?				

Question or Observation to Make	Sites
23. Is waste continually being be appropriately segregated at the waste site?	Yes No Not observed?
24. Are waste handlers wearing heavy-duty gloves, apron and closed-toed shoes when disposing of sharps waste and safety boxes?	Yes No Not observed?
25. Are there any used syringes and needles scattered outside the health center or the disposal site, i.e. not completely buried or incinerated?	Yes No Not observed?

Review the results for each site in this facility and for each section. Unknown answers (“?”) should receive particular attention on the next supervisory visit. They do not count in the totals of “yes” and “no” answers, but reminders of the expectations can be given in preparation for the next visit. Share your findings with the director of the facility and with the staff you have interviewed and observed. Congratulate them on the areas that are strong before giving them feedback on the areas for improvement.

Notes for the feedback to give to the director and his staff:

Appendix 7 - Safety Box Recording Form

[illegible]

Appendix 8 - Making a Healthcare Waste Management Plan for your Facility

Name of Facility:	Date:
-------------------	-------

Define Staff Roles

Who is responsible overall for supervising HCWM at your facility?

Attach supervision structure organogram of your facility.

Who is responsible for performing waste disposal for each area of your facility?

Attach job descriptions for all cadres of staff at your facility.

Outline Current HCWM Status at Facility

Define type and amounts of waste generated.

Type	Amount (per week)
Non-infectious waste	
Infectious waste	
Highly infectious waste	
Sharps waste	

List number of staff and their designations at your facility.

Designation	Number

Outline HCWM practices used currently.

Concept	Current Practice
<p><i>Is waste classified and segregated into different coloured waste bins?</i></p> <p>Describe how.</p>	
<p><i>How are sharps (needles) disposed?</i></p> <p><i>How are safety boxes used?</i></p>	
<p><i>Are full safety boxes recorded?</i></p> <p><i>Where are they stored?</i></p> <p><i>How are they transported to their final disposal location?</i></p>	
<p><i>Where are different categories of waste disposed?</i></p> <p>Describe the disposal process.</p>	

Outline Ideal Practices: Establishing Standards

Concept	Standard
Segregating waste (different types, corresponding colours of waste liners)	
Prioritising sharps (use of safety boxes or needle removers, if applicable)	
Recording, handling and transport of safety boxes	
Final waste disposal for each category of waste (including sharps barrel, if applicable)	
Hepatitis B and tetanus toxoid immunization for all cadres of staff	

List Improvements Needed

What capital improvements are needed at your facility?

Item	Date for Introduction	Total Cost	Responsible Party

What supplies needed for the next 6 months? (Protective clothing, cleaning supplies, waste bin, liners, safety boxes)

Supplies	Quantity	Total Cost

What training is needed at your facility for each cadre of staff?

Cadre of Staff	Training Topics	Date for Completion

Outline Monitoring Schedule

List the person responsible to perform the monitoring for each cadre of staff and the frequency with which they will be monitored.

Cadre of Staff	Supervisor	Frequency to be Monitored

List the forms to be used to monitor HCWM activities and the frequency with which activities will be monitored.

Form	Frequency to be monitored

Date for introduction of this plan:

Appendix 9 – PRE – AND POST-TRAINING ASSESSMENT TOOL

MAKING MEDICAL INJECTIONS SAFER

Pre-Training Assessment/Post-Training Assessment Tool on Injection Safety and Infection Prevention and Control

NOTES FOR TRAINING FACILITATORS

Overview: This tool is designed for the assessment of healthcare workers, supply and waste management staff, and future trainers (i.e.: those who are undergoing training at this time and who will be leading training workshops in the future) on injection safety and infection prevention and control knowledge and attitudes before and after training workshops. There is a separate tool for each of the categories of participant listed above. The tool is referred to as a **pre-/post training assessment** tool because it is intended to be used both at the beginning and at the end of training. Before training, the tool can be used to establish a baseline of knowledge and attitudes among trainees. After training, the tool serves to evaluate the trainees' comprehension of the content of the workshop.

