Ethiopian TVET-System

Basic Biomedical Equipment Servicing Level II

Based on May 2011 Occupational Standards

October, 2019

Module Title: dismantling and disposing bio medical equipment

TTLM Code: EEL BES2 M09 TTLM 1019v1

This module includes the following Learning Guides

LG29: DECISION FOR DISMANTLE AND DISPOSAL

LG Code: EEL BES2 M09 LO1-LG-29

LG30: PLAN TO DISMANTLE AND DISPOSE

LG Code: EEL BES2 M09 LO2-LG-30

LG31: ORGANIZING RESOURCES NEEDED

LG Code: EEL BES2 M09 LO3-LG-31

LG32: DISMANTLING THE EQUIPMENT

LG Code: EEL BES2 M09 LO4-LG-32

LG33: DISMANTLING THE EQUIPMENT

LG Code: EEL BES2 M09 LO5-LG-33

Instruction Sheet	LG29: DECISION FOR DISMANTLE AND DISPOSAL

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Identifying equipment for no more service
- Obtaining an approval for dismantling
- Informing end users about the equipment to be dismantled

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, **upon completion of this Learning Guide, you will be able to**:

- Identify equipment for ***no more service***
- Obtain Approval for dismantling from concerned body
- Inform end users about the equipment to be dismantled

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 and Self-check 4” **in page - 5, 9, 11** respectively.

INFORMATION SHEET-1	IDENTIFYING EQUIPMENT FOR NO MORE SERVICE

1.1 Items can be available for disposal because they are:

- required to be disposed of under a particular policy;
- no longer required due to changed procedures, functions or usage patterns;
- occupying storage space and not being needed in the foreseeable future;
- reaching their optimum selling time to maximize returns;
- no longer complying with occupational health and safety standards;
- found to contain hazardous materials; and/or
- Beyond repair but able to be sold for scrap.

Equipment will only be replaced when one of the following valid reasons has been fulfilled:

A. it is worn out beyond repair (has reached the end of its natural life)

B. it is damaged beyond repair

C. it is unreliable – faulty, old, unsafe

D. it is clinically or technically obsolete

E. spare parts are no longer available

F.it is no longer economical to repair. And one of the following valid reasons has also been fulfilled:

G. utilization statistics are available to show that it is still required

H. a demonstrated clinical or operational need still exists.

II. Equipment will not be replaced simply because:

- it is old
- Staff do not like it
- a newer model has arrived on the market.

1.2 Developing replacement and disposal policies and goals

All equipment has an expected lifetime and will eventually need to be replaced or disposed of. Service histories associated with inventory items can be assessed to determine when equipment is no longer serviceable, relevant, safe or cost-effective. Over time, trends can help to identify the expected lifetime for equipment and cost-effectiveness (or lack of) to keep a piece of equipment in service. This information can help to develop policies for the replacement or disposal of equipment. Subsequently, this information can be used to prepare budgets for new capital purchases, repair services and so on.

It is important for the Trust to have in place a procedure for the disposal of assets. The procedure will provide staff members with detailed guidance and help to ensure that consistent work practices are followed.

The policy outlines a procedure that can be clearly audited. It also allows central records to be kept of all asset disposals.

This policy is designed to highlight the importance of the disposal procedure so as to maximize the potential proceeds for the Trust and avoid incurring any financial penalties within their respective budgets.

Selection Of Preferred Disposal Option

When selecting the preferred option for disposal, it is important to consider a range of factors that will impact on the disposal process. This requires the disposal to be carefully planned, allowing each option to be properly evaluated.

Factors to consider include:

- the type and condition of the surplus goods;
- Whether there have been any offers from other public authorities;
- the nature of the recipient market;
- time and resource issues;
- The costs and benefits provided by each disposal option.

1.(https://capturetribe.com/theppa/wp-content/uploads/2019/01/Disposal-of-Stores-Goods-and-Equipment.pdf)

2. **How to Manage' Series for Healthcare Technology Guide 1** (https://www.who.int/management/organize_system_%20healthcare.pdf)

Self-Check -1	Multiple choice

Directions: Answer all the questions listed below.

1. Equipment will only be replaced when

A. it is worn out beyond repair (has reached the end of its natural life)

B. it is damaged beyond repair

C. it is unreliable

D. all

2. Equipment will not be replaced simply because of:

A. it is old
B. Staff do not like it
C. a newer model has arrived on the market
D. all

3. All equipment has an expected lifetime and will eventually need to be replaced or disposed.(TRUE/FALSE)

Note: **Satisfactory rating - 3 and 5 points** **Unsatisfactory - below 3 and 5 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet- 2	Obtaining an approval for dismantling

2.1 Disposal Hierarchy

when equipment becomes redundant for its original use then the following disposal hierarchy should be followed:

1st.	Reused within the Directorate;
2nd.	relocate within the Trust;
3rd.	sale, part-exchange or donation;
4th.	sustainable disposal.

2.2: Disposal Process.

Where appropriate, the Asset Budget Holder must ensure equipment that is being sold or donated has been appropriately decontaminated with a decontamination certificate (e.g. medical equipment) or has the appropriate safety sticker / certificate / British Standards label (e.g. electrical equipment must have an up-to-date PAT test sticker, upholstered furniture must have a flame retardant label). Advice can be sought from the Procurement team or appropriate Trust stakeholder.

The Procurement team is responsible for facilitating the sale of any unwanted Trust equipment, including but not limited to:

- contacting companies that specialize in auctions and disposal,
- negotiating the sale or disposal arrangements, and
- processing the sale

2.3After disposal:

The Asset Budget Holder is responsible for returning an electronic copy of the Asset Disposal Form to the Finance Department and where appropriate, the Medical Devices Adviser. The Finance Department and Medical Devices Adviser must ensure all appropriate asset registers or inventories are suitably amended.

The Asset Budget holder is responsible for sending the original Asset Disposal Form together with any associated legal documentation (e.g. deed of gift) to the Legal &Property Team within the Estates Services department. Except for sales; where the Asset Budget Holder is responsible for sending the original Asset Disposal Form to the Procurement team, who will complete any associated legal documentation (e.g. deed of sale) and return all original documents to the Legal &PropertyTeam.

The Asset Budget Holder should also ensure, where applicable insurance and any maintenance arrangements have been revised. Advice can be sought from the Procurement team.

disposal channels are available for when equipment reaches the end of its life

- When disposing equipment the environment is considered
- There are clear regulations on waste disposal
- Companies that buy old equipment exist
- Decommissioning regulations exist, e.g. erasing of patient data and decontamination and the technicians know how to do this

• When purchasing new equipment the supplier may take responsibility for the equipment that is being disposed

Create awareness and share best practices on disposal from the UK
• Awareness-raising, explain the environmental impact
• Encourage hospitals to create disposal routes and raise awareness on Ministry level
• Teach technicians how to decommission, e.g. decontaminate and erase patient data
• Include disassembly and disposal of equipment in the tender specifications, consider if that is acceptable for the owner (the hospital/MoH might see a value
– auction to scrap buyers. Try to convince that cleaning up is a more suitable solution than keeping a junkyard)

Assumptions

• Data is accessible and of adequate quality to demonstrate progress, understand successes and challenges
• Staff understand the importance of data collection, management, and analysis
• Staff are willing to undertake monitoring and evaluation tasks
• Staff reflect on findings from the data to review practices and implement change where it's needed
• There is resource to transform data into information that can be used to engage with stakeholders
• There is an appetite to engage with stakeholders with findings from institution data
• The institution fosters a culture of learning

Mitigations:

• Include exploration and discussion of data accessibility in the planning phase of the project. Where data is missing, establish a means to gather the data or agree proxy measures.
• Gain consensus for data collection tools, especially if introducing a new tool and wherever possible, use existing data collection systems/tools
• Decide on what data is actually needed, and limit collection to that
• Include training on data collection, management and analysis in the project plan. Seek out individuals willing to champion the importance of data
• Plan for regular project meetings that include data review and action components
• Discuss who your stakeholders are, what they want to know about the project, and how best to provide them
with this information e.g. in a project meeting, a report, a poster, etc For more information on evaluation and learning, THET has tools and guidelines for health partnerships to assist them with

Monitoring and evaluation.

