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PRIMARY HEALTH CARE PROJECT

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STANDARD OPERATION PROCEDURE

FOR FACILITY AND EQUIPMENT MAINTENANCE MANAGEMENT

IN PRIMARY HEALTH CARE CLINICS IN IRAQ

DISCLAIMER
This guideline has made possible through support provided by the U.S. Agency for International Development (USAID) under Primary Health Care Project in Iraq (PHCPI) implemented by University Research Co,. LLC. This guideline has been developed in Iraq in close collaboration with the Ministry of Health (MoH) in March 2013

Contents

Introduction

USAID funded/ Primary Health Care Project in Iraq (PHCPI) in cooperation with Iraqi Ministry of Health (MOH) aims to promote Primary Health Care (PHC) services provided by Primary Health Care Clinics (PHCCs) in Iraq in order to achieve the development goal in enhancing the PHC provision system through achieving the following results:

First: Enhancing management and operations systems, which support clinical care.

Second: Improving the quality of the delivered PHC according to quality standards.

Third: Enhancing and expanding local community participation and partnership in PHC.

Maintaining the medical & service devices in the hospitals and health clinics besides making them function according to the adapted standard specifications, lead to providing most efficient medical services for people and accomplish the purposes for which they were invented. Maintenance and repair of facilities and infrastructure, and keeping them safe and clean are also of the important approaches for the results referred to in (first) and (second) above. This can be achieved through enhancing and developing facilities, and medical & service devices management.

This guideline seeks to develop work mechanism for engineers, technicians and the PHCCs' facilities and medical & service equipment maintenance workers; clarify the concept of maintenance, its importance and classifications in health area, its planning and implementation, the tasks and duties of other directorates and departments of the Ministry in relation to all kinds of maintenance. Add to that preparing documents and forms, which are used in documenting and monitoring the steps required to be accomplished in the maintenance of PHCCs' facilities and medical & service equipment, for the equipment to perform the best possible services for people and get their satisfaction.

This guideline covers the procedures required in managing maintenance, repair, monitoring and supervision at PHCCs for the following fields:

- The building and floors
- Medical & service equipment
- Occupational Health and Safety
- Public Cleanliness and Sterilization
- Linens and laundry
- Medical and general wastes management

Before going into the details, it is important to be acquainted with the nature of the services provided by PHCCs, their types and their development provisions according to Iraqi MOH regulations and sorting, and to explain maintenance concept and kinds.

1. **PHCCs responsibilities**

- Providing preventive services and therapeutic services, and implementing the following health programs:
  - Immunization
  - Nutrition
  - Maternal and child care
  - School health services
  - Control of drinking water service
  - Food safety and health control
  - Health promotion, coordination and collaboration with the rest of Civil Society Organizations in the same geographical area
  - Oral and dental health
  - Mental health
  - Emergency services
  - Communicable diseases control
  - Other services

2. **Planning restrictions and obligatory provisions to open PHCCs**

Iraqi MoH laid restrictions and provisions to open any type of PHCC as follows:

a- Main PHCC

Main Health Clinic consists two medical units. Each medical unit offers PHC services and supervises a geographical area of 5000 persons.

- ✓ Population in the same geographical area not less than 10000 persons
- ✓ Schools existed in the same geographical area not less than 5 schools
- ✓ The availability of medical and health staff, and medical & service supplies
- ✓ The nearest Health Clinic should be located not closer than 10 Km except for Baghdad and provinces clinics
- ✓ Ease of access to the location with the availability of transportation and shortcuts

1 According to the restrictions issued from Policies Department/ Planning Directorate-MOH

- ✓ The need of ventilation and normal light in the rooms
- ✓ WCs for employees should be separated from these for visitors
- ✓ A garden and a park sufficient for five cars to be available

b- Sub-PHCC ran by a physician (doctor)

- ✓ Population in the same geographical area not less than 3000 persons and no more than 5000 persons
- ✓ Schools existed in the same geographical area are 2 schools
- ✓ The nearest Health Clinic should be located not closer than 5 Km
- ✓ Ease of access to the clinic and the building should be located by a public way
- ✓ The number of rooms in the building not less than (4 rooms) and the rooms should be accommodated (Electricity, water and sewerage)
- ✓ The availability of medical and health staff, and medical & service supplies
  - ✓ A garden and a park sufficient for two cars to be available
  - ✓ WCs for employees should be separated from these for visitors

c- Sub-PHCC ran by health professionals

- ✓ Population in the same geographical area not less than 1000 persons and no more than 3000 persons
- ✓ Schools existed in the same geographical area should be 1 school
- ✓ The nearest Health Sub-Clinic ran by a physician should be located 4 Km away
- ✓ Ease of access to the clinic and the building should be located by a public way
- ✓ The number of rooms in the building should be (3 rooms) and they should be accommodated (Electricity, water and sewerage)

Sub-PHCCs are linked to the districts administratively and technically. In addition to the main and sub PHCCs, Health Directorates offer some simple services to people of remote areas through Health Home service which offers simple preventive therapeutic services and health education for a 1000 persons population density.

3- Maintenance notion

Elite of researchers and writers interested in maintenance domain presented a number of definitions for it, below are some of these definitions:

- A group of technical systems ran by maintenance management to reduce malfunctions and make devices and equipment in a good functional condition or restore them to the normal condition before breakdown.
- The procedures of maintaining devices and equipment in a good functional condition.
- The action applied to conserve equipment used in work or for producing services and restore them to an acceptable condition in an affordable cost.

From the aforementioned definitions, one can conclude the following:

- Maintenance aims to reduce malfunctions but not stopping fault because stopping faults is ideal
- Maintenance is technical and engineering process and this fact cannot be denied. Nevertheless, it involves an administrative phase since maintenance may not be performed without administrative measures as planning, organization, observation and evaluation

Thus, it requires focus on bringing out technical and administrative sides of maintenance. Accordingly, maintenance definition would be:

(A group of sustainable technical and administrative activities, which aim to preserve devices and equipment and restore them to the normal functional condition for them to perform the required tasks properly and reduce cost and time effectively).

4- The importance of maintenance

- Maintenance helps reducing breakdowns, which increases services provision and cost reduction.
- Continuing effectiveness in a way that leads to an increased level of efficiency and quality standards.
- Saving public fund through the continuance of devices and equipment working for the longest possible period with the needed efficiency

5- Classification of maintenance

First: **Planned Maintenance**: it is the process of organizing maintenance activities, conducting them in accordance with prior estimates and documenting the procedures in the set plan. It is of two kinds:

1- Corrective

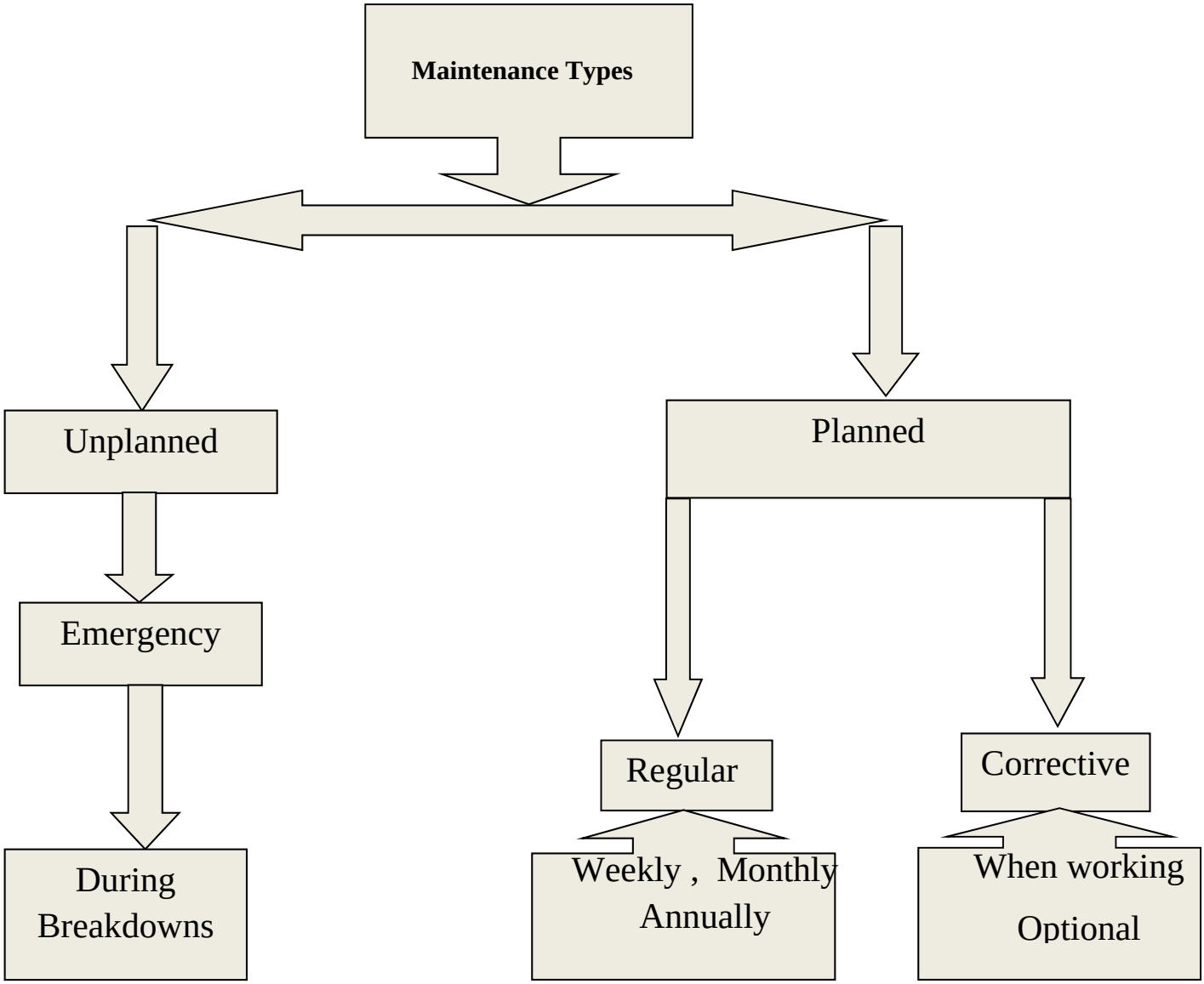
It is also called remedial maintenance and applied when there is a failure in order to reestablish the non-working device to its normal working condition (some writers categorize this kind of maintenance under Unplanned Maintenance).

2- Periodic

The maintenance that is conducted according to prior plan in order to reduce the likelihood of fault to happen or to enhance the performance of the device (some writers categorize scheduled or routine maintenance as a second type of preventive maintenance

Second: **Unplanned Maintenance:** Maintenance activities that are conducted without prior planning and also called emergency maintenance, which requires immediate intervention, by maintenance management to prevent a greater fault or the breakdown of the device from happening.

Preventive maintenance is considered one of the important kinds of maintenance because it seeks to reduce the likelihood of breakdown and to reach zero defect.


Maintenance Types
Unplanned
Emergency
During Breakdowns
Planned
Regular
Weekly , Monthly Annually
Corrective
When working
Optional

Chapter One

The building and floors maintenance

Taking care of the floor and building of PHCC is important because of the positive impact it creates to the visitors and workers in the health clinic. On one hand, visitors would feel comfort and relaxed in a health clinic with good infrastructure. On the other hand, good infrastructure will assure offering good services by the workers. Thus, the administration should pay attention to this aspect when planning for PHCC maintenance. Checking and inspecting the building and floors of PHCC regularly (periodically) can alert maintenance staff on the hazards that might harm the building and persons. Those who use the building should ensure that all its facilities, equipment and services were checked, inspected and fully maintained in accordance with the guidelines in appropriate periods following the recommendations of faults, defects and hazards correction and verify the reliability of maintenance when required.

Checking the building, floors and infrastructure of the PHCC is conducted through checking the indicators available in the inspection forms, which represents a guide to check and follow up the procedure of maintaining the building, floors, garage and everything related to infrastructure in the PHCC (the forms attached to the Annex). These forms include the following standards:

- The property of the land and designs belongs to MOH.
- PHCC design allows offering the care for the patient smoothly and effectively.
- Ensuring convenience and assuring that the space suits the current and anticipated needs.
- The availability of the supplies and services to have an ample and convenient environment.
- Creating spaces to facilitate patients and workers movement to their destinations.
- Securing appropriate and comfortable waiting places.
- The use of appropriate communication system in the building of the clinic.
- Securing entrances and controlling movement around the building.
- Initialize the clinic in a way that guarantees offering services and meeting patients' needs.
- Purifying the labs air by using filters.
- Conducting regular and documented inspection actions to the infrastructure.