How the assessment is designed: The assessment is deliberately designed to present key concepts covered in the training in order that the *application* of the concept may be seen by the trainees. Most situations in this assessment are ones in which observations of healthcare workers have shown that they do not apply the basic principles of injection safety and infection prevention and control, perhaps because they perceive these situations to be 'exceptions' to the 'rules.'

The goal of this exercise is to make them reflect on the key concepts in relation to their daily work, and to realize that for their own safety and that of their patients and communities, they do, in fact, need to apply these concepts even in difficult circumstances.

How to administer the assessment: It is not necessary to discuss the results of the *pre*-assessment with the trainees. Instead, the results of the pre-assessment can be tabulated and used for comparison with the results of the *post*-assessment as a way of measuring progress since the baseline (pre-assessment), as well as

ensuring that the trainees have understood the key concepts covered in the training workshop.

After the *post*-assessment, once the trainees have had a chance to respond to all statements, the results are discussed with them as a group. The facilitator can ask how many questions they got right and then the group as a whole can briefly discuss the correct answers and the thinking behind it. The facilitator may wish to make note of statements that cause lively discussion or disagreement or resistance among trainees as areas to be reinforced further during future supervision visits.

Clearly, some problems that are mentioned, such as lack of safety boxes, need to be addressed by the health system, but discussion of these items still serves as a reminder to trainees of their role in injection safety and infection prevention and control. During this discussion, the facilitator may wish to take this opportunity to inform the trainees of the systems-level changes that are underway to facilitate their application of key injection safety and infection prevention and control concepts (such as collecting consumption data on use of syringes and needles, and safety boxes so that they are ordered in time and in sufficient quantities to avoid stock outs).

Facilitators' Guide: The following pages include the trainees' version of the assessment and the facilitator's version with the answers and the reasoning behind the response to each statement.

MAKING MEDICAL INJECTIONS SAFER

Pre/Post Assessment

ID Number:

Level: Training of Trainer

Time allowed: 1 hour

Total Marks: 50

1. What is WHO/SIGN three part strategy for injection safety? (3)
2. Name three principles of adult learning. (3)
3. List the types of interpersonal communication. (1)
4. Define behaviour change. (2)
5. Name four skills or techniques of counselling (2)
6. What is injection safety? (2)
7. What is infection prevention and control? (2)
8. Name four diseases transmitted by unsafe injection practices (2)
9. Name four occasions in which hand hygiene is required (2)
10. Name four 'right' ways to give a safe injection (2)
11. Name two 'best' practices in safe injection (2)
12. What is the first thing you should do when you get a needlestick or sharps injury? (2)
13. Name four groups at risk of getting needlestick injuries (2)
14. Recapping with one hand is acceptable (True/False) (2)
15. Define an adverse event (2)
16. Name **all the** of the logistician seven 'rights' (7)

17. Name the components of the logistics cycle (2)
18. Exercise:
If you had 1000 5ml syringes at the beginning of January, you received 2000 of the same at the end of June, and you have 600 at the end of December, what will be your **Average Monthly Consumption** assuming there were no stock-outs? (3)
19. List the categories of waste and their appropriate bin colour (1)
20. How can the community be affected by unsafe waste management practices? (3)
21. Name the steps of proper waste disposal (2)
22. Name four things that should be disposed of in a safety box. (2)
23. To what level should you fill safety boxes before closing and sealing them?
 $\frac{1}{2}$ _____
Full _____
 $\frac{3}{4}$ _____ (1)
24. Give two reasons why it would be beneficial to reduce the number of injections given to patients. (2)
25. Identify one treatment alternative to injections (1)

ANSWER SHEET

Level: Training of Trainer

1. What is WHO/SIGN three part strategy for injection safety? (3)
- **Changing behaviour of healthcare workers and patients**
 - **Ensuring availability of equipment and supplies**
 - **Managing waste safely and appropriately**
2. Name three principles of adult learning. (3)
- Any three of the list below:
- **Involve learners in planning and implementing learning activities.**

- Draw upon learners' experiences as a resource.
- Develop and/or use instructional materials that are based on learners' lives.
- Cultivate self-direction in learners.
- Create a climate that encourages and supports learning.
- Foster a spirit of collaboration in the learning setting.
- Incorporate small groups into learning activities.
- Give respect for their current viewpoints and status.
- Build on learner's previous experiences.
- Ensure the teaching has specific, practical, measurable objectives, rather than being vague.
- Ensure that there is 'transferability', i.e. they can apply the teaching immediately to real situations in their own lives.