Decontamination entails a combination of processes used with the intention to make a device safer for handling by staff and for further use

The effective decontamination of reusable devices is essential in reducing the risk of transmission of infectious agents. This guidance also needs to be applied to demonstration units as these typically move freely between clinical areas and users

1. Safe disposal
http://www.southernhealth.nhs.uk/_resources/assets/inline/full/0/81710.pdf

2. www.thet.org/health-partnership

Self-Check -2	Multiple choice

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. The Procurement team is responsible for

A. Contacting companies that specialize in auctions and disposal,
B. negotiating the sale or disposal arrangements
C. processing the sale
D. all

2. Disposal channels are available for when equipment reaches the end of its life

A. true B. false

Note: **Satisfactory rating – 4 points** **Unsatisfactory - below 2 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	**INFORMING END USERS ABOUT THE EQUIPMENT TO BE DISMANTLED**

3.1 introduction

When user or service engineer or technician identifies that equipment is no longer safe or meets any of the following criteria he or she notifies health facility management, utilizing the notification form

Unserviceable: damaged beyond economical repair, damaged by contamination, absence of manufacturer/supplier technical support, or non-availability of spare parts or consumables

Obsolete: passed its life span, clinically or technically obsolete, or changes in local policies for device use

Unsafe: does not comply with safety requirements from the manufacturer

Ineffective: unable to provide accurate results

Costly: not economical to, use

Surplus: without a useful purpose for a health facility, but may be transferred or Donated

1. DECOMMISSIONING_AND_DISPOSING_HEALTHCARE_EQUIPMENT
http://moh.gov.rw/fileadmin/templates/Guidelines_Protocols/GUIDELINES_FOR_DECOMMISSIONING_AND_DISPOSING_HEALTHCARE_EQUIPMENT_IN_rwanda.pdf

Self-Check -3	Matching

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

A

1. Unserviceable
2. Obsolete
3. Unsafe
4. Ineffective
5. Surplus

B

A. without a useful purpose for a health facility, but may be transferred /donated

B. unable to provide accurate results

C. does not comply with safety requirements from the manufacturer

D. passed its life span, clinically or technically, or changes in local policies for device use

E. damaged beyond economical repair F

Note: **Satisfactory rating 10 points** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Instruction Sheet	LG30: PLAN TO DISMANTLE AND DISPOSE

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Fixing dismantling schedule and communicate with end users
- Decontaminating equipment

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Fix dismantle schedule and communicate with end users
- Decontaminate equipment

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, sheet 3
4. Accomplish the “Self-check 1, Self-check t 2, self-check 3” **in page -17, 19, and 25** respectively.

Information Sheet-1	Preparing Store house for dismantled equipment

1.1 Warehouse manager

- Receive pharmaceutical shipments in clean receiving bay as per receiving SOP (SOP No…..) And check label such as Name, strength, batch number, expiry date according to supplier dispatch document (packing list, sales invoice etc).
  - Store products on clean, undamaged pallets and according to product specification.
  - Maintain adequate space between the rows of stored products for cleaning, monitoring and inspection.
  - Ensure safe and appropriate storage of pharmaceutical products.
  - Properly handle and store NPS drugs in compliance with international conventions, and national laws and regulations.
  - Store separately highly toxic and radioactive materials, and other hazardous, sensitive and/or dangerous materials and pharmaceutical products in dedicated area that is subject to appropriate additional safety and security measures.
  - Follow appropriate stock rotation to ensure that the oldest stock sold first within its shelf life and moved to the front of the picking face and the new stock put to the back.
  - Store recalled and return products according in a dedicated area under key and lock and clearly labelled.
  - Periodically segregate and records damaged and expired products.
  - Ensure cleanliness of warehouse, monitor as per cleaning schedule and records are maintained
  - Control and monitor room temperature and relative humidity using calibrated thermo hygrometer and records are maintained as per the temperature and RH log sheet.
  - Check the condition of newly arrived cold box that contain the product.
  - Ensure safe and appropriate storage of cold chain pharmaceutical products.
  - Check and ensure cold chain products are not placed directly against the refrigerator side or back wall or near the cooling plate.
  - Maintained sufficient space around the cold chain products for air to circulate.
  - Check the expiry date of the cold-chain products on a regular basis.

http://www.fmhaca.gov.et/wp-content/uploads/2019/03/Standard-operating-procedures-for-pharmaceuticals-good-distribution-and-storage-practices.pdf

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Self-Check -1	True /false

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page

1. Checking the expiry date of the cold-chain products on a regular not necessary before disposal.
2. Radioactive based equipment and other equipment should store separately
3. Maintain adequate space between the rows of stored products for cleaning, monitoring and inspection is unnecessary to implement disposal

Note: **Satisfactory rating 6 points** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-2	**Fix dismantling schedule and communicate with end users**

2.1 informing end user

Decisions about necessary staff Data of equipment present in inventory gives the staff an idea about equipment and determines the skills of staff required for maintaining the workflow of disposal. There are many types of medical equipment with different technical specifications, functions and requirements. Depending on the complexity of the medical equipment, knowledge about equipment and skills of staff, a manager assigns the staff for handling the issues that particular equipment. Clinical staff is also responsible for handling the equipment with care, operating properly, cleaning, disinfecting, shifting (if required) and inform biomedical engineers for service issues. Clinical staff also plays an important role in inventory management by limiting resource settings.

All medical equipment has a particular lifetime after which they need replacement or disposal. History of service of medical equipment is available in inventory if equipment goes beyond repair, out of service or missing etc. The trends that are available on inventory can favor the biomedical engineers to determine the lifespan of medical equipment and its cost effectiveness to let the equipment stay in-service, efficiently. Such type of data available in inventory can help the engineers to generate the policies for disposing or replacing equipment's. Similarly, budgets can also be formed to plan the purchase of new equipment

Self-Check -2	Multiple choice

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

A. Clinical staff is responsible for C. operating properly

B. cleaning D. disinfecting

1. Tools used to determine equipment disposal is:

A. inventory B. Equipment user C. Specification D. all

2. Which is correct?

A. All medical equipment has a fixed lifetime

B. History of service of medical equipment is available in inventory

C only Clinical staff is also responsible for handling equipment

D. none

Note: **Satisfactory rating - 6 points** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-3	DECONTAMINATING EQUIPMENT

3.1 Decontamination

A process which removes or destroys contamination so that infectious agents or other contaminants cannot reach a susceptible site in sufficient quantities to initiate infection or any other harmful response. Differing levels of decontamination are used depending on the device and its intended use. Medical devices must always be decontaminated before reuse, relocation, sale, donation or disposal. Decontamination of the medical device must be in accordance with the manufacturer's instructions as outlined in the Trust Decontamination of Medical Devices Policy (SH CP 100) and other associated Trust policies. All medical devises being reused, relocated, sold, donated or disposed must be accompanied by a decontamination certificate.

Effective decontamination of medical devices will be carried out to ensure that the device is:

- Safe for further use
- Safe for members of staff to handle
- Safe for use on the patient
- Safe for disposal

3.2Cleaning

Instruments should be cleaned as soon as possible after use in an appropriate facility. This may rarely be undertaken within the clinical setting although it should be carried out in the HSDU.
Keeping instruments moist is a requirement, where there is any significant delay prior to cleaning. Cleaning must be carried out with the most appropriate technique in accordance with the manufacturer's instructions. Some medical devices may require dismantling to achieve effective decontamination and if necessary training from the manufacturer should be arranged. Cleaning is the most important element of the decontamination cycle. Poor cleaning will result in the presence of contaminated material remaining on the instruments and affect the quality of the disinfection and sterilization process.

Wherever cleaning is carried out, staff should be appropriately trained, and wear appropriate personal protective clothing. Cleaning can be separated into mechanical processes using an automated washer-disinfector or manual processes. An automated cleaning system is preferred as this provides a validated repeatable process. Ultrasonic baths can be used as a pre-cleaning process. Where automated cleaning processes are undertaken,

Process mapping system used should be ‘backed up’ on the appropriate X Drive. This should be audited regularly e.g. monthly to gain assurance of tracking and traceability.

3.2 MANUAL CLEANING

Manual cleaning of devices should be restricted to those items deemed incompatible with automated processes. Where manual cleaning is undertaken staff must receive training and be assessed to ensure they are competent. A written procedure that conforms to the manufacturers’ instructions and national requirements must be available. Details of manual cleaning should be recorded as part of the decontamination process for that particular reusable medical
device. Non-abrasive implements should be used to prevent damage. Devices with lumens/annulated or small holes should be cleaned with designated single use cleaning brushes of appropriate diameter where manual cleaning is unavoidable. Particular attention should be paid to the following:

- Where manual cleaning is carried out, it should be undertaken in an appropriate area, which is separate to the sink provided for hand washing and segregated from the patient area.
- Staff are to be trained in manual washing techniques.
- Staff are to be immunized against Hepatitis B and fit to work in such an environment.
- Appropriate personal protective equipment is to be issued.
- There are to be procedures for monitoring the adequacy of cleaning and rinsing.
- Manual washing procedures are to be recorded.
- Detergents are to be used in accordance with Material Safety Data Sheets and COSHH assessments.

3.2.2 Automated cleaning

automated processes provide a validated and repeatable cleaning process. Large washer-disinfectors used for decontamination in facilities such as HSDUs should be purchased using a formal technical specification as accepted by NHS Wales Shared Services Partnership. All washer disinfectors must be capable of being
validate

3.2.3 Ultrasonic cleaning – pre cleaning process

Where ultrasonic pre cleaning is used, the equipment manufacturer’s operating instructions must be followed and staff given adequate training in the use of the machine. Ultrasonic cleaning should be used only if recommended by the instrument/device manufacturer. Ultrasonic action is generated by transducers that agitate the water by creating bubbles. The bubbles implode and dislodge dirt from the surface and joints of surgical instruments. Ultrasonic cleaners help to clean devices with joints or multiple components that are difficult to clean manually. Ultrasonic cleaners are not recommended for cleaning certain items in particular rubber products which will absorb the
ultrasonic waves and reduce the efficacy of the cleaning process.