Health clinic's check and inspection

To make sure that the standards above apply to health clinics, a check and inspection on the building and floor of PHCC is conducted by the clinic's technicians and the district's engineers. Focus is paid to the following points:

The building and roofs

The building and roofs of the clinic should be checked and inspected (Form 2) and the following should be assured:

- The whole place is clean in accordance with the cleaning schedule at the health clinic (Form 12 b)
- Checking for moisture or oil / lubrication spells, dormer materials or scattered pieces
- Checking that corridors, which lead to examination and treatment rooms, are correctly referred to.
- Manholes, electrical wirings and sewage tanks should be covered
- The storage of unused equipment and devices should be assured safely and properly
- Warning and hazard signs should be placed in their appropriate places and should be clear
- Buildings' signs should be clearly shown in order to be able to response for emergencies
- Emergency exits should be pointed out clearly and can be reached easily with the presence of emergency lights
- Sufficient light should be available in the inside and outside of the clinic
- Adequate ventilation should be available
- Ceiling hatches should be covered properly and the windows should not let in flies
- Stairs must be in a good conditions with grab bars and anti-skid on the sides of the stairs
- Facilities and sinks are working, maintained and clean according to the cleaning schedule and available for all workers from both genders
- Ensuring the availability of hot and cold water, liquid soap and adequate drying means.
- Sewerage system is connected to the main sewerage network.
- The availability of a store or warehouse with the following description:
  - Enough space
  - Good ventilation and light
  - Shelves are in good condition
  - The availability of fire extinguisher and fire safety signs

- The availability of suitable ladder to handle material

- Physical infrastructure check includes:
  - The ground of the roof should be paved in a way that allows water drainage properly
  - There should be no cracks in the ceilings or the walls and should not be water damaged
  - The ground of the floors and the entrance should not have any holes or slippery slopes
  - Water storage tanks works and are covered properly and tightly.

Garage and garden

- The garage and vehicles and ambulances' entrance should not cause the loss of stability and control
- Ambulances' entrance and exit paths should be marked, safe and good
- Warning and indication Signboards should be assigned in the frontage of the garage of the ambulances
- Care and attention should be paid to the garden (if there is a garden)

Electrical safety

All electrical wiring should be clear of damage and wrapped with Electric tapes and lifted up from the ground – Test Form 3 in the annex

- Electrical switches are in good condition, undamaged and has ear thing wire
- The access to the electrical panel boards is easy without impediments
- Reaching electrical switches and circuits easily without impediments
- The availability of protection covers of junction boxes and pipes to cover the wires
- Electricity junction boxes and circuits are sorted and labeled correctly
- All the power-supplied parts (electrical panel boards, electrical junction boxes and switches) are secured in a way that prevents any accidental electrical fault.
- Electrical panel boards installations are used correctly and accurately and the wires are insulated
- The door that covers the electrical panel board is firmly fixed or locked
- The light in the lab is convenient for all the activities with the avoidance of light reflections and strobe lights which block vision

Water Cycles and Washing Places

Test Form 4 in the annex

- Assuring the availability of toilets, adequate sewerage and washing places for all employees
- Making sure that the toilets are set and clean
- Ensuring the availability of sinks provided with hot and cold water, soap and adequate drying means,
- Making sure of linking the sewerage system with the main sewerage network
- The availability of disinfectants and odor removals
- The availability of places for washing hands in the lab

Furniture

Test Form 5 in the annex

- Furniture and equipment are available in accordance with disclosure lists and functional.
- The examination bed and wheel chairs are available and functional.
- Water, liquid soap and towels are available in the specified places.
- Lounges (Waiting areas) are equipped with furniture, maintained and properly ventilated and secure privacy.
- Examination and PHC rooms are clean, properly ventilated and maintained and include the required supplies, furniture and equipment.
- Curtains are available and cleaned according to a schedule
- Water cooler are available in the lounges
- Air conditioners are available in the lounges
- The chairs and other furniture at the lab should be covered with leather to ease the cleaning and purification process

Chapter Two

Management of facilities, medical devices and service devices maintenance at PHCCs

What is meant by facilities management is achieving integrity among multi-disciplines activities inside the one environment and managing its impact on persons and places of work.

The management of medical & service devices forms an essential part of the tasks and responsibilities of engineering centers, departments, sections at the health districts and directorates and the technical directorates at the ministry headquarters. They should be responsible for the validity and maintenance of medical & service devices and equipment as well as for the procedures relevant to the selection and expiry of devices.

The main task for a successful and efficient management is to assure the safety and cleanliness of PHCCs' facilities and the efficient work of devices used for patients care in order to secure the provision of best PHC services for citizens.

This can be achieved through working according to a mechanism that aims to explain, demonstrate and plan the way of managing the maintenance of facilities and the medical & service devices at PHCCs. In addition, this mechanism seeks to select the documents and forms used by the technicians and engineers to document and monitor the works needs to be accomplished. All that because the maintenance in health field is of great importance that it deals with the most precious values the human.

The most important objectives of management are preserving the validity of the medical & service devices at PHCCs and making them work in accordance with the adopted standard specifications, which lead to perfect delivery of medical services (figure 6 in the Annex shows the mechanism of maintenance planning).

What is maintenance management?

To shed light on the concept of management, particularly maintenance management, let us apply the following conversation. Through the questions and their answers, the meaning of the management of devices and facilities maintenance becomes clear.

Question one

- Why do we need devices maintenance?
- Why do we need devices management?

The answer

1- So that the devices continue to work properly
2- To enable the workers at PHC level to diagnose and treat patients properly

Question two

Maintenance is of two aspects

a- Technical aspect
b- Management aspect. The first aspect is easy to understand **But?**

What is management? How to commence medical devices management?

The answer

We should have inventory list for all devices and machines at first

- We view all devices in the clinic and write it down in the list.

What are service devices?

And what are medical devices?

Service devices
Includes electronic, mechanical and electrical devices
For the medical devices
The devices used in examination, diagnoses and treatment.
We should be capable of knowing and recognizing each device and:

- How many devices and equipment in each site
- The types of the devices and their condition
- The period of from which the devices are functioning (since when)
- Who is to call in the case of a damage or fault in any device, the need to repair it or it needs spare parts.
- The appointed times for testing and calibrating devices
- The appointed times for conducting periodic maintenance

Form 14 includes a list of medical devices and supplies in the health clinics
From above, we conclude that the goals of the management of service and medical devices are the following:

- To run the devices and manage the assets
- Issuing work commands
- Data management
- Maintenance management and the management of the equipment used in the maintenance
- Management of engineers and technicians affairs
- Inventorying medical & service devices, equipment and spare parts
- Inventorying infrastructure (the building, water, electricity, water drainage, oils and fuel, generators, Reverse Osmosis system (RO) and air conditioning, ventilation and communication)

In addition to what is mentioned above, the mechanism for the procedures relevant to inspection and monitoring activities should be specified, the safety and accuracy of work for the devices and equipment should be ensured and all facilities and service devices should be maintained periodically and ready for the workers, patients and visitors. All of that reflect an improvement in health service delivery. The management also assures the following:

- The all medical & service devices are maintained with check, inspection, calibration and cleaning are included on appropriate periods according to manufacturer's instructions
- Fuel, electricity, water, communication and water drainage system are available and work properly meeting the needs

The plan comprises:

1-Identifying the responsibility of the management of medical equipment and the accidents and risks of medical devices.

2-Arranging the inventory and always keeping an inventory list includes all equipment and devices sorted by importance.

3-Checking the devices' accessories such as maintenance, operation and electrical safety guides.

4-Setting priorities with regard to maintenance putting in mind the importance of the devices and equipment.

5-Specifying the required procedures to each device (maintenance, check, repair, calibration, etc…).

6-Specifying the names and job descriptions of the persons in charge of the check, repair and verification of:

- Possessing the documents of each device.
- Reports of installing and setting the devices and damage reports.
- Electrical safety procedures.
- After sale procedures.
- Periodic and preventive procedures.
- Training and developing the capacity technical staff.
- Identifying the responsibilities of the staff according to their specialization.
- The availability of a label that defines the type and date of maintenance.

The Classification of Devices

In this mechanism, the classification of all devices is done by a classification system that depends on the function and type of work of the device and its applications, the likelihood of malfunction or failure according to the devices' working hours. This classification can be used in determining priorities. This classification is run in accordance with:

1- The work and function of the device
   a- Patient-related devices
      - Dental devices and their accessories
      - Physiotherapy devices
      - Laboratory devices and their accessories
      - Other devices.
   b- Devices not related to patient (such as the service devices, examination and measurement devices, etc…)
2- Devices life

Some devices are classified according to the date of use or launch by returning to the documentation in devices' cards. Such a classification helps to take the right decision in rather replacing the devices or not and assessing the need to that.

3- The use of devices: some devices are classified according to their use
   - Considerable use
   - Slight use
   - Normal use

The classifications above help to take the following decisions:

- The purchase of the devices

- Replacing them
- Providing their spare parts
- Their impact on health services
- The types and timings of the required maintenance on them

Steps of maintenance management planning

To plan for the management of medical & service devices maintenance, the following steps and procedures are adopted as shown (in form 6 and 10 in the annex)

1- Step 1

In this step, a precise inventory is done for all medical & service devices under (form 7). The inventory includes:

a- Preparing the device or equipment card (form 8), which consists the next information:

- The name of device
- The number of device
- The place of device
- Model
- Warranty Term since the date of its launch
- Repairs documentation

b- Preparing maintenance card (form 8 a) which consists the following information:

- Information about device (the name, number, function)
- The priority of device
- The procedures need to be done (maintenance, calibration)
- Device's instructions and guidelines

2- Step 2

a- Fixing the types of maintenance required for each device (daily, weekly, monthly, biannual, annual) and their timings (form 9)

b- Identifying the levels of maintenance for procedures aspect which are set in four levels:

1. **Level one**: is the daily works required (Daily Walk Around, checking, test, cleaning, simple lubrication and calibration.
2. **Level two**: in this level regular maintenance is done (weekly, monthly, etc…) along with some repair
3. **Level three:** the works that require experience and skill to accomplish them as well as doing those repairs out of the capabilities of level two.
4. **Level four:** the annual and semi-annual works, replacing parts and inclusive repairs, which require the availability of financial and logistic resources and repair equipment.

3- Step 3

Devices' priorities are set according to the importance of the device as follows:

a- Priority A

Devices and equipment that work in continuance way and when they are out of service it impacts the safety of clinic's work and patients so they are indispensable, including but not limited to fetal heartbeat device, sphygmomanometer and stethoscope (nowadays, the generator is considered an indispensable device).

b- Priority B

Devices and equipment that do not affect services or there is an alternative for them when they are out of service for a short time

c- Priority C

Devices and equipment that do not affect the continuance performance of the clinic in case they are out of service for maintenance.

4- Step 4

Distribution of maintenance work on technicians and engineers in line with their qualifications in addition to their normal work in accordance with the levels that were set in the previous step and as follows:

- Level one: professional and technical personnel that are directly in touch with devices provided that they are trained practically so they can conduct their assigned tasks in level one of maintenance and this is the responsibility of (the Clinic's Maintenance Unit)
- Level two: engineers and technicians who have engineering background and some experience in the field of devices' maintenance and the conduction of regular maintenance and repair. This is the responsibility of (District's Engineering Section)
- Level three: engineers with experience and ability to conduct maintenance and repair that level two cannot perform and it is the responsibility of (Maintenance Section/ Engineering and Maintenance Department- Directorate of Health)
- Level four: engineers with experience in inclusive repairs and all kinds and levels of maintenance and the availability of funding for that. It is the responsibility of (Engineering and Maintenance Section/ KIMADIA)

Form 10 A shows repair mechanism

Guidelines for the mechanism of selecting supplies and equipment

Selecting supplies, equipment and medical devices is not an easy task considering the availability of vast range of products and this mechanism aims to help on making decision about what should be enlisted when required for ordering or purchasing any device or equipment. This mechanism depends on the interaction method through introducing questions then determining the answer in accordance with the experience and previous experiments as follows:

1- We start at the need

- Why do we need to supply equipment, device or part of device. Is there need in public health field; are there compelling reasons such as disease or you might need them to prevent and diagnose or treat new health problem or improve services based on patients.
- Is the new element or the replacement is “vital”, “essential” or “indispensable” for the service
- Does it require replacing current equipment or devices with new devices because they are old?
- Did equipment reach its age limit and there is no point of repair?
- Is it not technically compatible in comparison to the new product? Or the manufacturer stopped producing spare parts and accessories for this device?
- Are the suggested devices more developed and effective from the current devices

2- Quality

- Is there a well-known and tested side?
- Is the use of the device easy or hard and what is the expected functional time left for the device?
- Are the spare parts or equipment meet safety standards?
- Are the tags and packaging of acceptable quality?
- Are there technical operational and maintenance guides attached to the imported devices?