3. List the types of interpersonal communication. (1)

Verbal and non-verbal

4. Define behaviour change. (2)

Individuals or groups change of attitude for voluntary adoption or maintenance of a new behaviour to promote health and improve the quality of life.

5. Name four skills or techniques of counselling (2)

Any four of the following:

- Praise and encouragement
- Questioning
- Paraphrasing and summarizing
- Active listening
- Coping with special needs

- Use of support materials
- Observation
- Explaining in language client understands
- Reflecting
- Non-verbal responses
- Clarifications

6. What is injection safety? (2)

Injection safety. A safe injection does not harm the recipient, does not expose the provider to any avoidable risk and does not result in any waste that is dangerous for other people.

7. What is infection prevention and control? (2)

Infection prevention and control refers to policies and procedures to minimize the risk of spreading infections, especially in healthcare facilities.

8. Name four diseases transmitted by unsafe injection practices (2)

Any four of the following:

Hepatitis B, Hepatitis C, HIV/AIDS, Haemorrhagic Fevers, Malaria

9. Name four occasions in which hand hygiene is required (2)

Any four of the following:

- Immediately upon arrival at work
- After touching blood, body fluids, secretions, excretions and contaminated items, whether or not gloves are worn
- Before putting on gloves for invasive procedures
- Before and after removing gloves
- Before and after each patient contact
- Between procedures on the same patient to prevent cross-contamination

10. Name four 'right' ways to give a safe injection (2)

Any four of the following:

Right patient, right drug, right formulation, right injection equipment, right dosage, right time, right route, right storage, right method of disposal

11. Name two 'best' practices in safe injection (2)
Any two of the following:
➤ **Selecting safe medicines**
➤ **Use of sterile equipment**
➤ **Observing aseptic technique**
➤ **Reconstituting drugs or vaccines safely**
➤ **Proper disposal of injection waste, including sharps**
12. What is the first thing you should do when you get a needlestick or sharps injury? (2)
Bleed the wound and run the injured area under water. Clean area with soap and water.
13. Name four groups at risk of getting needlestick injuries (2)
Any four of the following:
Nurses, Physicians, Medical Laboratory Technologists, Housekeeping staff, Laundry workers, Waste handlers, Community
14. Recapping with one hand is acceptable (True/False) (2)
15. Define an adverse event (2)
An incident which harms a person receiving healthcare caused by poor injection practices rather than the underlying condition of the patient
16. Name the logistician seven 'rights' (3)
Any three of the following:
➤ **Right goods**
➤ **Right quantities**
➤ **Right condition**
➤ **Right place**
➤ **Right time**
➤ **Right cost**
➤ **Right customer**
17. Name four components of the logistics cycle (2)
Any four of the following:
➤ **Serving customers**
➤ **Product selection**
➤ **Forecasting and procurement**
➤ **Inventory management**
➤ **Logistics information: money, people**

18. If you had 1000 5ml syringes at the beginning of January, you received 2000 of the same at the end of June, and you have 600 at the end of December, what will be your AMC assuming there were no stock-outs? (3)

Syringes found in stock A = 1000

Total number of syringes received B = 2000

Total number of syringes in stock at the end of stock taking period C = 600

Total consumption – (total syringes found in stock (A) + total syringes received (B) – total syringes in stock at the end of the stock taking period (C)

(A + B) – (C)

(1000 + 2000) – (600) = 2400

Stock taking period = January to December = 12 months

Average monthly consumption = total consumption / stock taking period in months

= 2400/12

=200

19. List the categories of waste and their appropriate bin colour (1)

- **Non-infectious- black**
- **Infectious- yellow**
- **Highly infectious- red**
- **Chemical- brown**
- **Radioactive- yellow with radioactive label**