Disinfection

Disinfection by heat or chemicals will destroy many microorganisms but not necessarily

bacterial spores. Chemical disinfection does not necessarily kill all micro-organisms present but reduces them to a level not harmful to health when the item is handled or reused. Disinfection by heat (thermal disinfection) is
preferred and chemicals should only be used if heat treatment is impractical or will cause damage to the equipment. Some disinfectants, if used under strictly controlled conditions, may be considered sterilants, although this process may be more accurately described as **high-level disinfection**. Chemical disinfectants may not work properly when they are: used on dirty objects; not freshly made up; made up to the wrong concentration, not stored correctly or mixed with chemicals.

Inspection

Inspection is an essential part of the decontamination process. Adequate lighting must be available to aid visual checking of the medical devices for cleanliness following the washing process. Any signs of inadequate cleaning must be reported and the medical device rejected, documented and repeat cleaning carried
Quality assurance methods should be adopted to assist in this process; eg, magnification use and ATP. Medical devices should also be checked to ensure they are functioning correctly, in good condition and fit for further use.

Packaging

Reusable medical devices that are processed in the HSDU steam sterilizers (autoclaves) can be packaged before sterilization. The sterilizers within the HSDU are known as porous load sterilizers because moist heat will penetrate and sterilize the packaged instruments. The wrapped medical devices remain sterile when they are removed from the autoclave until the pack is opened or damaged. Packaging materials must conform to the relevant BS EN standards and be compatible with steam sterilization process.
Before opening a HSDU processed pack it is important to check that:

- It is within the expiry date
- there is a label indicating the date of sterilization
- the indicator tapes (or arrows on see through packs) have changed color indicating that the pack has been through a sterilization process.
- There is no damage to the integrity of the pack or evidence of water contamination such as condensation or dampness. Sets of theatre instruments are packed in trays with a flexible wrapping material, in reusable containers or in orientation trays.

These will be decontaminated after use by HSDU when returned. Flexible packaging materials should be purchased that comply with the relevant British/European Standards. Heat sealing equipment should be maintained,

Sterilization

Sterilization is a process used to render an object free from all micro-organisms including all viruses and bacterial spores. Where sterilization is necessary, the method of choice in a healthcare setting is steam sterilization. Sterilization processes have to be validated prior to use, regularly maintained and their
performance routinely monitored. For reusable medical devices that are heat sensitive and unable to tolerate high temperatures an expensive alternative may be sterilization with

Ethylene Oxide. However, this can be time consuming as the item will need to be sent external to the organization.

Selection of the Decontamination Method

Cleaning must always take place before any of the other decontamination processes, as the presence of physical soiling prevents effective disinfection or sterilization. The level of decontamination required for an item is dependent upon the anticipated use of that item.

High-risk

High-risk items include all reusable medical devices that are in close contact with a break in the patient's skin or mucous membranes, and devices that enter a sterile body area of the patient. For reusable high-risk items, the appropriate means of decontamination is cleaning followed by sterilization. All high-risk items must be sterile at the point of use. Examples of high-risk items include surgical instruments, laparoscopes, syringes, needles and catheters. Decontamination level required: Cleaning and sterilization.

Medium-risk

Medium-risk items are medical devices used in contact with mucous membranes, items contaminated with particularly virulent or readily transmissible organisms, and items that you intend to use on an immunocompromised patient. In certain circumstances it may be preferable to transfer the items to the "High Risk" category. Disinfection by heat (known as thermal disinfection) is preferred where this is possible. For reusable medium-risk items, the appropriate means of decontamination is cleaning followed by disinfection (or sterilization). Examples of medium-risk items include respiratory and anesthetic equipment, gastrointestinal endoscopes and thermometers.

Decontamination level required: Cleaning and disinfection.

Low risk items

Low-risk items are medical devices used in contact with a patient's healthy intact skin, and equipment that does not have close contact with the patient. For these items, cleaning is sufficient. However, disinfection may be necessary if there is a known infection risk. Examples of low-risk items include tourniquets, washing bowls, bedding, baths, furniture, toilet seats, floors, walls and sinks.

Decontamination level required: Cleaning and drying is usually adequate,

MINIMAL RISK

Minimal risk items are those items that are not in contact with the patient or his or her immediate surroundings. These items are neither unlikely to be contaminated with significant numbers of potentially pathogenic micro-organisms or the likelihood of such micro-organisms transferring to patients and causing infection is unlikely. Examples of minimal risk items include walls, floors, ceilings and drains.

Decontamination level required: Cleaning and drying is usually adequate, but disinfect if known infection risk.

Decontamination of Medical Devices

http://www.southernhealth.nhs.uk/_resources/assets/inline/full/0/42856.pdf

Self-Check -3	Multiple choice

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Effective decontamination of medical devices will be carried out to ensure that the device is:

A. Safe for further use

B. Safe for members of staff to handle

C. Safe for use on the patient

D. All

2. Cleaning must always take place after any of the other decontamination processes

A. false B. true

3. ---------- are those items that are not in contact with the patient

A. Minimal Risk Items **B.** High risk items

C. Low risk items **D.** none risk

Note: **Satisfactory rating – 6 points** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Instruction Sheet	LG31: ORGANIZING RESOURCES NEEDED

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Organizing work force and work assignments
- Insuring financial resources
- Preparing necessary materials, tools and equipment

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Organize work force and work assignments
- Insure financial resources
- Prepare necessary materials, tools and equipment

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3,
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 **in page -32, 34, 45 respectively**.

Information Sheet-1	Organizing work force and work assignments

1.1 Job Orders

Definition:

Job order is a documented task specifications that an individual is required to complete the task at a given unit of time.

Job orders are very much and highly recommended for each and every skilled worker in his/her work environment particularly in almost all industries. In which, most of these industries required it for the purpose of written report or a documented report of the task being perform.

There are several kinds of job orders as well as formats and required information that may vary depending upon the nature of the industry or a service centre.

JOB ORDER CONTENTS

Job Order Control Number is basically non-identical number usually located at the upper left or right corner of the sheet usually written in different colour.

Name of Client This field contains the clients name usually divided in three (3) parts, the family name, first/given name and the middle initial. But some job orders may only have one (1) single field that requires the complete name of the client.

Contact Number requires the client contact number either a cellular phone number or a landline telephone

Client's Address requires the current address of the client

Job Description represents the overall overview of the task to be perform

Date and Time The date when the job order is requested of delivered

Date Finished The date when the task is completed.

Signature Signatures are areas of the job order form that requires the signature of the technician and the client that serves as the specimen of agreement between the two parties.

Preparing Job Orders

For most service centres, preparation of job before the start of every task is required. Basically, preparing job orders are just filling out the information required. In addition, a

short conversation should take place between the owner and the one who prepares the job order.

Most of the questions that should be ask:

1. When was this equipment started to show irregular operation or malfunctioning.
2. Events took place before the fault happened
3. Repair history of the equipment if any.

These questions are most likely to be ask, since this information could lead some conclusions and future awareness.

1.2 Interpreting Job Orders

For most of the industry they provide job orders to their skilled workers to have a concrete formal request of the task to be done. Before each task to be done the worker should be able to secure the job order, "**no job order means NO task to be done**". Upon receiving the job order make sure that all required fields are correctly and clearly written.

First, check date and Job Order control number for its validity. Next, is to check the client's name, address and contact number, this information is highly required, which means that if this required information are missing, the worker should refer to the immediate supervisor.

The most important part of the job order is the task description in which each worker should be able to understand and be able to attain the task requirement within the specific period of time which is also can be seen under the date and time of completion.

As a worker, time consciousness is very important to be able to attain the required span of time

It is recognized that the introduction of new policy/procedures may have an impact on service delivery and therefore it will be essential to review requirements as changes are introduced to ensure appropriate resources. Workforce planning will be essential to this, i.e. assessing current and future requirements. Consult the manufacturer for the best methods of waste disposal. They should be able to provide details of the current techniques and processes applicable to their products. The Waste Electrical and Electronic Equipment Regulations [26] primarily impose duties on 'producers', i.e. manufacturers and importers.

Work Request/Job Form

Note: this is a triplicate form – 1st sheet is the User File copy
2nd sheet is the Maintenance Progress File copy
3rd sheet is the Equipment/Section History File copy

For User Department Only

Facility: _____ Date: _____

Location: _____

Person making request/In-charge (Full name, Position, Contact): _____

_____

Equipment task: _____ Inventory no. _____

Fault description: _____

_____

Equipment/Work order received by: _____ Date: _____

Equipment returned to (Full name): _____ Date: _____

For HTM Team Only

Allocated to: _____ Section: _____

Type of service: _____ PPM _____ Repair _____

Serial no. _____

Work undertaken: _____

_____

_____

Reasons for failure: wear and tear: _____ mains unstable: _____ dirt: _____

contamination (water, oil): _____ user error/handling: _____ faulty installation: _____

other (specify): _____

Materials used: _____ Quantity/Cost: _____

_____

_____

Test results: _____

Work time: _____ Travel time: _____

_____

Why not completed: _____

_____

Completed by: _____

Maintainer's signature: _____ Date: _____

Self-Check -1	Matching

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Column A

_____1. Job Order Control Number
_____2. Name of Client
_____3. Contact Number
_____4. Client's Address
_____5. Job Description
_____6. Date and Time
_____7. Date Finished
_____8. Signature

Column B

a. The date when the task is completed.
b. This field contains the clients name usually divided in three (3) parts, the family name, first/given name and the middle initial. But some job orders may only have one (1) single field that requires the complete name of the client.
c. is basically non-identical number usually located at the upper left or right corner of the sheet usually written in different colour.
d. requires the current address of the client
e. represents the overall overview of the task to be perform
f. requires the client contact number either a cellular phone number or a landline telephone
g. Signatures are areas of the job order form that requires the signature of the technician and the client that serves as the specimen of agreement between the two parties.
h. The date when the job order is requested of delivered

Note: **Satisfactory rating – 8 points** **Unsatisfactory - below 4 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-2	Insuring financial resources

2.1 Financial resource

Directorate/Department budgets will be used to best effect to ensure that requirements in respect of decontamination are met, whether these are as a result of national or local initiatives.