3- Source

- Did we obtained approval to deal with the supplier?
- Is the company (the supplier) well known, robust and there were dealings with it in the past that ran smoothly?
- The nature of the technical support that the supplier provides? Does it supply spare parts and items?

4- The materials used in equipment manufacturing

- What are the materials used in their manufacturing?
- Are they easy to clean, disinfect and sterilize?
- Are they fragile and breakable or easily damaged?

5- Suitability
   - Do they fit to local conditions from the technical prospective?
   - Are they effective and reliable to work with in different climate conditions?
   - Do they require special storage conditions?
   - Are they compatible and in line with existing equipment?
   - Do patients and health staff approve them?
   - Is the device easy to use and you are able to maintain and repair it?

6- Cost
   - Is there financial allocation in the budget?
   - Were import costs taken into account (transport, freight and insurance)?
   - Is there a commitment to train the devices' users (doctors), and to train engineers and technicians on maintenance and repair within the costs?
   - Was the budget for maintenance, fuel and spare parts, consumables and accessories taken into consideration?

7- Use and Maintenance
   - Do technical staff have sufficient skills to maintain and sustain the new devices?
   - Are the devices covered by warranty and insurance?
   - Does the manufacturer or supplier provide support services? Are technical expertise required for maintenance available locally?
   - Do the staff at the clinic have the ability to use this expertise?

How to deal with expired medical devices.

The medical devices are considered expired when their product life ends according to manufacturer's recommendations or in case of a malfunction that cannot be maintained. Every health institution should form a committee to inventory materials prepared for consumption. The Technical Committee mentioned above [1] should adopt the following clauses when making the expiry decision:

- Broken, irreparable (apology from the Department of Engineering and Maintenance at KIMADIA and private offices)
- Lack of basic parts or accessories, not available (Department of Engineering and Maintenance at KIMADIA cannot supply)
- Device's therapeutic or diagnostic capability does not fit the medical and technical development in the field in which the device is used and its results are incompetent
- The cost of repairs is high (lack of economic feasibility and the availability of alternatives)
- Devices' exposure to fire or stealing some of their parts and crashing provided that there are decisions of investigation)

Any expired device should be dealt with cautiously and considered as contaminated and dangerous

1- The methods used in the decontamination of medical devices

Decontamination is a package of measures to make sure that the contaminated part or the rest parts of the device will be free of pathogens. Before the decontamination of the devices, they should be classified on the basis of

a- Their work by the power supply (batteries, from a source of electrical energy by wire)

b- Do not require power supply.

In the case that the device works by power supply

- The device should be unplugged from the power supply (removal and disposal of batteries according to the instructions outlined in Chapter 6/ Waste Management).
- Disconnect the wire of the power supply and remove the fuse
- Remove any reserve power supply (extra batteries)

c- Decontamination procedures vary according to the devices and their methods of use. Generally, these procedures can be divided to:

First: Decontamination by cleaning (using cleaning fluids)

Second: By disinfection

Choosing the right way of decontamination should comply with the level or degree of risk.

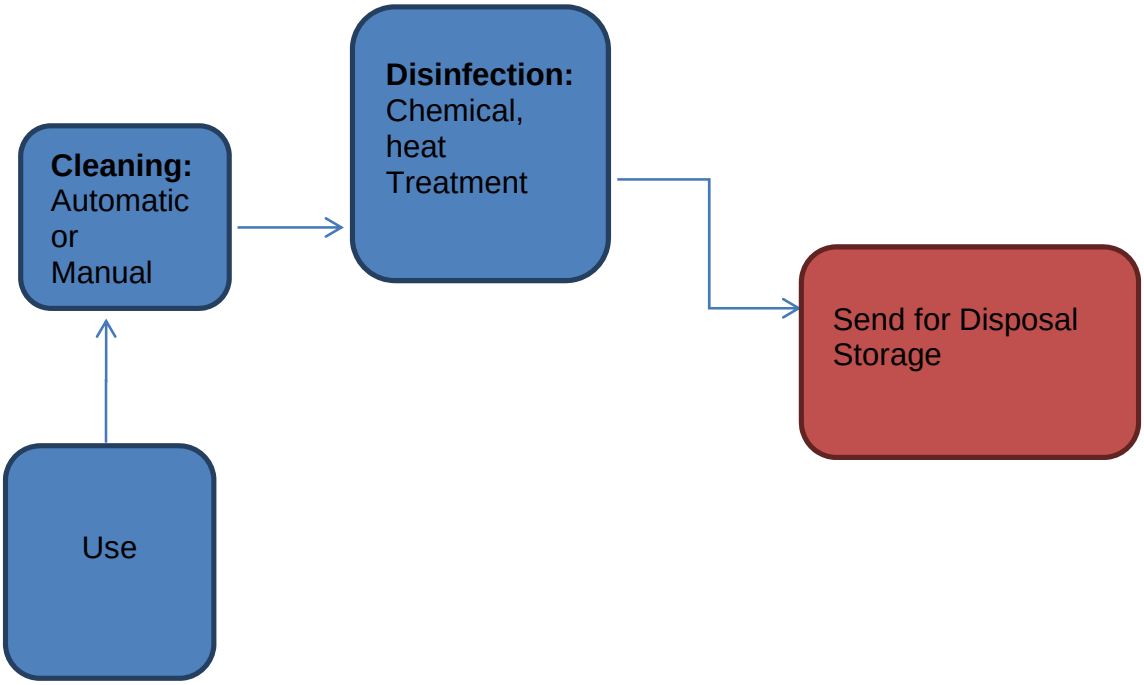
d- (Classification of infection risk associated with the contamination of medical devices)

Risk	Application of item	Procedure
High	•In close contact with broken skin or broken mucous Membrane. •Introduced into sterile body Areas.	Cleaning followed by Sterilization.
Medium	In contact with mucous Membranes. •Contaminated with particularly virulent or readily transmissible Organisms. •Before use on Immunocompromised patients.	Cleaning followed by Sterilization or disinfection. **NB**: Where sterilization will damage equipment, cleaning followed by high level disinfection may be Used as an alternative.
Low	In contact with healthy skin. •Not in contact with patient.	Cleaning.

e- There are other factors to be taken into account when performing the procedures of decontamination of medical devices among which:

- The nature of the contaminant.
- The time to perform the decontamination process.
- Temperature, pressure, humidity and chemicals that could be caused by the device during the decontamination process.
- Availability of equipment by which the process of decontamination is conducted.
- The risk that comes with the decontamination process.

2- The mechanism of medical devices' decontamination



After making sure that the device is free from any contaminant, a label should be put on the device to show that the device is free from any contaminant then concerned authorities should be notified according to the administrative hierarchy about measured taken for the device.

3- Disposal of devices and removal from service

a- Medical devices can be disposed of according to manufacturer directions. These directions include the following:

- Returning back the device to the parent company (mostly this term is mentioned in the contract)

- Storing the device for a certain period until delivered to the parent company

In either case, the instructions mentioned in 1 and 2 above should be implemented

b- If there is no support and guidance of the manufacture and nothing is mentioned about that in the contract, the following measures should be taken:

(1) Performing decommissioning

The aim behind a decommissioning the device is making it safe and unusable taking into consideration the minimization of its impact on the environment to a minimum level. After decommissioning, the device can be stored for long periods (according to the supervising authority opinion after executing the procedures described in 1 and 2 above).

(2) Final treatment

Sometimes devices need to be deteriorated and disposed of by either landfill or using incinerators. This decision is to be made in coordination with the relevant committees at Ministry of Environment in order to be complied with the right method of disposal guidelines, preserve the environment, and control contamination.

1- Ministry of Health- Technical Affairs Directorate/ Medical devices and equipment expiry terms

Chapter Three

Hygiene and sterilization

This chapter is to shade light on supervision, monitoring, evaluation, guidance and instructions standards of health clinic's hygiene and sterilization. The focus would be on supportive staff including technicians and administrative staff at the Clinic and Engineering Sections at the Districts. This focus is due to their importance and impact in this area, especially their direct and indirect contact with the causes of infection when they examine and repair equipment, work in laboratories and handle waste. In addition, addressing the procedures of infection control in relation to three aspects:

- General environment
- Medical & service devices and equipment and other joint facilities
- Education and training

Securing the standards

Securing the following standards must be taken into account:

1. Maintain health clinic facilities clean including the areas of general use like bathrooms, waiting rooms and places where the service and care are delivered to patients

2. Follow infection control procedures related to the cleaning in all clinic's facilities

3. The use of pesticides inside and outside the clinic to reduce the spread of insects and rodents

4. Setting a plan to reduce smoking inside the building that includes patients, visitors and workers at the clinic

Hygiene and infection reduction

The following aspects of hygiene and cleanliness instructions would be addressed:

- Hand hygiene
- Safe use of medical devices and equipment
- The use of personal protective equipment
- Safe disposal of sharps and syringes
- Education
- Clinic environment.

1- **Hand Hygiene:** (form 11) in the annex

- Hands must be sanitized immediately before each procedure that involves direct contact with the patient and after each procedure or contact that may cause hands contamination.
- Hands must be free of any hand accessories and wounds and scratches must be covered with dressing before start cleaning the hands. The nails must be kept short, clean and free of varnish (for females).
- Hands that are contaminated with organic substances should be washed, if the contamination is visible or invisible, with liquid soap and warm water for 40-60 seconds.
- If hands were not visibly dirty or in case of dealing with any pathogen, they should be sterilized and disinfected with alcoholic solutions.
- Effective washing passes through four stages: preparation, washing, rinsing and drying. Preparation requires moistening hands with warm water before placing liquid soap or any anti-microbial lotion. The hand washing lotion should reach all the hand and they are rubbed together vigorously for 10 to 15 seconds minimum with a particular focus on the fingertips, thumb and between the fingers. Then rinse your hands thoroughly before drying with paper towels.
- When you cleanse your hands with alcoholic solutions, they must be free of dirt and organic substances. The solution should reach to the entire surface of the hand then rubbing them together vigorously with a focus on the fingertips so that solution evaporates and hands dry.
- Hand moisturizer to be used on a regular basis to protect the skin from the effects of dryness resulting from cleansing. Certain types of soap, antimicrobial hand lotions or any alcoholic product may cause skin irritation so a competent medical team should be consulted.

2- Safe use of medical equipment and devices:

Joint medical equipment and devices used in the provision of health care within the clinic are often in contact with the skin so they can be carrier of microorganisms among patients and also the workers, who are in contact with equipment, so the must be decontaminated properly after each use with disinfectants and water and in some cases with hypochlorite.

3- The use of personal protective equipment:

Personal protective equipment used in the medical institutions are (gloves, aprons and lab-coat, cap (head cover), mask, safety goggles and overalls). For technicians, the focus should be towards the importance of gloves and overalls without neglecting the other protective equipment. Gloves must be worn when dealing with medical devices in maintenance and cleaners must wear gloves to protect their hands

There are two types of gloves:

- Disposable gloves (single-use): which are used when dealing with medical & service devices. These gloves must be worn when using or maintaining the device and disposed of as medical waste after the completion of action bearing in mind cleaning the hands after removing the gloves. This also includes service workers when cleaning or collecting garbage.

- Re-usable gloves: some of which are made of leather or linen and used when dealing with service devices (electrical boards, air-conditioners, etc…), these are heat and electricity insulators. Others are made of rubber (latex) and used when handling liquids (such as oils and grease) to prevent the leakage of these fluids to the hands, as well as when dealing with construction materials and garden cleaning

Gloves must be disposed of as medical waste and hands must be cleaned after removing the gloves. Cases of workers allergy to rubber material should be documented and alternatives should be provided.

In addition to the gloves, disposable plastic aprons should be worn if the clothes could be exposed to liquid and solid materials and waste. These aprons should be used only once and disposed of as medical waste.

In case of dealing with the steams when working in the lab or repairing large generators, masks and safety goggles must be worn. This also includes service workers (cleaners), especially when cleaning facilities and emergency rooms.