20. How can the community be affected by unsafe waste management practices? (2)

Any of the following:

- **Exposure to infectious waste**
- **Exposure to used syringes/needles or sharps**
- **Exposure to harmful smoke if incinerator/pit improperly placed and not maintained**
- **Access to syringes which can be reused**

21. Name the steps of proper waste disposal (2)

Waste minimization
Segregation
Handling
Treatment
Transporting

Disposal

22. Name four things that should be disposed in a safety box. (2)

Any four of the following:

- **Syringes and needles**
- **Syringes with needles removed (if using a needle remover)**
- **Needles with infusion set removed**
- **Scalpels**
- **Blades**
- **Broken glass (e.g., pipettes, ampoules, broken vials)**

23. To what level should you fill safety boxes before closing and sealing them?

$\frac{1}{2}$ _____

Full _____

$\frac{3}{4}$ **X** (1)

24. Give two reasons why it would be beneficial to reduce the number of injections given to patients. (2)

Any two of the following:

- **Reduce risk to provider: less chance for needlesticks**
- **Reduce risk to client: fewer chances of introducing bloodborne pathogens**
- **Reduce risk to client: adverse event**
- **Reduce effect on environment from reduced healthcare waste volume**

25. Identify one treatment alternative to injections (1)

- **Oral medication**

MAKING MEDICAL INJECTIONS SAFER

Pre/Post Assessment

ID Number:

Level: Healthcare Worker

Time allowed: 1 hour

Total Marks: 50

1. What is WHO/SIGN three part strategy for injection safety? (3)

2. Define behaviour change (3)
3. Name four skills to techniques of counselling (2)
4. What is injection safety? (2)
5. What is infection prevention and control? (2)
6. Name four diseases transmitted by unsafe injection practices (2)
7. Name four occasions in which hand hygiene is required (2)
8. Name four 'right' ways to give a safe injection (2)
9. Name two 'best' practices in safe injection (2)
10. What is the first thing you should do when you get a needlestick or sharps injury? (2)
11. Name four groups at risk of getting needlestick injuries (4)
12. Recapping with one hand is acceptable (True/False) (3)
13. Define an adverse event (2)
14. List the categories of waste and their appropriate bin colour (5)
15. How can the community be affected by unsafe waste management practices? (3)
16. Name the steps of proper waste disposal (3)
17. Name four things that should be disposed in a safety box. (3)
18. To what level should you fill safety boxes before closing and sealing them?
 - a. $\frac{1}{2}$ _____
 - b. Full _____
 - c. $\frac{3}{4}$ _____
 (2)
19. Give two reasons why it would be beneficial to reduce the number of injections given to patients. 4)
20. Identify one treatment alternative to injections (1)

ANSWER SHEET

Level: Healthcare Worker

1. What is WHO/SIGN three part strategy for injection safety? (3)
 - **Changing behaviour of healthcare workers and patients**
 - **Ensuring availability of equipment and supplies**
 - **Managing waste safely and appropriately.**
2. Define behaviour change (3)

Individuals or groups change of attitude for voluntary adoption or maintenance of a new behaviour to promote health and improve the quality of life.
3. Name four skills or techniques of counselling (2)

Any four of the following:

 - **Praise and encouragement**
 - **Questioning**
 - **Paraphrasing and summarizing**
 - **Active listening**
 - **Coping with special needs**
 - **Use of support materials**
 - **Observation**
 - **Explaining in language client understands**
 - **Reflecting**
 - **Non-verbal responses**
 - **Clarifications**
4. What is injection safety? (2)

Injection safety. A safe injection does not harm the recipient, does not expose the provider to any avoidable risk and does not result in any waste that is dangerous for other people.

5. What is infection prevention and control?

(2)

Infection prevention and control refers to policies and procedures to minimize the risk of spreading infections, especially in health care facilities.