Where additional resources are required a business case will be submitted to the appropriate committee for consideration and approval to ensure that any deficits in funding are addressed. Responsibility for developing business cases rests with the relevant Directorate/Department Manager.

National and local initiatives may require additional resources to support implementation. Where there are designated funds available to support such initiatives, and funds can be acquired via a bidding process either to Clinical Commissioning Groups/Department of Health, the Trust will submit bids as appropriate to secure these funds.

Where resources are limited, decisions on investment will be based on sound evidence and be able to demonstrate efficiency and effectiveness can be achieved. Prioritization of investments will be agreed through the respective committee i.e. Decontamination Working

Group, Infection Prevention and Control Committee, Capital Management Group, and their recommendations referred to the Trust's Executive Team for consideration.

Self-Check -2	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are Trust's Executive Team?

   A. Commissioning Groups B. Capital Management Group

   C.HTM working group D. all

2. Responsibility for developing business cases rests with the relevant

   A. Commissioning Groups B. Capital Management Group

   C.HTM working group D. Department Manager

Note: **Satisfactory rating – 4 points** **Unsatisfactory - below 2 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	Preparing necessary materials, tools and equipment

3.1 OHS guidelines and PPE

Personal Protective Equipment (PPE) Selection

- **The Personal Protective Equipment (PPE)** Selection Policy Guideline provides guidance in the identification of personal protective equipment and examples of personal protective equipment that may be available, selected and used.
- The Work Health and Safety Act (SA) 2012, its regulation and associated codes of practice place a duty of care on all workers to take reasonable care to protect their own health and safety while at work. This may include the need for using personal protective equipment (PPE) and clothing when undertaking a hazardous task.

Principles PPE

Personal Protective Equipment is any device or clothing worn by a worker to control the level of risk that cannot be controlled or eliminated by providing protection / shield between the hazard and the worker when exposed to:

- dangerous goods, hazardous chemicals, infectious substances including blood and bodily fluids(BBF)
- dust, fumes or particles
- radiation (ionizing and non-ionizing), ultraviolet or solar radiation
- noise
- moving objects such as vehicles, trolleys and forklifts
- flying objects when using machinery with moving parts
- Environmental factors , for example, high and low temperature

- PPE must be used for additional protection when other risk control measures do not provide sufficient exposure control.
- PPE is one of the least effective methods of controlling risk to work health and safety , as per the hierarchy of control, and must be used :
- When there aAre no other practical risk control measures available or when identified through a dynamic risk assessment, for example:

  - **Gloves** - for all contact with blood and or body fluids.
  - **Double glove** - application in operating theatres and procedural areas.
  - **Eye protection**- use of a face shield when undertaking any procedure where a splash of fluid may occur
  - **Gowns** - use when undertaking any procedure where a splash of blood or body fluid may occur

- **Respiratory Masks:** A correctly fitted P2 (N95) respiratory mask must be used for all known or suspected 'airborne' respiratory diseases such as Tuberculosis, Measles, Chicken Pox and during aerosol generating procedures such as bronchoscopy and pulmonary function testing.
- **Surgical Masks** must be worn for all patients exhibiting signs and symptoms of confirmed or suspected respiratory disease (droplet) such as: Influenza, Pertussis, Meningococcal infection and Respiratory Syncytial virus (RSV).

The use of PPE and Infection Prevention

The use of PPE must be routine practice for all workers when there is a risk of exposure to blood (including dried blood), all other body substances, secretions and excretion's (excluding sweat), regardless of whether they contain visible blood i.e. standard precautions.

The Work Health and Safety Regulations, 2012 (SA) states that it is the responsibility of each

Healthcare worker (HCW) to be familiar with and comply with these protective measures at all times when there is an identified risk of exposure to BBF.

PPE in this context refers to a variety of barriers, used alone or in combination, to reduce the risk of acquiring and transmitting potentially infectious microorganisms by:

- protecting skin, eyes, mouth, respiratory system and clothing of staff from potentially infectious excretions and secretions
- Preventing contamination of skin and clothing by microorganisms present in the environment.
- Selection of PPE should be based on the risk of transmission of potentially infectious microorganisms to the healthcare worker from:

Exposure to blood and body substances during an activity (standard precautions) contamination from infectious microorganisms via the contact, droplet or airborne route. (Transmission-based precautions) When a disease agent is unknown, a symptom-based approach will reduce the risk of transmission to the HCW and to other patients. For example, if a patient presents with vomiting or diarrhea or respiratory symptoms (coughing, sneezing and fever) then the appropriate precautions should be implemented immediately, rather than waiting for a definitive diagnosis.

- Routine use of PPE, especially gloves, should not be encouraged in a patient care environment if there is no risk of a BBF exposure.
- PPE items used as part of standard and transmission-based precautions include: aprons, gowns gloves, respiratory, face and eye protection.

Further information regarding the use of standard and transmission based precautions can be Detail

Identifying the need for PPE

The identification of the need for Personal Protective Equipment (PPE) is determined through the following process:

- Identification of the hazard / task /activity

- Risk Assessment of hazard / task /activity
- Development of risk control measures through the Hierarchy of Risk Control (Elimination,
- Substitution, Engineering Controls, Administrative Controls, PPE)
- Identification of PPE required to minimize / reduce risk Selection, purchase and accessibility of PPE

Training in the use of PPE Inspection, Cleaning and Maintenance of PPE.

Where PPE is in use, routine inspection, cleaning and maintenance is required.

- The wearer is required to inspect PPE prior to use, for signs of penetration or other damage due to impact, rough treatment or unauthorized alterations which may reduce the degree of safety originally provided.
- Regularly check respiratory devices (every time before and after use), to ensure that filters / cartridges or air supply are in place and replaced as necessary. This is to ensure that the equipment is ready for use at all times.
- Clean/decontaminate all re-useable PPE in accordance with the manufactures instructions. However, in the absence of such instruction the item can be washed thoroughly in detergent and warm water using a soft cloth, then rinsed and dried.
- Avoid using any cleaning agents that are likely to scratch surfaces, particularly the lenses of eye protection equipment.
- Store PPE in clean, sealed containers, such as plastic tubs with lids. This prevents continual exposure to air or other particulates or other environmental factors, for example, prolonged exposure to direct sunlight that may compromise the effectiveness of the equipment (including filter / cartridges).
- Ensure that the PPE is kept clean in between usage.
- Remove damaged PPE from use, and take to the supervisor to arrange for replacement equipment.

Details of Types of Personal Protective Equipment

- Hand Protection (gloves)
- Eye Protection (goggles, safety glasses, face shields)
- Face Protection and infection prevention (eye wear, face shield, surgical masks)
- Hearing Protection (ear plugs, ear muffs)
- Respiratory Protection (respirators, face masks, cartridge filters)
- Surgical Masks
- Particulate Filters
- Disposal N95 or P2 Masks
- Respiratory Protection with Powered Air Purified Respirator (PAPR)
- Laser Safety
- Skin Integrity and Protection (sunscreen, alcohol gel)
- Protective Clothing (high visibility garments, thermal wear, overalls, aprons, lead aprons, reflective vests, impervious long-sleeve gowns)

- Footwear (enclosed shoes, safety boots)
- Head Protection (hard hats, helmets, sun hats, bike helmet)
- Falls Protection (safety harness)

Hand Protection

Workers must be educated in the correct manner to clean hands and preserve hand skin integrity.

Gloves must be worn for protection from hazards such as:

- ✓ Infectious agents
- ✓ Abrasion
- ✓ Chemicals
- ✓ Sharp Objects
- ✓ Radiation
- ✓ Hot or Cold Materials

The type of glove will vary, defendant on the nature of the task and a range should be available to accommodate individual worker needs. There are some conditions where gloves are not permitted (e.g. some machinery operation)

For gloves to be used with chemicals consult the relevant chemical's Safety Data Sheet (SDS) for advice on the type of glove to use

- Hands must be cleaned with soap and water or alcohol gel before and after glove use
- Moisturizing lotion should be made available and should be applied as required
- Consideration should be given to the need for a glove lining or inner glove or moisture /barrier cream where prolonged use of waterproof gloves is envisaged.

Note: Some workers may develop an allergic reaction to latex gloves. Recommendations to avoid reactions include:

- The provision of reduced protein and powder free gloves
- Ensure good housekeeping to reduce latex build up
- Advise workers to wash hands thoroughly after removing latex gloves.