4- the safe disposal of sharp tools and syringes

(Needles, scalpels, glassware and any tool used to cut the skin)

- Sharp tools must not be circulated directly by hands and its circulation must be reduced as possible.
- Needles should not be re- covered, bent, fractured, or their cover removed than prior to use or when disposed of.
- Sharp tools must be segregated inside a container designed for this purpose. The container should be as follows:

❖ Does not allow liquids to pass
❖ Cannot be perforated
❖ Provided with a slot that does not permit hands
❖ Should be filled to two-thirds of its size and the proportion of fullness can be seen
❖ Made of unbreakable material
❖ Can be easily closed

- When putting the containers in places, they should be placed steadily so as not to be directly on the ground. They should be disposed of according to instructions.

5- Education

All health care providers must have knowledge on hygiene and sterilization instructions and the procedures of transmission of infection prevention. They should also be trained on how to clean their hands and use personal protective equipment, dispose of and deal with sharp tools and medical and non-medical waste. Awareness seminars and educational lectures should be established and posters that explain that should be printed.

6- Clinic's environment

Environmental sources of pathogenic organisms are present in all mediums including health institutions. These organisms can be transmitted to humans through exposure to air, water and contaminated fluids, surfaces or devices. That is why the clinic must be always clean in a way that would be mentioned later.

Infection risk reduction:

Infection risk presence is associated with the existence of infection causes in sufficient amounts in the environmental sources, thus infection control requires the assurance that necessary practices are done to reduce this risk, as follows: -

1- Limitation of environmental sources that cause infection
2- Maintaining the ventilation systems
3- Reducing liquid infection carriers
4- Constant cleaning of all health clinic facilities
5- Sterilizing hands after contacting the medical and laboratory devices and the devices in direct contact with patients
6- Environmental sanitation by providing appropriate environmental conditions

Cleaning of health clinic's facilities

A trained staff must execute daily cleaning of the clinic and the assessment of cleaning quality should be conducted on an ongoing basis. The number of people, events intensity,

humidity, substances that help microbial growth as well as the diversity of surfaces (horizontal or vertical) in the clinic all of that affect the effort required to secure the needed cleanliness in the health clinic.

a- Cleaning equipment

Cleaning equipment used in health care clinics should be kept clean and dry after use, as well as maintaining the them. It is preferable to use equipment that insure reduction of dust scatter on them during use or storage. Appropriate cleaning equipment include mops with detachable heads, washable or single-use clothes, as well as vacuum cleaners with filters.

b- cleaning methods

To reduce the amount of dust, using suitable methods such as moisturizing dust and vacuuming it then mop it with damp mops, particularly horizontal surfaces and the corners. In addition, regular cleaning of ceilings and places that are not constantly accessed is necessary.

c- How to clean the health clinic

For a clean health clinic and free of epidemics and diseases prevalence, first we should assign numbers for all rooms at the health clinic and the design a map or diagram that illustrates the health clinic rooms with their numbers so as to facilitate cleaning, inspection and monitoring tasks taking into account securing the following the necessary supplies:

- Waste containers inside the clinic and the garage as well with bags to collect the waste.
- paper tissues
- sterilization liquids (hand sanitizer, Dettol, chlorine or bleach liquid)
- Liquid soap and detergents
- Providing tight waste baskets (steel) in laboratory
- Providing medical waste containers correspond to the approved standards
- Providing ventilation fans for laboratory room and dental units
- Brushes, brooms and medium-sized rags for cleaning
- Cleaning cart

- Water hoses
- Bathroom odors eliminators
- calcification remover

- Glass Cleaners
- Water pump
- Sterilized handkerchiefs and tissues
- Vacuum cleaner for ceramics polishing
- Rubber pedals (for the entrance and bathrooms)
- Signs that show the importance of hygiene in maintaining human health

d- Cleaning steps:

Tables 12 a and 12 b show the proposed actions and timings to clean up the health clinic facilities

Before starting cleaning procedure, one should know that the importance of cleaning the perimeter of the health clinic is no less important than cleaning the health clinic from the inside. Health clinic visitors, particularly those health clinics located in popular areas, must be notified of the importance of maintaining health clinics facades clean by not making the outside walls a dumping ground and putting boards or signs to specify that; make them feel that the health clinic is found to serve them. Cleaning procedures are set in a logical sequence as follows.

- Starting to clean the perimeter of the health clinic
- Cleaning the main entrance (exterior corridors, garage, garden if any)
- Cleaning waste containers inside the health clinic (in the garage and inside the rooms)
- Cleaning health clinic's doors and windows
- Cleaning and sterilizing of the internal corridors
- Cleaning and sterilizing patients waiting rooms and putting posters and other means to clarify the importance of cleanliness
- Cleaning and sterilizing water coolers and ensuring the availability of water in them
- cleaning bathrooms:

- cleaning and sterilizing floors with water and detergents and sterilizers
- Cleaning and sterilizing sinks and toilets with detergents and sterilizers

- Cleaning and sterilizing surfaces, doors and ventilation fans
- Wiping bathrooms and floors then spraying sterilizers in bathrooms
- Cleaning and sterilizing waste baskets

- Ensuring the availability of hand sterilizers and tissues

❖ Cleaning health clinic's rooms: cleaning and sterilizing floors (with and water detergents and sterilizers), taking into account the use of two buckets one filled with water and the second with cleaning solution. We should start by using the detergent then rinsing with water and drying.

- Cleaning and sterilizing, roofs, doors, corners and ventilation fans
- Cleaning windows and glass surfaces
- Cleaning and sterilizing all medical & service devices

❖ Cleaning and sterilizing the internal and external stairs
❖ Cleaning the roofs of the health clinic and assuring that they are free of consumables and waste.
❖ Cleaning water tanks, changing the water every month to make sure it is clean and free of algae, dust and foreign objects, and making sure the tank covers are sealed
❖ Cleaning laboratories

- Cleaning horizontal floors and surfaces on daily basis with detergents and water then sterilizing
- Cleaning and sterilizing walls every week
- Cleaning and sterilizing micro devices and examination devices
- The use of sterilizers on surfaces to clean from microbes

e- Waste treatment

Waste management aims to maintain the safety of all health workers, patients, visitors and the surrounding environment of the clinics, particularly health clinics located within population centers. Due to the importance of the subject and its direct impact on health, health institutions must have a plan to manage healthcare waste and that plan should be reviewed annually, subject for continuous monitoring, and include the following aspects:

- The procedures of examination, annual review of waste types, sizes and weights and re-disposal
- educating and training of the staff responsible for waste management to reduce the risk of injury and facilitate the efficient disposal
- Waste separation procedures
- Requirements of waste containers (in line with the legislation, standards and guides for their design, colors and symbols)
- Waste storage places

- Transportation and treatment arrangements and waste disposal procedures
- Check and continuous monitoring of waste and the reduction of their generation

Waste handling subject would be dealt with in Chapter six in more details.

Chapter Four

Linens and Laundry

This chapter intends to develop a curriculum for the safe management of linens, curtains, mattresses and bedcovers in terms of colleting, separating, washing and ironing, to highlight risks of infection associated with using dirty laundry and to keep clean laundry from the risk of recontamination, to identify the appropriate preventive measures to reduce the risks and, to prevent patients, health workers and the community in general when handling them.

Linens are usually cleaned and washed personally as a kind of providing help and volunteering.

The purpose

- To develop a curriculum for the safe management of linens and laundry
- To highlight risks of infection associated with using dirty laundry
- To keep clean laundry from the risk of recontamination
- To identify the appropriate preventive measures to reduce the risks of contamination when handling the laundry and to protect patients and workers in general.
- Assign responsibilities
- Monitoring and training

Before beginning to describe the mechanism for dealing with linens and laundry, below are the standards that this mechanism is to achieve

- Secure adequate stock of clean and sustained linens and bedcovers to be available when needed.
- Manage laundry service needs whether inside or outside the clinic efficiently.
- Follow instructions and requirements of infection prevention and safety when collecting mattresses and linens for laundry purposes and safety in laundry management.
- Clothes and bed sheets stained with blood and body fluids should be collected and kept isolated, and gloves must be put when handling them as well as storing them in predefined plastic bags.
- Those who are concerned with laundry should be provided with and trained on information related to the requirements of control and safety in laundry management.

Methods of work in handling linens and laundry[2]

To work according to the above criteria, linens and laundry are to be handled in one of the following methods:

1. Secure a laundry room equipped with fully automatic washing machines (auto dry) with taking into consideration separating washing machines of infected laundry
2. Contract with a third-party concerned with laundry tasks according to the terms and instructions set by the PHCC as they will be addressed later.

When handling linens, they are classified as in the table shown below:

Dirty	Used linens not containing body fluids and not used for infected persons
Infected laundry	Linens used for infected persons Linens wetted with blood and other body fluids
Other items	Personal stuff and curtains

Instructions on storing

1. Storing clean laundry:

- Clean linens should not be stored in the laundry room, bathroom or changing room.
- Storage place should be kept clean and out of reach of insects and rodents
- Must be lifted off the ground when storing
- Must be kept from being contaminated again
- Must not be stored in places within reach of the patients.

2. Storing dirty laundry:

- Bags of used linens should be tightly closed when they are three-quarters full.
- Should be kept in a safe place
- Should not be put in places obstructing passage or other businesses

[2] When disposable bed sheets are not available.

Handle specific Items and reduce the spread of infection

A. Before addressing how to handle the items listed in B, and in order to reduce the spread of infection among service providers the following have to be taken into consideration:

- Put on thick gloves and masks before work.
- Separate contaminated bed sheets and linens in waterproof and preferably red bags.
- Pay attention if there's any sharps when collecting and moving.
- Collect linens and sheets slowly making no quick movement to avoid the spreading of microbes.
- Tightly close the bags of dirty sheets and linens.
- Move laundry bags (sheets and linens) by the cart.

B. Handle items

1. Mattresses

- Mattress used for the patient should have washable sheets.
- They must be cleaned with disinfectants and water then rinsed and dried after use for each patient.
- Dirty or torn mattresses must be disposed of and replaced.

2. Personal laundry of patients (PHCCs that have labor and emergency rooms)

- Patients' personal laundry should be given to their relatives if possible.
- If they're to be sent to laundry service providers then it should be done according to the regulations and constructions set and agreed upon by the clinic.

3. Curtains

- Curtains bust be washed regularly as mentioned in the cleaning schedule (sample 12 A)
- Curtains should be changed whenever they apparently get dirty.

4. Laundry room
    - Laundry room is designated for laundry. However, it is the laundry room workers' duty to keep the room and its equipment in a satisfying level of cleanness.
    - Laundry room should be far from the places of pharmaceutical and nutritional preparations.
    - Washing machines should work in a good format and be kept clean.
    - Work surfaces must be kept clean and free of any visible contaminants by using disinfectants and water.
    - Dirty laundry should immediately be put in the washing machine; not to be left outside on work surfaces.
    - Hands must be washed and sterilized after handling dirty laundry.
    - Workers are not permitted to rinse dirty laundry by hands.

Linens disinfection by service providers

Used laundry's treatment and disinfection methods adopted by the contractors are controlled by the guidelines of Services Unit in the Health District. Compliance of these methods with the guidelines is subject to the scrutiny of the Health District.

Monitoring

Laboratory Unit and Services Unit in Health Districts make sure of conducting regular monitoring for all measures to ensure compliance with the standards and commitment to the safe practices.

The table below is used to make sure that all individuals concerned with laundry are fully aware of risks of handling dirty laundry, and that they have been informed of all instructions issued in this respect. Everybody is asked to commit to and work according to it, with regular scrutiny.

I've read the document and understood all its instructions and directions, and I'll act according to them.

#	Name	Signature	Date

Laundry Management and Responsibilities

1. PHCC Manager is responsible of applying what is cited in this guideline.
2. Official of Infection Control Committee is responsible of developing and implementing directions and instructions of infections control, and he/she is responsible of providing consultation and training regarding all practices of infection control, and ensuring that the guideline be seen and reviewed by the Infection Control Committee to insure that everybody is committed to it. He/she is also responsible of working with the PHCC Manager to set plans for infection control regarding laundry.
3. Service Unit (Administrator at the District level) and (service official at PHC level in the clinic) are responsible of ensuring that all the PHCC staff are aware of the health policy and that safe management of linens and laundry is adopted in their job fields in compliance with the standards previously mentioned, and ensuring completion of human resources working under his/her authority.
4. The PHCC workers in general: it is necessary to make sure that they have read and understood the health policy in handling linens and laundry, and they utilized the instructions related to managing them in their health work.
5. Non-Health staffs: all non-health staffs who are not concerned with linens and laundry have to make sure that they are fully aware of their role in infection prevention associated with primary health care in this field.