6. Name four diseases transmitted by unsafe injection practices (2)

Any four of the following:

Hepatitis B, Hepatitis C, HIV/AIDS, Haemorrhagic Fevers, Malaria

7. Name four occasions in which hand hygiene is required

(2)

- **Immediately upon arrival at work**
- **After touching blood, body fluids, secretions, excretions and contaminated items, whether or not gloves are worn**
- **Before putting on gloves for invasive procedures**
- **Before and after removing gloves**
- **Before and after each patient contact**
- **Between procedures on the same patient to prevent cross-contamination**

8. Name four 'right' ways to give a safe injection (2)

Any four of the following:

Right patient, right drug, right formulation, right injection equipment, right dosage, right time, right route, right storage, right method of disposal

9. Name two 'best' practices in safe injection

(2)

Any two of the following:

- **Selecting safe medicines**
- **Use of sterile equipment**
- **Observing aseptic technique**
- **Reconstituting drugs or vaccines safely**
- **Proper disposal of injection waste, including sharps**

10. What is the first thing you should do when you get a needlestick or sharps injury? (2)

Bleed the wound and run the injured area under water. Clean area with soap and water.

11. Name four groups at risk of getting needlestick injuries (4)
Any of the following:
Nurses, Physicians, Medical Laboratory Technologists, Housekeeping staff, Laundry workers, Waste handlers, Community
12. Recapping with one hand is acceptable (True/False) (3)
False
13. Define an adverse event (2)
An incident which harms a person receiving health care caused by poor injection practices rather than the underlying condition of the patient
14. List the categories of waste and their appropriate bin colour (5)
 - **Non-infectious- black**
 - **Infectious- yellow**
 - **Highly infectious- red**
 - **Chemical- brown**
 - **Radioactive- yellow with radioactive label**
15. How can the community be affected by unsafe waste management practices? (3)
Any of the following:
 - **Exposure to infectious waste**
 - **Exposure to used syringes/needles or sharps**
 - **Exposure to harmful smoke if incinerator/pit improperly placed and not maintained**
 - **Access to syringes which can be reused**
16. Name the steps of proper waste disposal (3)
- | |
|---------------------------|
| Waste minimization |
| Segregation |
| Handling |
| Treatment |
| Transporting |
| Disposal |
17. Name four things that should be disposed in a safety box. (3)
Any four of the following:
 - **Needles and syringes**
 - **Syringes with needles removed (if using a needle remover)**
 - **Needles with infusion set removed**

- **Scalpels**
- **Blades**
- **Broken glass (e.g., pipettes, ampoules, broken vials)**

18. To what level should you fill safety boxes before closing and sealing them? (2)

$\frac{1}{2}$ _____
 Full _____
 $\frac{3}{4}$ **X** _____

19. Give two reasons why it would be beneficial to reduce the number of injections given to patients. (4)

Any two of the following:

- **Reduce risk to provider: less chance for needlesticks**
- **Reduce risk to client: fewer chances of introducing bloodborne pathogens**
- **Reduce risk to client: adverse event**
- **Reduce effect on environment from reduced healthcare waste volume**

20. Identify one treatment alternative to injections (1)

- **Oral medication**

MAKING MEDICAL INJECTIONS SAFER

Pre/Post Assessment

ID Number:

Level: **Supply Staff**

Time allowed: **1 hour**

Total Marks: **20**

1. Name three of the Logistician seven 'rights'. (3)
2. Forecasting and procurement is dependent on consumption data from healthcare facilities/Service Delivery Points. (1)
 Yes/No

3. Storage, distribution and transportation are together generally called (2)
- a. Inventory management
 - b. Forecasting
 - c. Procurement
 - d. None of the above
 - e. a and b
4. Which is usually referred to as the engine that drive the logistics cycle (2)
- a. Issues voucher
 - b. Tally card
 - c. Procurement
 - d. Logistics information
 - e. Transport
5. Amount of time it takes between placing an order and receiving the commodities in your store is (2)
- a. Pipeline length
 - b. Lead time
6. A distribution system where higher level decides what goods to go where is called (2)
- a. Pull system
 - b. Indent system
 - c. Requisition system
 - d. Push system
7. If you have 500 Syringes of 2ml at the beginning of January, received 1000 of the same at the end of June and have 300 at the end of December, what is your AMC assuming there were no stock-outs (2)
8. In a MMIS District, there is a balance of 200,000 pieces of syringes and needles at the end of first quarter, 2004; the AMC for the store is 50,000 pieces. What is the MOS (2)
9. In XYZ DISTRICT MMIS Store, the AMC for syringes and needles is 10,000 of 5ml; the Store is supposed to keep a maximum of 2 months supply. Ending balance at the end of 2nd quarter of 2004 was 3,000. What quantity does the DISTRICT need to order? (2)