Examples of hand protection

Fig2. Examples are provided for illustration only

Gloves and infection prevention

- Gloves can protect both patients and HCW from exposure to potentially infectious microorganisms that may be carried on the hands. As part of standard precautions they are used to prevent contamination of HCW hands when:

- anticipating direct contact with blood or body substances, mucous membranes, non-intact skin and other potentially infectious material
- handling or touching visibly soiled or potentially contaminated patient-care equipment
- there is potential exposure to toxic drugs during administration
- there is exposure to chemicals during the cleaning process

Key considerations in glove selection will include potential exposure to BBF and the potential contact with non-intact skin, mucous membranes or sterile sites.

- Types of materials:

Non-sterile single use medical gloves are available in a variety of materials and consist of the
following:

- natural rubber latex (NRL)
- NRL alternative - synthetic alternative to latex e.g. nitrile
- Vinyl gloves - do not provide optimal protection against BBF and are not recommended for patient care.
- Polythene gloves - are not suitable for clinical use and are generally used for food handling, preparation and serving.
- Single use disposable sterile gloves are worn when there is contact with sterile instruments or normally sterile parts of the body.
- Reusable utility gloves are indicated for non-patient care activities such as cleaning of contaminated equipment or surfaces, general cleaning duties and instrument cleaning in sterilizing services departments.

Recommendations:

- Gloves must be worn as a single-use item for each invasive procedure, contact with non-intact skin, mucous membranes or sterile site and if the activity has

been assessed as being an exposure risk to blood, body substances, secretions and excretions.

- Gloves must be removed and hand hygiene performed before leaving a patient's room or area.
- Single use disposable gloves must be changed:
- between episodes of care for different patients
- between each episode of clinical care on the same patient to prevent cross-contamination of body sites e.g. mouth care followed by wound care when the integrity of the glove has been compromised i.e. ripped , torn
- Single use disposable sterile gloves must be worn during: contact with sterile sites procedures requiring aseptic technique where key parts and / or sites are touched directly (i.e. when a non-touch technique cannot be achieved)

Glove risk assessment.

Removing and disposing of gloves

- When removing gloves, care should be taken not to contaminate the hands. After gloves have been removed hand hygiene is to be performed as per the SA Health Hand Hygiene Guideline.
- Single use gloves must not be washed or alcohol-based hand rub applied for subsequent reuse.
- Gloves should be disposed of and then discarded into a designated container for waste to contain the contamination.

Eye Protection

- Goggles and safety glasses prevent injury to eyes. Face shields and visors prevent injury to eyes, nose and mouth from dust, flying particles, chemicals/substances, radiation (visible and invisible) and potentially infectious blood or body fluids
- Workers must wear protective eyewear for any procedure where they may be exposed to these situations, or where stated in the safe work procedure
- Eye protection must comply with relevant standards, and provide the level of protection required e.g. arc welding / cutting, infection control procedures
- Normal prescription glasses DO NOT provide adequate protection. Workers requiring reading
- Glasses should seek additional eye protection equipment which does not interfere with the worker's vision, yet provides an appropriate barrier to hazards.

Personnel who wear contact lenses, and work with chemical substances, should be aware of the following potential hazards:

- Contact lenses may adhere to the eye
- Contact lenses may absorb chemicals and concentrate them on the surface of the eye
- Contact lenses may interfere with emergency flushing procedures by trapping fumes or solids

- If a worker is unconscious following an injury, rescue personnel may be unaware the contact lenses are in place.
- Refer to the Chemical SDS for safety information regarding wearing of contact lenses.

Examples of eye protection:



Face Protection and Infection Prevention

The mucous membranes of the nose, mouth and eyes and non-intact skin are portals of entry for infectious microorganisms. Face and eye protection reduces the risk of exposure of healthcare workers to splashes or sprays of blood, body substances, secretions or excretions.

Equipment includes:

- Protective eyewear – are generally fog resistant goggles that can be single use or reusable and provide protection from splashes, sprays from multiple angles. These are required in addition to personal glasses and contact lenses as personal eyewear are not considered adequate eye protection
- Face shield – single use or reusable face shields may be used in addition to surgical masks, as an alternative to protective eyewear. A face shield can provide protection to other parts of the face as well as the eyes. Face shields extending from chin to crown provide better face and eye protection from splashes and sprays
- Surgical masks – are loose fitting, single use items that cover the nose and mouth.

They are used to keep splashes or sprays from reaching the mouth and nose of the person wearing them. They also provide some protection from exposure to respiratory secretions. Surgical masks should be of a fluid resistant material when used for patient care. Considerations when using a surgical mask must include:

- changing the mask when it becomes soiled or wet
- never reapplying when it has been removed
- not left dangling around the neck
- avoid touching the front of the mask while wearing it
- safe removal i.e. using ear loops or ties to remove, avoiding touching the front of the mask
- hand hygiene before and after removal

P2 / N95 respirators (masks) - are medical devices designed to protect the wearer from infectious microorganisms transmitted via the airborne route or during aerosol generating procedures.

Removal and safe disposal of face and eye protection

The front of a mask, protective eyewear or face shield is considered to be contaminated.

Removal of a face shield, protective eyewear and surgical mask can be safely performed after gloves have been removed and hand hygiene has been performed.

Single-use face and eye protection should be disposed of by discarding into a designated container for waste to contain the contamination. Re-usable eyewear or face shields require cleaning with detergent and water and / or disinfectant immediately after use.

Hearing Protection

In areas of identified high noise hazard (e.g. workshops) ensure that 'hearing protection must be worn' signs are in place and are complied with Types of hearing protection include: a variety of disposal and re-useable ear plugs, ear muffs or ear canal caps. The selection made will be based on the outcome of a risk assessment in relation

Screwdrivers

Screw driver

Is a tool designed to loosen or tighten screws. Screwdrivers are available in many different shapes, sizes, and materials.

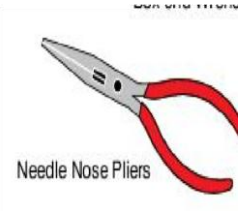
Screwdrivers are used for driving or removing screws or with slotted, or special heads.

Slot-Head or standard Screw driver

Is designed for use on screws with slotted heads. This type of screw is often used on the terminals of switches, receptacles, and lamp holders.

This has caused many types of pliers to be developed.

Needle-nose pliers Forming loops on small conductors cutting and stripping small conductors



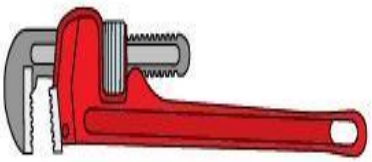
Diagonal pliers (dykes) Cutting small conductors

Cutting conductors in limited space

Wrenches are made from steel alloy to prevent breakage.
There are many different types of wrenches. Each type has its own use. By using the proper wrench for the task to be done, you will not break the wrench, damage the equipment, or cause personal injury.

HEX KEY WRENCH (or ALLEN KEY)

A. Double open end wrench
B. Double boxed end wrench



Pipe Wrench

c. Combination wrench

3.2 Testing device

There are many kinds of instrument used for the measurement of electrical/electronic quantities.

For experimental work in the lab, individual voltmeters to measure voltage, ammeters to measure current, and ohmmeters to measure resistance are sometimes used.

More often, a single multimeter is usually used to accurately measure voltage, current, or resistance

What is a multimeter?

Multimeter is a devise used to measure voltage, resistance and current in electronics & electrical equipment

It is also used to test continuity between 2 points to verify if there is any breaks in circuit or line

There are two types of multimeter Analog & Digital

- Analog has a needle style gauge
- Digital has a LCD display

Soldering gun/iron

The most fundamental skill needed to assemble any electronic project is that of soldering. It takes some practice to make the perfect joint, but like riding a bicycle, once learned is never forgotten! The idea is simple: to join electrical parts together to form an electrical connection, using a molten mixture of lead and tin (solder) with a soldering iron. A large range of soldering irons is available - which one is suitable for you depends on your budget and how serious your interest in electronics is.

Personal Protective Equipment

Personal Protective Equipment Personal Protective Equipment (PPE) plays a key role in ensuring that the workers are protected while carrying out activities that have the potential to create injuries or harm to their body.

A range of personal protective equipment is available in the market which includes

- Safety Helmet for head protection
- Safety nose masks & respirators for protecting against dust, smoke and fumes released during certain work activities
- Safety goggles and related eye wear that ensures the eyes are adequately protected against fast moving small particles and chemical / fluid splashes during work operations
- Safety Ear plug to prevent ears from excessive noises at the workplace

- Safety Aprons to prevent body from particles, chemicals, etc.
- Safety Shoes to prevent the feet from sharp chips and other particles

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1-------is used for all contact with blood and or body fluids.