Training:

Human resources working in PHCCs should be trained on handling linens and laundry focusing on the following:

- All staffs handling laundry (clean or used) should be aware of instructions of linens and laundry.
- Clean laundry should be handled in a way that ensures avoidance of contamination even when they are being transformed or stored.
- Laundry carts should be used in collecting used bed linens. They should not be carried by hand or left on the ground to reduce environment pollution and personal exposure
- Linens should be carefully removed from the beds as much movement may lead to increasing Bacteria in the air.
- All staff should ensure that no foreign objects be disposed of with linens such as artificial teeth, eyeglasses, sharps, pillows, handkerchiefs may cause harm to the workers or the washing machines.
- Workers should put on aprons and gloves when handling linens used for patient or when handling linens contaminated with body fluids.
- Works have to wash their hands after handling used linens and after taking off aprons and gloves

Chapter Five

Occupational health and safety

Occupational health and safety is defined as the science concerned with maintaining human's safety, health and property by providing secure work environment and free of any causes of accidents, injuries or occupational diseases through the measures and regulations that aim to keep people and property out of all risks.

Goals of Occupational Health and Safety

1. Protect humankind from accidents caused by work environment risks.
2. Maintain the physical elements of facilities and their equipment from damage and burn as a result of accidents.
3. Instill safety and tranquility to the employees while carrying out their work and reduce anxiety that they suffer during work.

Duties of Occupational Health and Safety Management in PHCCs:

- Provide an appropriate healthy environment.
- Know how to deal with medical waste in PHCCs.
- Provide personal protective equipment to the cleaners according to how they handle or deal with medical waste.
- Apply guidelines and instructions on the protection of workers, visitors and clients of infectious and occupational diseases.
- Set evacuation and emergency plans and conduct training on them as well as reviewing and updating them annually (fire - natural disasters - security cases ..... etc.)
- Supervision and follow-up in all matters related to security and occupational safety.

Awareness to Prevent Accidents:

Accidents and injuries related to the professions occur every day in the workplace. They are often occur because workers do not have the necessary awareness and training to perform the work safely. One of the ways to prevent injuries at work is the **Job Risk Analysis System.**

Job Risk Analysis System

It is the examination of every step of the completion of any action or job in terms of occupational health and safety to get to know, control and prevent the risks associated with each step.

Its Benefits:

A - Know the risks of each job and work.

B - Raise awareness of occupational health and safety among workers.

C - Reduce incidents and thus reducing the cost resulting from these incidents.

Application Steps

The necessary steps for the application of Job Risk Analysis System are as follows:

First: select a job to analyze its risks by reviewing the records of injuries and choose jobs with a high level of injuries or new jobs.

Second: split the job into sequential steps, then analyze risks of each step, taking into account not to prolong the division to be no more than ten steps.

Third: Identify the risks of each step.

Fourth: Analyze and evaluate these risks and determine the best ways to reduce the occurrence of them.

Identify Risks in PHCCs and prevent accidents caused by them:

The risks that can be exposed to are physical, chemical, mechanical, biological and psychological risks. In order to prevent the occurrence of accidents in any work, we have to identify the reasons that lead to the occurrence of these incidents. Some preventive measures that prevent accidents in PHCCs are following:

1. Seek to provide safe environment in the PHCC through the terms and conditions that must be met in buildings in terms of location, size, distribution of indoors, standards and specifications of building materials used, HVAC systems and proper lighting, fire risk prevention procedures, specifications of water used and the use of correct engineering methods in designing and distributing electricity.

2. in stores of materials, medicines and medical devices:

- Materials should be classified according to their nature, characteristics and instructions written should be implemented so that each type of materials stored separately in order to easily identify the appropriate means for firefighting accordingly.
- Stored materials should be placed on shelves or bases to protect them from damage; not to put them directly on the ground.
- Completely apply smoking prevention policy inside stores and put warning signs.
- Periodical Follow-up by a specialist on electrical devices and ensure safety.
- Take into account the cleanliness, order and organization within the stores and keep the outer perimeter of the stores clean of waste or flammable trash.

- Perform maintenance of fire alarms and fire extinguishing equipment according to specific dates, and hang them in visible and accessible places. They shall be operated and tested from time to time to make sure of their validity, and there should be instructions on how to use them fixed.
- Control of rodents and insects on an ongoing basis.
- Provide adequate ventilation inside the stores.
- Observe the stores' actual capacity; don't accumulate materials more than the actual capacity.

3. Protect workers from infection causes.

It is protecting health facility workers from the risk of acquired infection by providing a health and clean environment in the PHCCs. This includes:

- Hand washing
- Segregation of waste and how to deal with it.
- Disinfection and sterilization of medical devices and equipment.
- Periodic examination of workers in the primary health centers to prevent infections acquired inside the center.

The medical and laboratory devices which are in contact with the patients are carrying infection to the medical staff, technicians and engineers who are dealing with these devices in laboratories or when examine, maintain or repair them. So caution is required when dealing with them as well as taking the necessary precautions through sterilization and disinfection in addition to the use of appropriate protective gloves.

4. Security and safety in laboratories:

Rules for the security and safety of laboratories must be established to ensure the safety of workers. Face Respirators and hand gloves should be used as well as separating medical waste and blood samples drawn from the patient, sterilizing medical devices appropriately according to the type and use of the device. Cleansing should be on daily basis and devices should be dried using soft towels.

The following should be observed:

- All substances resulting from the human body should be considered infection sources.
- Avoid actions that produce blowing spray.
- Avoid eating, drinking smoking or keeping food inside the laboratory.
- Cleaning the laboratory according to what is mentioned in the cleaning steps in Chapter Four.

- Report immediately upon the occurrence of any accident while dealing with biomaterials, especially if a wound or a prick was caused by sharps.

- Use mechanical pipettes instead of using the mouth according to the instructions.

5. Dealing with Radiation:

A- Security and Safety from Radiation

- Cover the X-ray room with lead insulation material, use lead barriers in accordance with international requirements to ensure the safety of staff and clients, hang warning signs to avoid exposure to radiation for the clients especially pregnant women.
- Educate patients and their families on radiological examinations to reduce their exposure to radiation through awareness campaigns and health education.
- Reduce the re-examinations of patients (women in early pregnancy)
- Emphasize and periodically follow-up examinations for workers and check for badges on an ongoing basis in the specialized clinics.

B- Methods to prevent Radiation:

- Keep enough distance between the worker and the radiation source.
- Reduce the hours of exposure to radiation.
- Put leaden barriers to the source.
- Adequate ventilation
- Waste treatment so as not to affect the internal or external environment
- The regular inspection of the environment
- Put alarms to detect radiation increase in the workplace.

Emergency Plan

A – The plan aims to face the crises and emergencies that PHCCs may witness such as fire through preparing or anticipating and dealing with them as soon as they occur. The plan must include how to evacuate the PHCC of the occupants in case of emergency and take all necessary measures to ensure their safety, tranquility stability and security to them. The plan aims to:

- Preserve life and property, and evacuate the buildings occupants as soon as hearing the fire alarm bell sending them to predetermined assembly points.
- Establish and train a committee for the management of crises and emergency in the PHCC and determine its duties and tasks.
- Control the risk and prevent the spread of fire, work on reducing losses by using effective ways firefighting.

B- Duties of Management of Crises and Emergency Committee

Requirements for the success of the plan of responding to crises and emergency situations depend on the crisis management committee and how well they are trained to take preventive measures, physical confrontation and control the damage. The duty of the Committee includes the following:

- Put phone numbers of Civil Defense and Fire teams in a clear place (model 13)
- Guide building occupants to the path of escape routes, emergency exits and assembly points.
- First aid
- Boost morale through periodic symposiums.
- Turn off electricity to stop work immediately.
- Head to assembly points through the escape routes and emergency exits.
- Prevent workers from getting back to the building for any reason.

Electrical Safety and Shutdown of Power Source:

- A safe system to unplug power source must be established.
- Power sources must be unplugged from the equipment, and gas and air valves must be closed.
- The responsible person where the electrical defect or broken device is located should inform the maintenance department of the defect and the need to maintenance.
- The maintenance technician shall cooperate with the site official to put a tag next to the electric keyboard or the valves that have been shut down.
- The above steps are to be made under the supervision of the maintenance department in the case of repairs or does one of the contractors use the equipment.
- If work hasn't been completed during working hours, a sign should be put to inform the employees of the situation.
- During supervisory tours, maintenance technician should ensure the safety of all energy sources in the PHCC.

Table to follow up application of Safety and Security Measures

#	Test	Yes	No	Comments
1	check examination of the PHCC's environment according to the PHCC Cleanliness examination and evaluation form			
2	Provide and put on the special equipment of a radiologist (Badge, vests) and cover the X-Ray room with lead according to the Ministry of Environment instructions			
3	Make sure that medical and lab staffs are putting on gloves and vests.			
4	Cleaning workers are putting on their special equipment			
5	A plan for medical waste separation available			
6	Guiding signs for the clients and caution guidelines concerning emergency exits, fire and no-smoking hanged in the appropriate places			
7	Store fuel in a safe way			
8	Provide fire extinguishers and ensure their validity			
9	Emergency exits are passible (door, stairs) and clearly indicated			
10	Check electric network and plugs according to the instructions			

* checking must be done by the officials in the District on regular basis or during the inspection visits

Chapter Six

Waste Management in Primary Health Care Clinics

This chapter aims to develop a mechanism for waste management in PHCCs and the proper ways to deal with its both kinds; the medical and the normal in terms of identification, separation according to the kind and size, collection, storage, isolation then transportation and disposal. This chapter will also address the risks of waste and how to prevent them. Efficient waste management can positively affect the quality improvement and raise quality in providing care services, and this is the goal of the general management that considers waste management one of its essential parts.

1. The importance of proper waste treatment

All staff have a responsibility to dispose of healthcare waste in a manner that poses minimal hazard to patients, visitors, other healthcare workers, and the community. This can:

- Minimize the spread of infections and reduce the risk of accidental injury to staff, patients, visitors, and the local community.
- Reduce odours and provide an aesthetically pleasing atmosphere
- Attract fewer insects and does not attract animals.
- Reduce the likelihood of contamination of the soil or ground water with chemicals or micro organisms
- Contribute in environment safety and protection from pollution

Dangers posed by healthcare waste

To staff

Sharps pose the greatest risk and can cause injury and transmission of serious infections, including HIV, Hepatitis B and C. It is recommended that all staff at risk of waste-related injury should be vaccinated against Hepatitis B.

Patients and clients

Staff members who have improperly handled contaminated waste can easily spread infections to patients.

To the community

Improper disposal of waste is one of the greatest threats to members of the community. For example, contaminated (infectious) waste can be found by children who are playing and cause them injury and infection. Besides, scavenging of contaminated waste is a significant problem. Not only are people who go through contaminated (infectious) waste at risk of injury and infection themselves, but this practice can also put patients and the local community at risk when scavenged waste, such as syringes and needles, IV fluid bags is reused.

Anyone who handles contaminated waste – from the time it is thrown out by a service provider to even after it reaches the site of final disposal – is at risk of infection or injury

The dumping of healthcare waste in uncontrolled areas can have a direct environmental effect by contaminating soils and underground waters.

2. Reasons for improper waste handling

Appropriate disposal of waste is such a problem because:

- The staff who collect and dispose of contaminated waste, those who decide on the facility's budgets, and those who handle and dispose of trash once it leaves the facility (such as trash haulers or dump operators) are often unaware of the risks that medical waste poses.
- Many administrators and staff do not know or think about how waste is handled or where it goes – they just assume that waste is being disposed of in an appropriate manner.
- Healthcare facilities are often designed with little consideration for waste disposal.
- There may be a mistaken belief that fancy, expensive waste-disposal technology is necessary in order to dispose of waste properly. If this technology is unavailable or unaffordable, many people believe that little can be done to address the problem of waste disposal.

By educating staff, administrators, and the local community about the dangers of contaminated waste and by instituting low-cost, safe waste-disposal practices, all health facilities can minimize the risks associated with waste disposal.

3. Kinds of waste in healthcare facilities

There are two kinds of waste found in health facilities: general waste(around 80% of the total healthcare facilities waste) and clinical or medical (contaminated) waste (around 20% of the total healthcare facilities waste). It is important to dispose of all kinds of waste properly, but improper disposal of contaminated waste (which is infectious) poses the most immediate health risk to the community.