10. Which of the following is not a stock keeping record? (2)
- a. Bin Card
 - b. Inventory Control Card
 - c. Parking List
 - d. Ledger Card.

ANSWER SHEET

Level: Supply Staff

1. Name the Logistician seven rights (7)
- a. **Right goods**
 - b. **Right quantities**
 - c. **Right condition**
 - d. **Right place**
 - e. **Right time**
 - f. **Right cost**
 - g. **Right customer**
2. Forecasting and procurement is dependent on consumption data from health facilities/Service Delivery Points.
Yes/No (1)
3. Storage, distribution and transportation are together generally called
a. **Inventory management** (2)
b. Forecasting
c. Procurement
d. None of the above
4. Which is usually referred to as the engine that drives the logistic cycle? (2)
- a. Issues voucher
 - b. Tally card
 - c. Procurement
 - d. **Logistics information**
 - e. Transport
5. Amount of time it takes between placing an order and receiving the commodities in your store is: (2)

- a. Pipeline length
- b. Lead time**

6. A distribution system where lower level decides what goods they want is called?

- a. Pull system**
- b. Indent system
- c. Requisition system
- d. Push system (2)

7. If you have 500 syringes of 2ml at the beginning of January, received 1000 of the same at the end of June and have 300 at the end of December, what is your AMC assuming there were no stock-outs? (2)

$$500 + 1000 = 1500 - 300 = \frac{1200}{12} = 100$$

8. In a MMIS DISTRICT, there is a balance of 200,000 pieces of syringes and needles at the end of first quarter, 2004; the AMC for the store is 50,000 pieces. What is the MOS? (2)

$$\text{MOS} = 200,000 / 50,000 = 4 \text{ months}$$

9. In XYZ DISTRICT MMIS Store, the AMC for syringes and needles is 10,000 of 5ml; the Store is supposed to keep a maximum of 2 Months supply. Ending balance at the end of 2nd quarter of 2004 was 3,000. What quantity does the DISTRICT need to order?

(2)

$$\begin{aligned} \text{Max Stock level} &= \text{AMC} \times \text{Max months,} \\ &= 10,000 \times 2 = 20,000 \end{aligned}$$

$$\text{Ending balance} = 3,000$$

$$\begin{aligned} \text{Amount to Order} &= \text{Maximum Stock} - \text{Ending Balance} = 20,000 - 3,000 \\ &= 17,000. \end{aligned}$$

10. Which of the following is not a stock keeping record (2)

- a. Bin Card
- b. Inventory Control Card
- c. Packing List**
- d. Ledger Card.

MAKING MEDICAL INJECTIONS SAFER

Pre/Post Assessment

ID Number:

Level: Healthcare Waste Management Staff

Time allowed: 45 Minutes

Total Marks: 20

1. Which of the following is considered sharps waste? (2)
 - a. Syringe with no needle attached
 - b. Vaccine vial
 - c. Gloves
 - d. Syringe and needle
2. Which of the following is not infectious? (2)
 - a. Dressing gauze soiled with body fluids
 - b. Placenta
 - c. Used syringes
 - d. Coca cola OR soda bottle
 - e. Used surgical blades
3. In what type of container should sharps waste be collected? (2)
4. What is the proper way to store the container (in 3 above)? (2)
5. Name three types of protective clothing that must be worn when handling waste. (2)
6. Name one way to make the final disposal of waste in your facility safer. (2)
7. Name the colour code for wastes and mention which type goes into each specific bin colour (2)
8. You do not need to wear gloves when you are carrying full sharps boxes to waste storage areas and when preparing waste for final disposal as long as the boxes are closed (True or False) (2)
9. Filled, closed safety boxes should be stored in a locked area away from the public (State whether you agree or disagree) (2)
10. What is the first thing you should do when you get a needlestick or sharps injury? (2)