A. Double glove C. Eye protection
B. Gloves D. Gowns

2. The identification of the need for Personal Protective Equipment (PPE) is determined through the following process:

A. Identification of the hazard / task /activity
B. Risk Assessment of hazard / task /activity
C. Identification of PPE required to minimize / reduce risk
D. All

3. Which of the following is wrong match

A. Safety Helmet for leg protection
B. Safety nose masks & respirators for protecting against dust, smoke and fumes released during certain work activities
C. Safety goggles and related eye wear that ensures the eyes are adequately protected against fast moving small particles and chemical / fluid splashes during work operations
D. Safety Ear plug to prevent ears from excessive noises at the workplace

Note: **Satisfactory rating – 6 points** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

List of reference

1. . http//howstuffworks.com ;
2. https://capturetribe.com/theppa/wp-content/uploads/2019/01/Disposal-of-Stores-Goods-and-Equipment.pdf
3. BASIC ELECTRICAL TOOLS, EQUIPMENT, AND THEIR USES https://www.itc.edu.py/Material%20Inglés%20Técnico.pdf
4. PPE https://osha.washington.edu/sites/default/files/documents/Osh11Unit4.pdf

Instruction Sheet	LG32: DISMANTLING THE EQUIPMENT

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Dismantling equipment following correct procedures and OHS measures
- Marking dismantled parts and label
- Cleaning , checking , and reading parts for packing
- identifying parts for reuse and disposal and pack the reusable items

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Dismantle equipment following correct procedures and OHS measures
- Mark dismantled parts and label
- Clean, check, and ready parts for packing
- Identify parts for reuse and disposal and pack the reusable items

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3, Sheet 4 Accomplish the “Self-check 1, Self-check t 2, Self-check 3 and Self-check 4” **in page -52, 54, 57 and 60** respectively.

Information Sheet-1	Dismantling equipment following correct procedures and OHS measures

1.1 Occupational Health and Safety procedures for a given work area.

Occupational health and safety (OH&S) is the term used to describe the laws and processes that help to protect employees from death, disease and injury while at work.

What is hazard?

The Occupational Health and Safety Regulation 2001 define a hazard as 'anything (including work practices or procedures) that has the potential to harm the health or safety of a person'.

Hazard: is also a situation or thing that has the potential to harm a person.

Hazards at work may include: noisy machinery, a moving forklift, chemicals, electricity, working at heights, a repetitive job, violence at the workplace etc..

Risk: is the possibility that harm (death, injury or illness) might occur when exposed to a hazard.

Hazards can be grouped into five broad areas:

Physical hazard e.g. noise, radiation, light, vibration

Chemical hazard e.g. poisons, dusts

Biological e.g. viruses, bacterial infection, parasites

Mechanical/electrical hazard e.g. trips and falls, tools, electrical equipment (micro or macro shock).

Psychological hazard e.g. fatigue, violence.

Hazards can arise from:

Work environment use of machinery and
substances poor work design
Inappropriate systems and procedures

Risk management

Risk management is a proactive process that helps you responds to change and facilitate continuous improvement in your business.

It should be planned, systematic and cover all reasonably foreseeable hazards and associated risks.

It involves four steps to set out hazards; **identify hazards** – find
out what could cause harm.

Assess risks if necessary – understand the nature of the harm that could be caused by the hazard, how serious the harm could be and the likelihood of it happening.

Control risks – implement the most effective control measure that is reasonably practicable in the circumstances.

Review control measures-to ensure they are working as planned.

Step 1 – How to identify hazard

Identifying hazards in the workplace involves finding things and situations that could potentially cause harm to people.

Hazards generally arise from the following aspects of work and their interaction: physical work environment equipment, materials and substances used work tasks and how they are performed work design.

How to find hazards

Inspect the work place

Consult your workers

Review available information's

Step 2 – How to assess risk

A risk assessment involves considering what could happen if someone is exposed to a hazard and the likelihood of it happening. A risk assessment can help you determine: how severe a risk is whether any existing control measures are effective what action you should take to control the risk how urgently the action needs to be taken

STEP 3 – How to control risks

The most important step in managing risks involves eliminating them so far as is reasonably practicable, or if that is not possible, minimizing the risks so far as is reasonably practicable. The hierarchy of risk control

The ways of controlling risks are ranked from the highest level of protection and reliability to the lowest as shown in Figure below

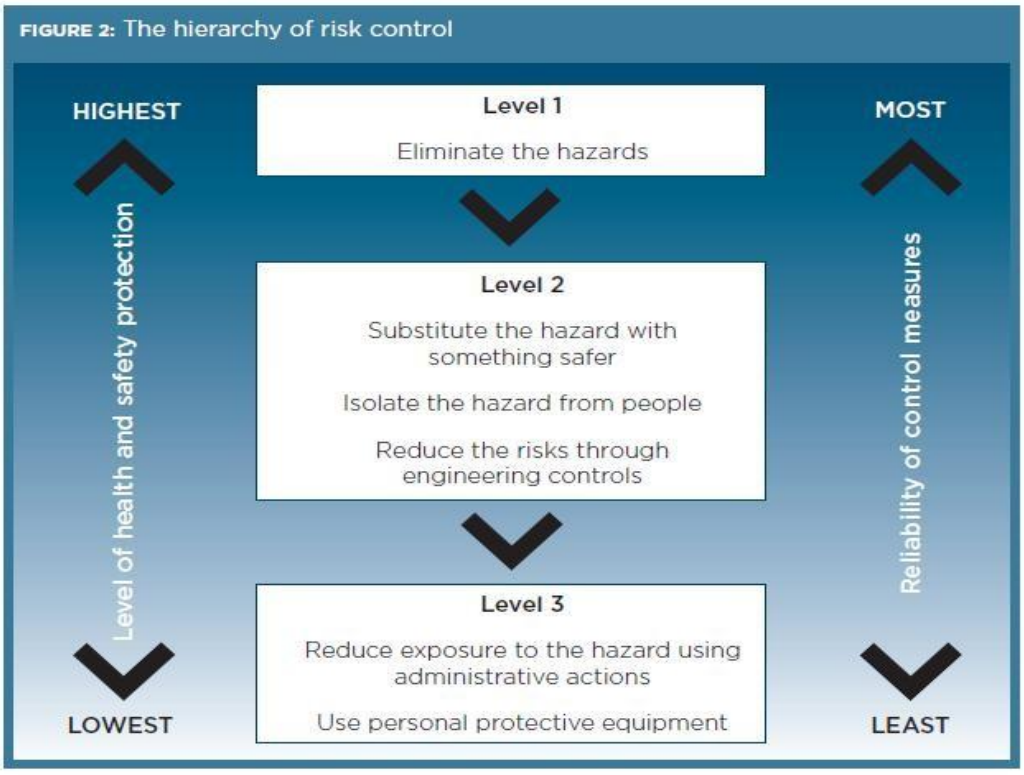


FIGURE 2: The hierarchy of risk control

CODE OF PRACTICE | HOW TO MANAGE WORK HEALTH AND SAFETY RISKS

LEVEL- 1 Control measures

You must always aim to eliminate a hazard, which is the most effective control.

If this is not reasonably practicable, you must minimize the risk by working through the other alternatives in the hierarchy.

The best way to do this is by, firstly, not introducing the hazard into the workplace. For example, you can eliminate the risk of a fall from height by doing the work at ground level.

LEVEL- 2 control measures

If it is not reasonably practicable to eliminate the hazards and associated risks, you should minimize the risks using one or more of the following approaches:

Substitute the hazard with something safer

For instance, replace solvent-based paints with water-based ones.

Isolate the hazard from people

This involves physically separating the source of harm from people by distance or using barriers. For instance, use remote control systems to operate machinery; store chemicals in a fume cabinet. **Use engineering controls**

An engineering control is a control measure that is physical in nature, including a mechanical device or process. For instance, use mechanical devices such as trolleys to move heavy loads; place guards around moving parts of machinery; install residual current devices (electrical safety switches); set work rates on a production line to reduce fatigue.

LEVEL- 3 control measures

These control measures do not control the hazard at the source. They rely on human behavior and supervision, and used on their own, tend to be least effective in minimizing risks. Two approaches to reduce risk in this way are:

Use administrative controls

Administrative controls are work methods or procedures that are designed to minimize exposure to a hazard.

For instance, develop procedures on how to operate machinery safely, limit exposure time to a hazardous task, and use signs to warn people of a hazard.

https://www.wrla.org/sites/wrla_01/files/health_and_safety_manual_sample.pdf

Self-Check -1	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Which of the following is physical hazard.

   A. noise, B. radiation C. vibration D .all

2. How to find hazard?

   A. Inspect the work place

   B. Consult your workers

   C. Review available information

   D. all

3.Hazards can arise from:

A. Work environment use of machinery
B. substances poor work design
C. Inappropriate systems and procedures
D. all

Note: **Satisfactory rating – 6 points** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-2	Marking dismantled parts and label

2.1 Tags and labels

It is good practice to label each piece of medical equipment with a unique identification number. This number will be used by the users to communicate with the medical equipment maintenance department so there is no confusion about which specific piece of equipment is being reported. When doing IPM procedures, a label indicating the date the work was done and the procedure that was performed
should be applied to the equipment for two reasons:

- To communicate with clinicians and others that the device was recently inspected or maintained;
- To identify to IPM technicians which devices have been completed and which are still due for IPM.

When taking power measurements on equipment that have an output, the measurements are recorded on the inspection form but many hospitals also choose to record these readings on a sticker which is placed on the equipment for future reference. Some hospitals use colored inspection stickers to indicate when the device was last inspected in (e.g. yellow – this year, blue – last year, pink – two years ago, etc). This helps readily identify which equipment is next due for inspection.

https://www.fda.gov/files/medical%20devices/published/Labeling---Regulatory-Requirements-for-Medical-Devices-%28FDA-89-4203%29.pdf

Self-Check -2	Multiple choice

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1---------- To identify to IPM technicians which devices have been completed and which are still due

A. Tag C. identification number

B. label D. all

2. ---------- helps readily identify which equipment is next due for inspection.