- **General waste**
  General waste is non-hazardous waste and it poses no risk of injury or infections. This is similar in nature to household trash. Examples include paper, boxes, packaging materials, bottles, plastic containers, and food-related waste.
- **Clinical or Medical waste**
  Clinical or Medical waste is contaminated material generated in the diagnosis, treatment or immunization of patients. It is usually categorized as:

  Infectious Waste:

  All waste suspected to contain pathogens (bacteria, viruses, parasites or fungi) in sufficient concentration or quantity to cause disease in susceptible hosts. Infectious waste includes, but is not limited to, excreta, tissue, body parts and fluids contaminated with pathogens, utensils and equipment exposed to infected patients and infectious waste generated from the laboratory.

  Pathological Waste:

  All wastes consisting of tissues, organs or various human body parts such as, bloods, lymph, organs or body parts of animal trials, human body liquids from the placenta and infant dead, etc.

  Sharps Waste:

(used or unused), including hypodermic and suture needles, scalpel blades, blood tubes, pipettes, and other glass items that have been in contact with potentially infectious materials (such as glass slides and cover slips)

Pharmaceutical Waste:

All wastes including expired, unused, spilt and contaminated pharmaceutical products, drugs, vaccines, and sera that are no longer required and need to be disposed of.

Chemical Waste:

These are the wastes that are solid, liquid and gaseous chemicals which may be hazardous and have at least one of the following properties:

- Toxic
- Corrosive (e.g. acids of pH < 2 and bases of pH > 12)
- Flammable
- Reactive (explosive, water reactive, shock sensitive)

Wastes with High Content of Heavy Metals:

Wastes representing a subcategory of chemical wastes with high toxic such as, mercury wastes from broken clinical equipment like thermometers, blood pressure gauges and cadmium wastes from discarded batteries.

Pressurised Containers:

Emptied or unused gas cylinders, gas cartridges, aerosol cans that may explode if incinerated or accidentally punctured.

4. Principles of waste management

a waste-management plan

Every health facility – whether a large hospital, a doctor's office, or a small health post – should develop a medical waste-management plan and should designate a staff member to coordinate the management of medical waste.

Components of a waste-management plan

The health facility's waste management plan should contain the following four components, each of which will be discussed in detail in this module:

- Sorting: Separating waste by type at the place where it is generated.
- Handling: Collecting and transporting waste within the facility.
- Interim storage: Storing waste within the facility until it can be disposed of.
- Final disposal: Eliminating or transporting solid medical waste, liquid medical waste, sharps, and hazardous chemical waste from the health facility.

Separation/Segregation

It is important to train all healthcare workers, including physicians, to keep contaminated and non-contaminated waste separate.

Only a small percentage of the waste generated by a healthcare facility is medical waste that must be specially handled to reduce the risk of infections or injury.

Sorting the waste at the point where it is generated can conserve resources by greatly reducing the amount of waste that needs special handling. Poor separation of waste at the point where it is generated leads to large amounts of waste that must be handled specially – which can overwhelm the disposal system, lead to improper disposal of medical waste, and put everyone at risk.

Tips for sorting waste

Each type of waste should be put in the appropriate waste containers. To help the staff use containers correctly:

- Always keep separate containers in convenient places wherever both general and medical waste are generated.
- Use coloured plastic containers, painted drums, or easily readable labels to help distinguish between general and contaminated waste containers. For example, paint the containers used for contaminated waste yellow or use yellow plastic bags if available (see below).
- Place sharps containers where sharps are used so that staff do not have to walk across the room (or farther) carrying used sharps.
- General (non-clinical) waste must not be mixed with clinical waste, and if they are mixed they should be marked as clinical waste.

Note: All healthcare facilities must mark waste bags or containers with standard colours, symbols and code numbers to classify clinical (contaminated) and general waste.

Table: Sorting, colour coding and marking of healthcare waste

Waste Category	Colour of Container and Markings
General Waste	Black
Infectious waste or pathological wastes	Yellow, with black marked “INFECTIOUS” Red, marked “PATHOLOGICAL”
Sharps	Yellow, marked “SHARPS”
Chemical and pharmaceutical wastes	Yellow marked “CHEMICAL”
Wastes with high content of heavy metals	Yellow (firmly closed) marked with “heavy metal”
Pressurised containers	Black

Exceptions

- ❖ Small quantities of chemical waste or drug waste can be collected together with the infectious waste.
- ❖ Waste that should not be incinerated, such as empty oxygen cylinders (aerosol containers) can be collected together with general waste if the containers are empty.
- ❖ Infectious waste containing low quantities of radioactive content such as cleaning equipment, equipment used for diagnosis or treatment can be collected together with infectious waste if the equipment has been selected for high temperature incineration.
- ❖ Infectious medical waste from TB culture and drug sensitivity procedures should be autoclaved before it leaves the laboratory for further processing.

Non-combustible (non-burnable) wastes include glass and metals.

- Pressurized gas containers (aerosol cans)
- Large amounts of reactive chemical waste
- Silver salts and photographic or radiographic wastes
- Plastic containing polyvinyl chloride (blood bags, IV tubing or disposable syringes)

- Waste with high mercury or cadmium content, such as broken thermometers, used batteries, non-plastics contaminated with blood, body fluids, secretions and excretions and infectious laboratory wastes.

Handling

Staff should handle medical waste as little as possible before storage and disposal. The more waste is handled, the greater the chance for accidents.

Special care must be taken when handling used needles and other sharps, which pose the greatest risk of accidental injury and infection.

Emptying waste containers

Waste containers that are too full also present greater opportunities for accidents. Waste should be removed from procedure rooms before the containers become completely full. At the very least, these containers should be emptied once a day. Dispose of sharps containers when they are 3/4 full. (When sharps-disposal containers become too full, people may push sharps into the container, causing injury.)

- ❖ Staff should wear utility gloves, heavy duty apron and boots when collecting waste.
- ❖ Do not collect medical waste from patient-care areas by emptying it into open carts or wheelbarrows, as this may lead to spills and contamination of the surroundings, may encourage scavenging of waste, and may increase the risk of injury to staff, patients, and visitors.
- ❖ Handle medical waste as little as possible.
- ❖ Never put your hands into a container that holds medical waste.

Interim storage of waste

If possible, final disposal of waste should take place immediately, but it is often more practical to store waste briefly in the facility before final disposal.

Interim storage should be short-term –-usually waste should be stored only for a few hours before final disposal. Waste should never be stored in your facility for more than one or two days.

If it is necessary to store medical waste on-site before final disposal:

- ➢ Place waste in a closed area that is minimally accessible to staff, patients, visitors and animals.
- ➢ As few people as possible should come into contact with stored medical waste.
- ➢ All containers should have lids to prevent accidental contamination, spillage, and access by insects, rodents, and other animals.

Remember: Contaminated medical waste poses serious health threats to the community. Never store medical waste in open containers and never throw waste into an open pile.

Transportation of Waste Outside

In case of off-site treatment, the waste has to be transported to the treatment/disposal facility site in a safe manner. The vehicle, which may be a designed van, should have the following specifications:

- It should be covered and secured against accidental opening of door, leakage/spillage etc.
- The interior of the container should be lined with smooth finish of aluminium or stainless steel, without sharp edges/corners or dead spaces, which can be conveniently washed and disinfected.
- There should be adequate arrangement for drainage and collection of any run off/leachate, which may accidentally come out of the waste bags/containers. The floor should have suitable gradient, flow trap and collection container.
- The size of the van would depend on the waste to be carried per trip.

Final disposal of waste

General waste, like household trash, can be taken to the regular community waste-disposal point for final collection and disposal. It should be:

- placed in a container that is green in colour;
- placed in an impermeable container with a lid;
- placed in plastic bags that are black in colour;
- segregated from clinical/infectious waste;
- collected on a daily basis;
- transported to disposal site (determined by local authorities)

Methods of medical waste treatment and disposal

Technologies and methods for the treatment and disposal of medical wastes are: incineration (burning), chemical disinfection, wet and dry thermal treatment, microwave irradiation, land disposal (burying), inertization and encapsulation

- Burning (incineration): All incinerators should comply with the Ministry of Environment regulations to control air pollution.

Incineration (in special incinerators): all incinerators should be in compliance with regulations of Ministry of Environment related to air pollution control.

Incineration at high temperature (above 800 – 1200 ˚C) is the best way to dispose of most kinds of medical waste. Incineration (burning) is the best option, since the high temperature destroys microorganisms and reduces the amount of waste. Burning in an incinerator or oil drum is recommended. Open burning is not recommended because it causes scattering of waste, is dangerous, and is unattractive.

- **Autoclave Treatment**

This is a process of steam sterilisation under pressure. It is a low heat process in which steam is brought into direct contact with the waste material for duration sufficient to disinfect the material. These are also of three types: Gravity type, Pre-vacuum type and Retort type.

In the first type (Gravity type), air is evacuated with the help of gravity alone. The system operates with temperature of 121 degree C. and steam pressure of 15 psi. for 60-90 minutes. Vacuum pumps are used to evacuate air from the Pre-vacuum autoclave system so that the time cycle is reduced to 30-60 minutes. It operates at about 132 degree C. Retort type autoclaves are designed to handle much larger volumes and operate at much higher steam temperature and pressure.

Autoclave treatment has been recommended for microbiology and biotechnology waste, waste sharps and solid wastes. This technology renders certain categories of bio-medical waste innocuous and unrecognisable so that the treated residue can be landfilled.

Microwave Irradiator

Autoclave

- **Microwave Treatment**

This again is a wet thermal disinfection technology but unlike other thermal treatment systems, which heat the waste externally, microwave heats the targeted material from inside out, providing a high level of disinfection. The input material is first put through a shredder. The shredded material is pushed to a treatment chamber where it is moistened with high temperature steam. The material is then carried by a screw conveyor beneath a series of conventional microwave generators, which heat the material to 95-100 degree C. and uniformly disinfect the material during a minimum residence time of 30 minutes and total cycle is of 50 minutes. A second shredder fragments the material further into unrecognisable particles before it is automatically discharged into a conventional / general waste container. This treated material can be landfilled provided adequate care is taken to complete the microwave treatment. In the modern versions, the process control is computerised for smooth and effective control.

Microwave technology has certain benefits, such as, absence of harmful air emissions (when adequate provision of containment and filters is made), absence of liquid discharges, non-requirement of chemicals, reduced volume of waste (due to shredding and moisture loss) and operator safety (due to automatic hoisting arrangement for the waste bins into the hopper so that manual contact with the waste bags is not necessary). However, the investment cost is high at

present. According to the rules microbiology and biotechnology waste, waste sharps and solid waste are permitted to be microwaved.

- **Chemical Disinfection**

This treatment is recommended for waste sharps, solid and liquid wastes as well as chemical wastes. Chemical treatment involves use of at least 1% hypochlorite solution with a minimum contact period of 30 minutes or other equivalent chemical reagents such as phenolic compounds, iodine, hexachlorophene, iodine-alcohol or formaldehyde-alcohol combination etc. Pre-shredding of the waste is desirable for better contact with the waste material.

Table: Treatment and Final Disposal Technologies for Healthcare

Technology or means	**Infection carrier waste**	**textile waste**	**Sharp waste**	**Pharmaceutical % chemical waste**
Incinerator	Yes	Yes	Yes	Small amount
Chemical disinfection	Yes	No	Yes	No
Autoclave	Yes	No	Yes	No
Microwave	Yes	no	Yes	No

Comparison between Incineration, Autoclave and Microwave Treatment

Type of Treatment	Advantages	Disadvantages
Incineration	• Elimination of health risks • The waste is non-recognizable • Fully destroys micro-organisms and sharps • Reduces volume/mass of the waste • Destroys all types of organic waste (liquids, pharmaceuticals, and other solids) • Heat recovery possible • High quantities of waste can be treated (except for batch incinerator)	• High investment costs • Complicated to operate • Continuous monitoring required • High maintenance • Relatively high operation costs; costs rise with the level of sophistication of the emission controls system • Limited capacity • Emits toxic flue gases (including dioxins and furans; level varies), currently there is no accepted level of emission for dioxins and furans. • Generates residue that needs safe landfilling • Any residue generated may be toxic
Autoclave Treatment	• Simple to operate • A known technology at healthcare facilities	• Relatively expensive to install and operate • Requires boiler with stack emissions controls • Relatively high maintenance costs • Cannot be used to treat some hazardous wastes and pharmaceuticals • Requires separate and additional packaging • Generates odors • Final disposal must be as for untreated special healthcare waste • Generates contaminated wastewater that needs treatment
Microwave	• The shredding process reduces	• Highly sophisticated and

irradiation (Disinfection)	the volume of the waste (not mass)	complex • Relatively expensive to install • Only solids can be treated and only when shredded • Cannot be used to treat some hazardous wastes and pharmaceuticals • Highly skilled operator required • Expensive and difficult to maintain • Final disposal must be same as for untreated special healthcare waste • Generates contaminated wastewater that needs treatment

- **Burying**

On-site burial is the next best option. When burying waste, you must have space for a pit big enough for all the waste generated at the site. The pit should be surrounded by a fence or wall to limit access to it.