MAKING MEDICAL INJECTIONS SAFER ANSWER SHEET

Level: **Healthcare Waste Management Staff**

1. Which of the following is considered sharps waste? (2)
 - a. Syringe with no needle attached
 - b. Vaccine vial
 - c. Gloves
 - d. **Syringe and needle**

2. Which of the following is not infectious? (2)
 - a. Dressing gauze soiled with body fluids
 - b. Placenta
 - c. Used syringes
 - d. **Coca cola or soda bottle**
 - e. Used surgical blades.

3. In what type of container should sharps waste be collected? (2)

Safety Box/Sharps container

4. What is the proper way to store the container (in 3 above)? (2)

Safety boxes should be stored in a secure place (e.g., a locked room), with access restricted to only authorized people. They should be kept dry and out of direct sunlight. They should be stored away from any other supplies.

5. Name three types of protective clothing that must be worn when handling waste. (2)
Any three of the following:
Apron, heavy duty gloves, close-toed shoes (e.g., gumboots), long sleeve shirt, overalls, goggles, glasses, mask

6. Name one way to make the final disposal of waste in your facility safer. (2)

*This answer depends on the local situation at the participants' facility.
Possible answers include:*

- *Proper placement of waste pit*
- *Proper depth of waste pit*
- *Maintaining incinerator*
- *Constructing a fence around waste pit or incinerator*
- *Maintaining segregation from point of origin to final disposal*
- *Keeping grounds clean and free of waste*

7. Name the colour code for wastes and mention which type goes into each specific bin colour. (2)

- **Red – Highly infectious waste,**
- **Yellow – Infectious waste**
- **Brown- Chemical waste**
- **Yellow with biohazard sticker- Radioactive**
- **Safety box- sharps waste**

8. You do not need to wear gloves when you are carrying full sharps boxes to waste storage areas and when preparing waste for final disposal as long as the boxes are closed (True or False) (2)

False

9. Filled, closed safety boxes should be stored in a locked area away from the public (State whether you **agree** or disagree) (2)

10. What is the first thing you should do when you get a needlestick or sharps injury?

(2)

Bleed the wound and run the injured part under water. Clean area with soap.

Appendix 10 – COURSE EVALUATION

1. How do you rate the planning and organization of this training?

Good ☐ Fair ☐ Poor ☐ No comment ☐

2. How was your accommodation?

Good ☐ Fair ☐ Poor ☐ No Comment ☐

3. How were the meals?

Good ☐ Adequate ☐ Inadequate ☐ Bad ☐

No comment ☐

4. Generally, how was the duration of the training compared with the objectives covered?

Adequate ☐ Short ☐ Too Long ☐ Just Enough ☐

5. Do you feel the objectives of the training were achieved?

Yes ☐ No ☐

If No: Explain

6. How were the facilitators?

Clear in their presentations ☐

Not clear in their presentations ☐

Lacked confidence in themselves ☐

Very useful to participants ☐

Inadequate in their knowledge base ☐

Any other observations or comments on facilitators

7. Did you find the methods used in training effective?

Yes ☐ No ☐

If Not, What would you suggest for future training?

8. How do you rate the training materials?

Useful ☐ Adequate ☐ Not adequate ☐
Not useful ☐ Too much ☐ Not clear ☐

9. Give your suggestion on the training materials for future training.

10. Do you feel your expectations on this training were met?

Yes ☐ No ☐

If No, Why?

11. Do you feel now you are well prepared to go and train the next level of healthcare workers in your district?

Yes ☐ No ☐

If No, Why?

12. What is your feeling about the Pre and Post-assessment given during this training?

Too Difficult ☐

Too Simple ☐

Useful ☐

Not Useful ☐

Not Necessary ☐

13. Will help us in the next training?

Yes ☐

No ☐

What is your overall assessment of this training?

14. What are your recommendations to improve future training on injection safety?

Thank you.

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