A. Tag C. identification number

B. label D.D all

Note: **Satisfactory rating – 6 points** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Short Answer Questions

Information Sheet-3	Clean, check, and ready parts for packing

3.1 CARE AND CLEANING

To maximize the life of equipment, it is necessary that equipment users and maintainers know how to look after the equipment and clean it. Users must care for and clean equipment regularly, to a given timetable. It is beneficial to do this because:

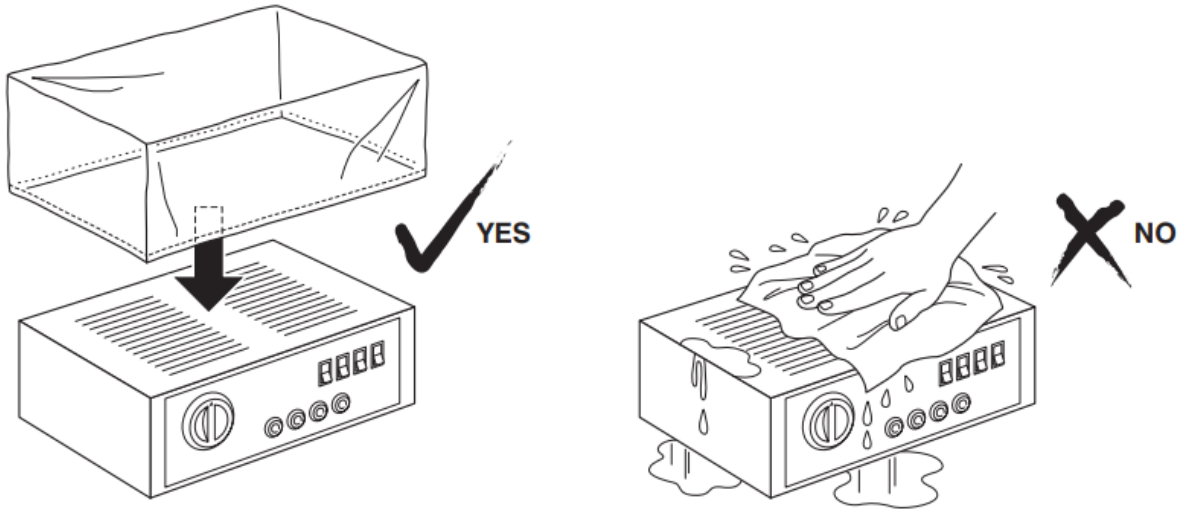
◆ it is easier to see faults (such as damaged suction pump tubing) when the equipment is clean

◆ it prolongs the life of equipment (for example, protecting electronic parts from damage by dust, protecting metal from corrosion by liquids or chemicals, protecting rubber seals from degradation by greases)

◆ it protects the operator and patient from infections (from microscope eyepieces, for example)

◆ it improves the performance of equipment (clean probes for ultrasound, clean seals on fridge doors, etc).

The best information regarding the care and cleaning of equipment is usually contained in the manufacturer's user manual and/or service manual



Common Care and Cleaning Strategies

- Keep all items clean and dry.

- Dust equipment (such as large free-standing items) regularly.
- Where applicable, replace the dust cover at the end of the shift; if there is no dust cover, make one.
- Keep equipment, such as laundry and kitchen equipment, clear of debris such as fluff, food, threads,
  grease, paper waste, etc.
- Switch-off and unplug items when they are not in use, **except** for items which have
- Battery back-up that must keep charging (such as defibrillators), or items which need a continuous supply (refrigerators, etc.).
- When cleaning, never flood the machine with fluid or a dripping wet cloth, use a damp cloth instead.
- Clean with the appropriate chemicals, solutions and materials at the end of the shift (equipment which comes into contact with patients, uses gels, etc.).
- The operator manual will contain guidance on the correct chemicals to use.
- Disinfect equipment such as theatre equipment after each patient. Check the operator manual for guidance on the correct disinfection method
- Unknot tangled leads on ECG recorders, interferential units and the like.
- when moving equipment, unplug the power cord and wind it up starting from the
- Machine end and working to the plug, in order to avoid twists.
- Wipe accessories such as ultrasound probes and reusable electrodes clean of lubricants and fluids.
- Store accessories carefully in appropriate places (pouches, holders, etc.).
  Store small items properly when they are not in use (keep diagnostic sets in their cases, for example).

- Remove batteries when battery-operated items are not in use in order to avoid corrosion (for example, ophthalmoscopes, Doppler heart rate detectors).
- Take apart items that disassemble easily and clean internal parts (for example, unscrew stethoscope earpieces and remove aural wax, detach and clean the valves on ambu bag resuscitators).
- Store lenses, such as microscope objectives and eye pieces, with a desiccator such as silica gel sachets to prevent fungal growths.
  In the case of items that need water to operate, such as water stills and autoclaves, always check that water is present before switching the item on.
- Check that oxygen bottles are free from oil and grease (which can cause explosions).

Self-Check -3	Multiple choice

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Which of the following equipment needs remove their batteries when battery-operated items are not in use in order to avoid corrosion

A. ophthalmoscopes C. pulse oximetry

B. Doppler heart rate detectors D. All

2. The best information regarding the care and cleaning of equipment is usually contained in

A. the manufacturer's user manual and/or C. operator manual

B service manual T D. All

Note: **Satisfactory rating – 6 points** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-4	Identifying parts for reuse and disposal and pack the reusable items

4.1 Re used medical equipment

The Medical Devices Regulations apply to medical devices being sold for the first time. There is no legislation which specifically covers the resale or reuse of medical devices or equipment .Note that devices not deemed to be safe for current patient use are therefore not safe for use by anybody to whom the device is donated. If the device is risk assessed as safe to use and working according to specification, it must be supplied with all relevant documentation (e.g. IFU, service history etc.). However, used medical devices are still required to be safe under other national provisions, including:

- Consumer Protection Act (Consumer Safety and Product Liability)
- Sale and Supply of Goods Act
- Health and Safety at Work Act
- Trade Descriptions Act
- The Electrical Equipment (Safety) Regulations
- Unfair Contract Terms Act

Liability issues

Before sale or transfer of ownership of medical devices, both parties should be clear about their legal liabilities. Legal advice should be obtained concerning general device types, such as walking frames or wheelchairs, and more specific advice for individual, larger devices such as X-ray machines. Essential requirement of the Medical Device Directive requires the manufacturer to provide: 'all the information needed to verify whether the medical device can operate correctly and safely, plus details of the nature and frequency of the maintenance and calibration needed to ensure that the device operates properly and safely at all times'. It is good practice to apply this principle to the sale of used device or transfer of ownership, to ensure safety. This information should be available for a prospective purchaser to view before sale and be supplied with the device on its completion. On selling or donating used devices, as much as possible of the following information should be supplied with the device to the purchaser:

• A clear statement that the device is being resold/donated

• A certificate of decontamination

• The user manuals and training requirements

• Full details of maintenance and servicing requirements

• Service history and manual

• Usage history

• Quality assurance test details

• Safety updates, including MHRA and manufacturer's documents that have been released since the medical device was first supplied. If instructions, training and maintenance/repair information are not available, it may not be appropriate to pass the device to a new user

Recommendations for removal from service

• Medical devices and items of medical equipment are replaced, decommissioned and disposed of in line with an agreed policy.

• Before the sale or donation of medical equipment for reuse, the potential for future liability against the healthcare organization should be considered.

• Disposal of waste should meet the applicable requirements for UK legislation

MEDICAL DEVICE REGULATIONS

https://www.who.int/medical_devices/publications/en/MD_Regulations.pdf

Self-Check -4	True or false

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. The Medical Devices Regulations apply to medical devices being sold for the first time.
2. After the sale or donation of medical equipment for reuse, the potential for future liability against the healthcare organization should be considered
3. used medical devices are required to be safe under other national provisions
4. Disposal of waste should meet the applicable requirements before disposal

Note: **Satisfactory rating – 8 points** **Unsatisfactory - below 4 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

List of reference

1. https://www.wrla.org/sites/wrla_01/files/health_and_safety_manual_sample.pdf
2. https://www.fda.gov/files/medical%20devices/published/Labeling---Regulatory-Requirements-for-Medical-Devices-%28FDA-89-4203%29.pdf
3. https://www.who.int/medical_devices/publications/en/MD_Regulations.pdf

Instruction Sheet	LG33: DISMANTLING THE EQUIPMENT

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Dispose equipment following disposal procedures,
- Prepare disposal report using approved format
- Discard equipment following discarding procedures
- Report and document

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, **upon completion of this Learning Guide, you will be able to**:

- Disposing equipment following disposal procedures,
- Preparing disposal report using approved format
- Discarding equipment following discarding procedures
- Reporting and documentation

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3 and Sheet 4”.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 and Self-check 4” **in page - 67, 70, 72 and 74** respectively.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1,” in page -75.

INFORMATION SHEET-1	DISPOSING EQUIPMENT FOLLOWING DISPOSAL PROCEDURES

1.1 Introduction

The Disposal of Equipment Procedures provides guidance to the Trust, its Directors and officers when considering, arranging and recording items that are to be disposed of, including condemnations. These procedures must be read in conjunction with: Trust's Standing Orders (part of Terms of Authorization), Standing
Financial Instructions and Financial Procedures (FP1), and Other relevant policies referred to any item that is considered to be obsolete shall be referred to the Asset Budget Holder.