Remember: If liquid waste is buried, large quantities (over 1 kg) should not be buried at the same time; burial should be spread over several days.

Disposal of liquid medical waste

Always wear heavy utility gloves and shoes when handling or transporting liquid medical waste of any kind. When carrying or disposing of liquid medical waste, be careful to avoid splashing the waste on yourself, others, or on the floor and other surfaces.

Carefully pour liquid waste down a sink, drain, flushable toilet, or latrine. If this is not possible, bury it in a pit along with solid medical waste.

Moderate quantities of mild liquid or semi-liquid pharmaceuticals such as solutions containing vitamins, cough syrups, intravenous solutions, eye drops (but not antibiotics or cytotoxic drugs), should be diluted with 0.5% sodium hypochlorite and discharged into municipal sewers using a large flow of water. Pharmaceutical wastes shall not be disposed of into slow-moving or stagnant water.
In addition, small amounts of blood in plastic containers or in test tubes could be sterilized by 1% sodium hypochlorite.

Note: Before pouring liquid waste down a drain or toilet, consider where the drain empties. It is hazardous for liquid medical waste to run through open gutters that empty onto the grounds of the facility.

All facilities should have appropriate drainage. If the facility does not link to a treated municipal water drainage system, then all drainage should be treated locally. This includes appropriate septic and filtration systems.

Staff and Community Education

Medical waste, when not correctly disposed of, poses a risk of infections to healthcare staff, patients, and the community at large, but many do not know or understand these risks. Your waste-disposal plans may not be effective until you have educated your staff and community about potential dangers.

Educating staff

The staff who collect and dispose of waste at healthcare facilities are often unaware of the risks that medical and hazardous chemical waste pose. Regular orientations and in-service training are important parts of staff education. In many locations, staff who perform waste-disposal tasks are low-literate/non-literate. If this is the case, development of highly visual training materials is recommended to ensure that these staff clearly understand their risks and the proper disposal practices.

Educating the community

In many low-resource settings, scavenging of medical waste is a significant problem, made worse by the poor waste-disposal practices at many medical facilities. Numerous cases of the transmission of Hepatitis B are contributed to scavenging medical waste around the world. It is important for facilities to help educate the local community about the dangers of scavenging medical waste, particularly if scavenging of waste is a common practice. Signs, informational sessions at health fairs, and educational sessions at schools and community centres can be used to alert community members about their risks. Health facility administrators can help target the specific risks within their communities by working in collaboration with community leaders on educational initiatives.

Remember: Highly infectious waste should be disinfected by proper disinfectants or autoclaved before they are disposed of either by incineration or non-incineration processes. Unless there is an adequate waste-water treatment plant, blood should be disinfected before discharged to a sewer.

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6. Instructions of project management and engineering services , engineering and maintenance department / KIMADIA-Ministry of Health, Republic of Iraq, 2008
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8. Measurements of consumption of machinery and medical equipment / Ministry of Health - Department of technical Affairs 2008

Appendices

Form 1

Why maintenance management

What is meant by equipment maintenance?

In order to

Keep equipment in good condition

Enable PHC worker to diagnose and treat patients efficiently

Maintenance has two aspects
Technical
Administrative

First aspect is easy to understand

But

What it Management? And how do we approach medical equipment maintenance management?

We must have a checklist

How to prepare a checklist?

We preview all equipment in the PHCC

What is equipment? And what is medical

- Electronic, mechanical and electrical equipment

- Furniture and technical documents

Medical equipment of examination and treatment

Some items although considered medical devices,

But they don't need maintenance; they need daily cleaning

We have to be able to know and recognize:

- How many devices and in the site

- Devices types, maintenance and calibration schedule.

- Devices operating time

Form 2

Checking Buildings and floors

#	Questions	Yes	No	Comments
1	The place is entirely clean according to the PHCC's cleaning schedule			
2	Are there any risks, wet spots, lubricating oils, protruding items or any scattered pieces?			
3	Corridors and hallways leading to examination rooms properly indicted?			
4	Are sewer vents, electrical wiring and wastewater tanks etc. are covered or equipped with inspection covers?			
5	Is equipment stored safely?			
6	Warning and danger signs clearly put in their proper place?			
7	Buildings labels are clear for the purposes of emergencies?			
8	Emergency exits are clear and accessible?			
9	Adequate lighting available?			
10	Adequate ventilation available?			
11	Windows and roof hatches are properly covered?			
12	Stairs are in good condition, metal baluster, anti-skid on the sides are available?			
13	Toilets and wash basins maintained and available for all workers			
14	Wash basins supplied with hot and cold water as well as appropriate drying items.			
15	Sewage system connected with the main sewage network			
16	Checking infrastructure: surface floor is paved and has water There is no cracking or moisture in the ceilings and walls Ground of floors and entrance are free of any drilling or slippery slopes windows are good, glass is clean and unbroken			
17	Water tanks are valid, clean and sealed			

Examiner's name and signature PHCC Manager

Form 3

Checking Electrical Safety

#	Questions	Yes	No	Comments
1	All electrical wirings are free of damage and wrapped with insulation tapes			
2	Electrical switches are in a good condition			
3	Control panel is in a good condition			
4	Access to control panels is easy			
5	Covers for boxes, tubes and wires are available			
6	Electricity cabinets and circuits are classified and labelled properly?			
7	All powered parts such as electrical control panels, junction boxes and keys equipment secured?			
8	Electrical control panel wirings accurately arranged?			
9	Door or plate that covers the control panel box fixed and firmly closed?			

Examiner's name and signature PHCC Manager

Form 4

Checking Toilets and washing places

#	Questions	Yes	No	Comments
1	Toilets, sanitation and washing places are available for all works			
	Verify toilets functionality and validity			
2	WCs and washing places are clean, maintained and sterilized			
3	WCs, wash basins have hot and cold water, soap and drying means			
4	Smooth flow in the drainage system at the facilities			
	Special places for hand washing in the lab are available			

Examiner's name and signature PHCC Manager

Form 5

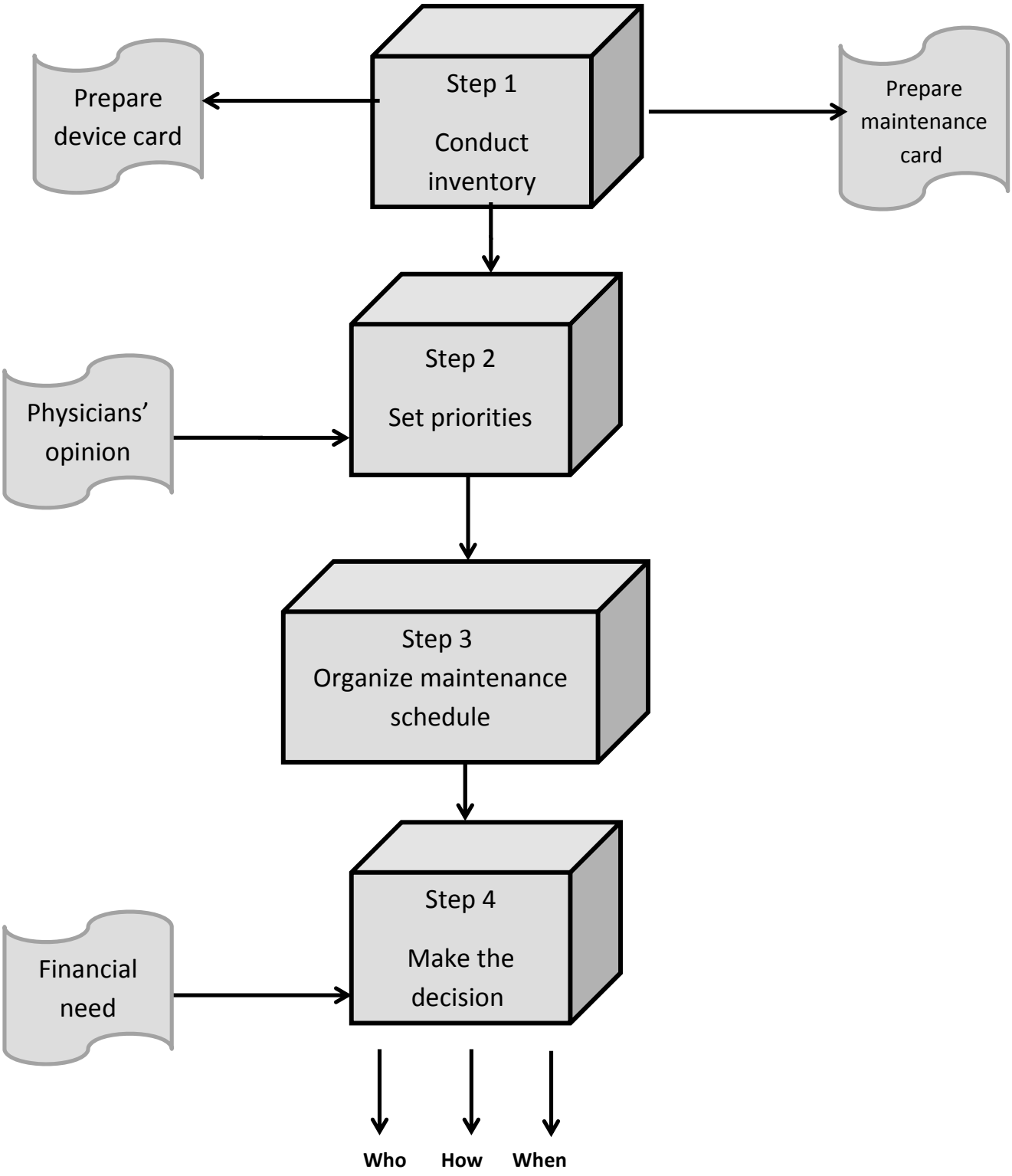
Checking Furniture in the PHCC

	Questions	Yes	No	Comments
	Furniture and equipment are available in accordance with the disclosure lists, and working regularly and properly			
	Examination beds and wheelchairs are available and work well			
	Hand washing facilities have water, liquid soap and towels			
	Waiting areas are appropriately furnished, clean and good ventilated			
	PHCC rooms are clean good ventilated, subject to maintenance and contain the necessary equipment			
	Chairs and other furniture are leather-covered to facilitate cleaning and disinfection			
	Curtains available and cleaned on regular basis			
	Air conditioners in the waiting areas available for the visitors			

Examiner's name and signature PHCC Manager

Form 6

Maintenance Planning Mechanism



Form 7

General status of equipment

DOH ……. /PHCC ……..

Priority	(status)			Equip. status	Invent. Date	Manuf.	Serial No.	Quantity	Model	Item	No.
	T.P	Agt.	IH								

FF: FULLY FUNCTION. PF: partially functioning NF: not function, NI: not in use, R I: require installation, NR: need repairers: RS: need site, NMS: need medical supply, NS: need spare part, NMP: need man power, NTR: need training, NMTR: need maintenance training M: item missing

***IH: in house, Agt: local Agent, TP: third part**

Abbreviations above are to be used in States field

Form 8

Device card

Device name: Device Number:
Site: Model:
Startup date: Contract No. & Date:
Supplier: Address:
Contact Agent: warranty period:

Date	Repair letter No.	Brief description on repair	Spare parts dispensed	Repairer

Form 8A

Maintenance document			
Device name: **Serial No.:** **Priority: A, B, C** **Device function:** **Device site:**			
Comments	**Services required:**		
1-			
2-			
3-			
4-			
5-			
Specific instructions:			
Contact with	**Date**		
	After sell contract		

Form 9

Regular Maintenance Plan (PHCC …….....)