Who Does This Policy Apply to?

This policy applies to ALL staff who wish to dispose of equipment, vehicle, technology, furniture and other assets of the Trust.

Main Duties & Responsibilities

Asset Budget Holder: is responsible for ensuring equipment (medical, vehicles, and technology and office equipment), furniture and other assets that is deemed surplus to requirements is disposed of in accordance with this procedure, completing the required documentation and informing the appropriate departments of the disposal.

Procurement Team: is responsible for advising staff whether an item for disposal is subject to a managed service (hire / lease / contract) agreement and advising staff on the best method for selling an item via the Asset Disposal Form. The Procurement team is responsible for facilitating the sale.

Medical Devices Adviser: is responsible for advising staff on the decontamination & disposal of medical devices, and ensuring the appropriate asset register (e.g. medical devices) or inventory is suitably amended.

Community Development Manager: is responsible for advising staff on options to donate to the third party voluntary and charitable sector.

IT Service Desk: is responsible for advising staff on the disposing of ICT equipment (e.g. computers, printers, phones, mobile phones etc.). The Technology team is responsible for ensuring all ICT equipment is disposed of legally & in accordance with appropriate Trust policies, and ensuring the appropriate asset register (e.g. technology) or inventory is suitably amended.

Deputy Head of Estates: responsible for advising staff on the disposing of Trust vehicles and ensuring the appropriate asset register (e.g. managed fleet vehicle) or inventory is suitably amended.

Finance Department: is responsible for ensuring the appropriate asset register (e.g. financial) or inventory is suitably amended.

Legal & Property Team: is responsible for ensuring all appropriate documentation has been completed correctly and stored for auditing purposes.

Waste Contract Manager: is responsible for advising staff on the disposal of equipment that is not subject to managed service (hire/ lease / contract) agreement.

The Waste Contract Manager is responsible for managing the Trust Total Managed Waste contract (general, recyclable, WEEE, furniture, office equipment and medical devices) and ensuring waste items are disposed of legally and in accordance with the appropriate Trust policies.

Selection of Preferred Disposal Option When selecting the preferred option for disposal, it is important to consider a range of factors that will impact on the disposal process. This requires the disposal to be carefully planned, allowing each option to be properly evaluated. Factors to consider include:

- the type and condition of the surplus goods;
- whether there have been any offers from other public authorities;
- the nature of the recipient market;
- time and resource issues;
- The costs and benefits provided by each disposal option.

Self-Check -1	Multiple choice

1. ---------- is responsible for ensuring equipment (medical, vehicles, and technology and office equipment), furniture and other assets that is deemed surplus

A. Legal & Property Team
C. Asset Budget Holder

B. Waste Contract Manager
D. Legal & Property Team

2. Who is responsible for ensuring the appropriate asset register (e.g. financial) or inventory is suitably amended?

A. Legal & Property Team
C. Finance Department

B. Waste Contract Manager
D. Legal & Property Team

3. Who is responsible for advising staff whether an item for disposal is subject to a managed service (hire / lease / contract) agreement and advising staff on the best method for selling an item via the Asset Disposal Form?

A. Legal & Property Team
C. Procurement Team

B. Waste Contract Manager
D. Legal & Property Team

Note: **Satisfactory rating – 8 points** **Unsatisfactory - below 4 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

INFORMATION SHEET-2	Preparing disposal report using approved format

2.1 Preparing disposal report

Procurement Entities should ensure that goods for disposal do not contain material that is not intended for disposal. In order to avoid embarrassment or legal liability, it is important to ensure that all appropriate checks are made.

A failure to do this could result in:

- material being misused or used for fraudulent purposes;
- classified information being leaked;
- Privacy legislation being breached.

Material that should be cleared includes stationery (particularly printed stationery), computer software, records, files, papers, whiteboards and hazardous stores. Ensuring that surplus goods prepared for disposal have been properly cleared will help maintain the integrity of the procurement entity and the Government in general.

It may also be beneficial to perform minor repairs on some goods prior to their disposal. This decision should be based on whether it will make the goods more saleable and provide an increase in the return that is greater than the cost required to perform the repairs.

Finally, it is important that goods are kept in a secure location and not used following inspection. This will ensure that goods maintain their condition, reducing the likelihood of complaints from tenderers.

Healthcare equipment Disposal Form

Health Facility Details			
Health Facility:			
Department:			
Equipment Details			
Name:		Model No:	
Serial No:		Inventory No:	
Manufacturer:		Purchase Date:	
Purchase Price:		Accumulated Depreciation:	
Current Value:		Estimated Remaining Life Span:	
Disposal Details			
Method	☐ Donation ☐ Sale	☐ Destruction ☐ Other (Specify):_____	
Estimated Disposal Cost			
Comments:			
Engineer/Technician Details			
Name:			
Position:			
Signature and Date:			
Approved By (Health Facility Asset Disposal Valuation Committee)			
Name:			
Position:			
Signature and Date:			

Self-Check -2	Multiple choice

1. Failure to prepare Disposal report resulted inA

   A. material being misused or used for fraudulent purposes;
   B. classified information being leaked;
   C. Privacy legislation being breached
   D. All

2. Material that should be cleared during disposal includes

   A. computer software B. records C. files D. all

Note: **Satisfactory rating – 8 points** **Unsatisfactory - below 4 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

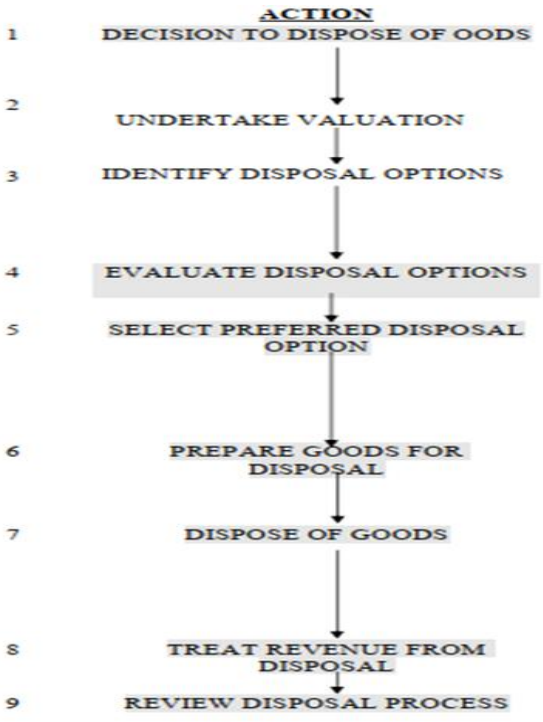
Score = _____

Rating: _____

Name: _____ Date: _____

INFORMATION SHEET-3	Discarding equipment following discarding procedures

3.1 THE DISPOSAL PROCESS FLOWCHART



Self-Check -3	Multiple choice

1. Which of the following criteria NOT included in inventory?

A. model number B. serial number C. manufacturer D. equipment price

2. Which of the following is comes first in disposal flowchart

A. under valuation B. dispose of goods C. review disposal process D. treat revenue

Note: **Satisfactory rating – 8 points** **Unsatisfactory - below 4 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____

INFORMATION SHEET-4	Reporting and documentation

4.1 Reporting and documentation

All waste removed from the site must be accompanied by a consignment/ chain-of-custody sheet or form, which is serialized for tracking and cross referencing. It includes the following information:

• Facility name and location (SOURCE of the waste)

• Date collected (REMOVED from site)

• Contents of container (DESCRIPTION of waste)

• Description of container (TYPE and CAPACITY/VOLUME)

• WEIGHT of container (usually in kilograms—a platform scale is recommended for this purpose)

• SIGNATURES from site manager overseeing collection and transport company representative.

https://aidsfree.usaid.gov/sites/default/files/scms_umpmanagementguide_092816.pdf

Self-Check -4	True or false

1. All waste removed from the site must be accompanied by a consignment

2. Facility name and location is used as waste source

Note: **Satisfactory rating – 4 points** **Unsatisfactory - below 2 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____

Reference

1. http://www.southernhealth.nhs.uk/_resources/assets/inline/full/0/81710.pdf
2. ttp://moh.gov.rw/fileadmin/templates/Guidelines_Protocols/GUIDELINES_FOR_DECOMMISSIONING_AND_DISPOSING_HEALTHCARE_EQUIPMENT_IN_rwanda.pdf
   https://aidsfree.usaid.gov/sites/default/files/scms_umpmanagementguide_092816.pdf

Operation Sheet 1	Dispose medical equipment using disposal procedure

Step 1: prepare necessary materials and tools

Step 2: make decision to perform disposal

Step 3: undertake valuation processes

Step 4: identify disposal option

Step 5: prepare goods for disposal

Step 6.dispose the equipment

Step 7.treat revenue from disposal

Step 8.review disposal processes

Acknowledgement

The Ministry of Education wishes to extend thanks and appreciation to the many representatives of business, industry, academe and government agencies who donated their time and expertise to the development of this Model Curriculum for the TVET Program **BASIC BIOMEDICAL EQUIPMENT SERVICING** Level **II**

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