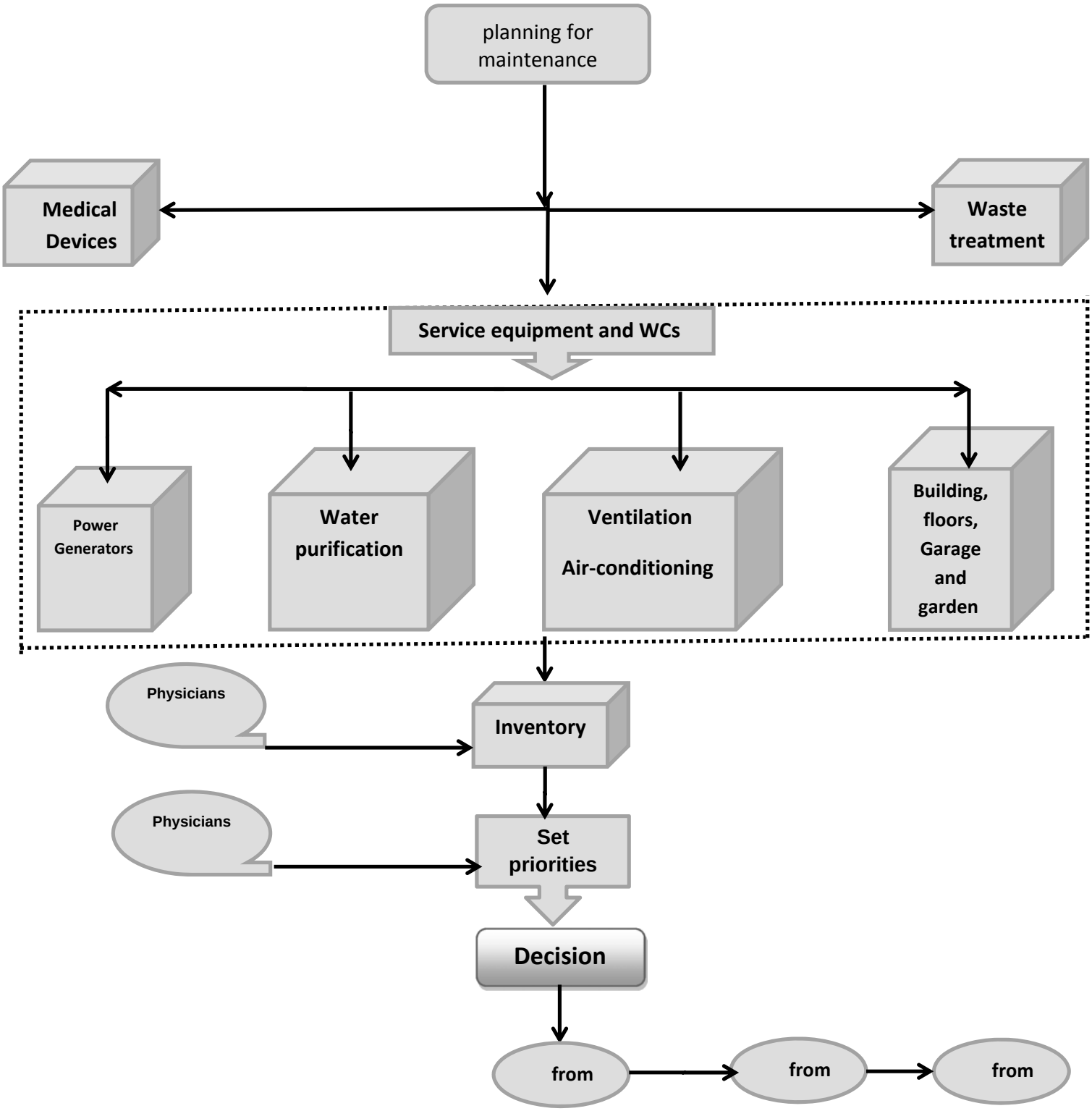
For the year/

#	Device/ equipment name	No.	Model	Site	Time											
					Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

Section Manager **District Manager**

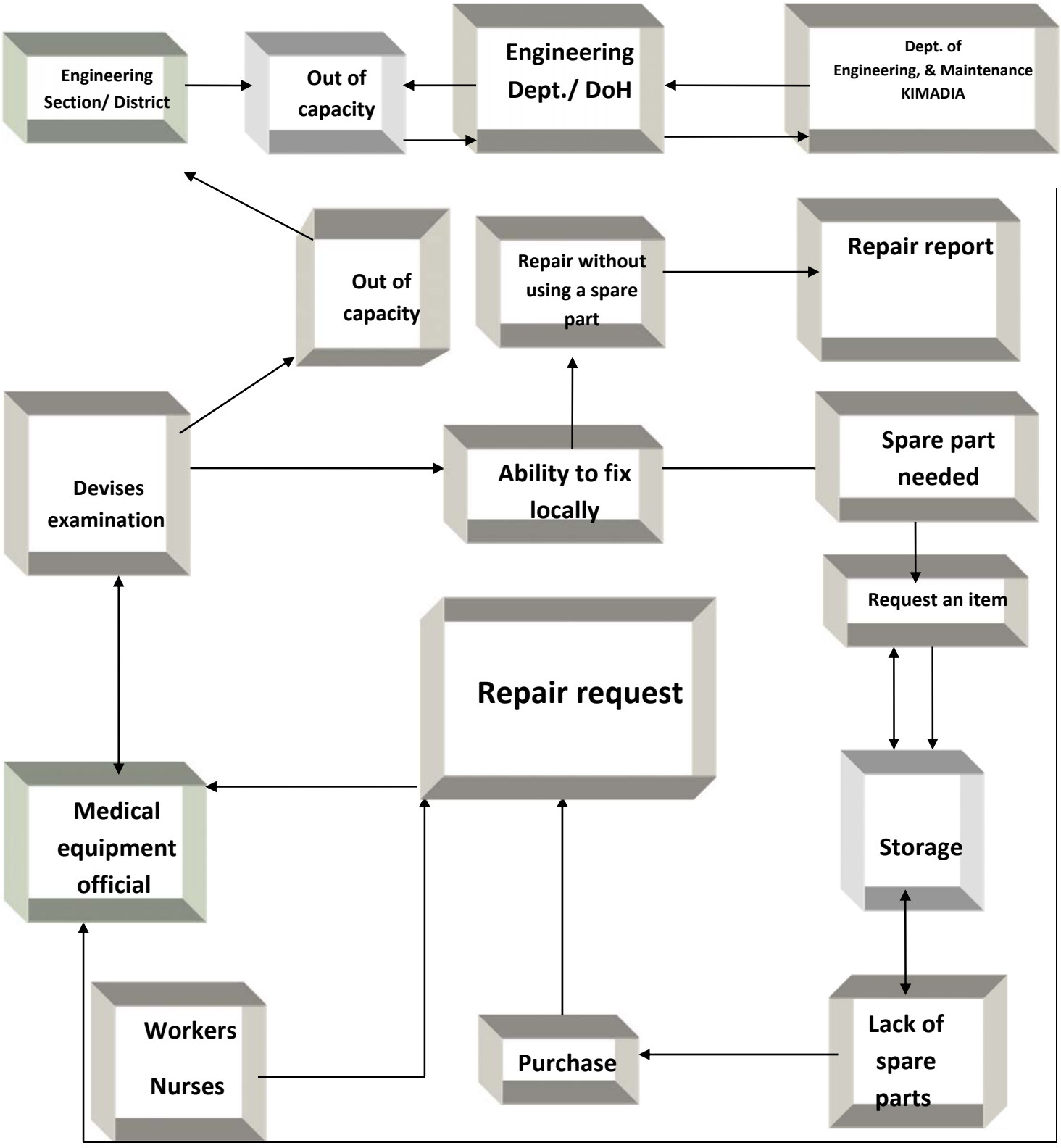
Form 10

(planning for maintenance)



10A

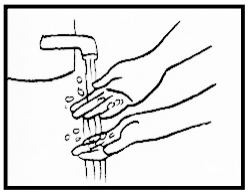
Repair process layout



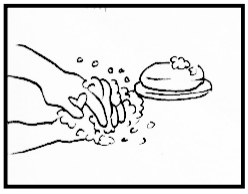
Form 11

Routine hand washing steps

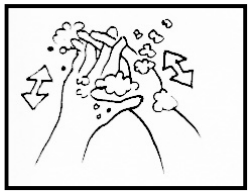
1. **Taking off all jewelry and trinkets.**
2. **Turning on the tap using the elbow or hands.**
3. **Exposing hand to warm water.**



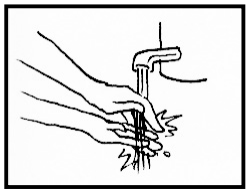
4. **Using a detergent in the washing procedure to reach hands efficiently. All parts of the hands should be wrapped well.**



5. **Fingers should be overlapped with moving them back and forth for 30-60 seconds, taking into account increasing this period if the dirt is visible on hands. In addition, dirt under the nails should be removed because germs increase in this part of the body. Most hand parts should be wrapped with focus on the parts that are usually overlooked**

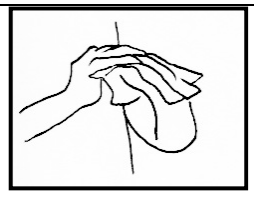


6. **Rinsing hands using tap water to remove the soap entirely. Putting hands in the sink or stagnant water is prohibited.**



7. **Drying hands with clean towel (single-use towel)**

8. **It is preferable to turn off the tap with elbows or dry paper towel after drying hands**



Form 12 (a)

Health Clinic cleaning schedule

Department	Cleaning method
Cleaning windows	Weekly Windows and glasses should be cleaned with a piece of cloth
Cleaning floors	Twice a day Floors should be cleaned daily with brooms and medium-sized clothing by using chlorine and hygiene products
Cleaning wooden doors and desks	Weekly Wooden doors and desks should be cleaned with a piece of cloth or wood polish
Cleaning bathrooms and sinks	Twice a day Bathrooms should be cleaned with chlorine, Dettol, bleach liquid and brush; paper tissues should be available; tanks should be cleaned every month
Plain soap	Twice a week Plain soap should be available on sinks and in the rooms
Liquid soap	Weekly Liquid soap should be available on sinks and in the rooms
Cleaning paravane (folding screen)	Twice a week The paravane should be cleaned with warm water and liquid soap using a piece of cloth
Cleaning PHCC rooms	Twice a day Floors, roofs, doors, corners and ventilation fans should be cleaned and sterilized with water and detergents using a piece of cloth
Medical waste disposal	They should be disposed of daily by putting them in a bag set for that reason and should be closed up firmly and sent to treatment
Normal waste disposal	They should be disposed of daily by putting them in a black bag and given to garbage truck
Cleaning electrical devices	They should be cleaned daily with a piece of cloth to get rid of dust; water coolers should be cleaned and filled with water
Cleaning medical devices	They should be cleaned daily using a piece of white cotton and sterilizers to insure getting rid of germs and dust
Cleaning medical waste basket	It should be cleaned with hot water, bleach liquid and chlorine four times a week
Cleaning non-medical waste basket	It should be cleaned with hot water, bleach liquid and chlorine twice a week
Cleaning patients' waiting rooms	They should be cleaned daily using water, Dettol and sterilizers

Form 12 (b)

Cleaning schedule appendix

Categories	Details	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Notes
Floors	Twice a day (with a piece of cloth, detergents and sterilizers)							At 8:00 and 12:30
Sinks	More than once a day (using sponge scourer, detergent and sterilizer)							Constantly clean
Windows	Once a week (using a piece of cloth and detergent)		#					
Curtains	Once a week using detergents						#	In the place allocated for cleaning linens and curtains or to contract with the nearest laundry
Sheets	To be changed after each patient							
Desk	Once a day (with a piece of cloth and sterilizer)							
Normal waste container	Daily (using a sponge and detergent or sterilizer), and a black garbage bag should be placed							
Examination supplies	After examining each patient (by washing them with liquid soap then putting them in the autoclave)							
Seats	Daily (using a piece of cloth and sterilizer)							
Examination bed	Daily (using a sponge, detergent and sterilizers)							
Sterilizers availability	Daily							
Paravane cleanliness	Twice a week (using detergent and sterilizers)			#			#	
Soap availability	Daily (plain and liquid)							
Medical waste container	Daily (using a sponge and detergent or sterilizer), and a yellow or blue garbage bag should be placed after each cleaning							
Cleaning medical devices	Daily (using a piece of cloth and sterilizers)							
Cleaning electrical devices	Daily (using a piece of cloth and sterilizers)							
Cleaning water tanks	The water should be changed and the cleaning should be done twice (using a brush, chlorine and water pump)			Second week		Fourth week		Requires velocity to insure the availability of water at the PHCC

Form 13

Types of extinguishers and how to use them

Water extinguisher		Used to extinguish solid material fires such as (paper- wood- cloth)
Foam extinguisher		Used to extinguish flammable liquids fires such as (paints- grease- petroleum liquids)
Powder extinguisher		Used to extinguish most types of fires except for electrical and electronic devices fires
Carbon dioxide extinguisher		Used to extinguish most types of fires and have high efficiency to extinguish electrical supplies and conductive materials fires

Note:- make sure to read the instructions on the distinguisher before using it

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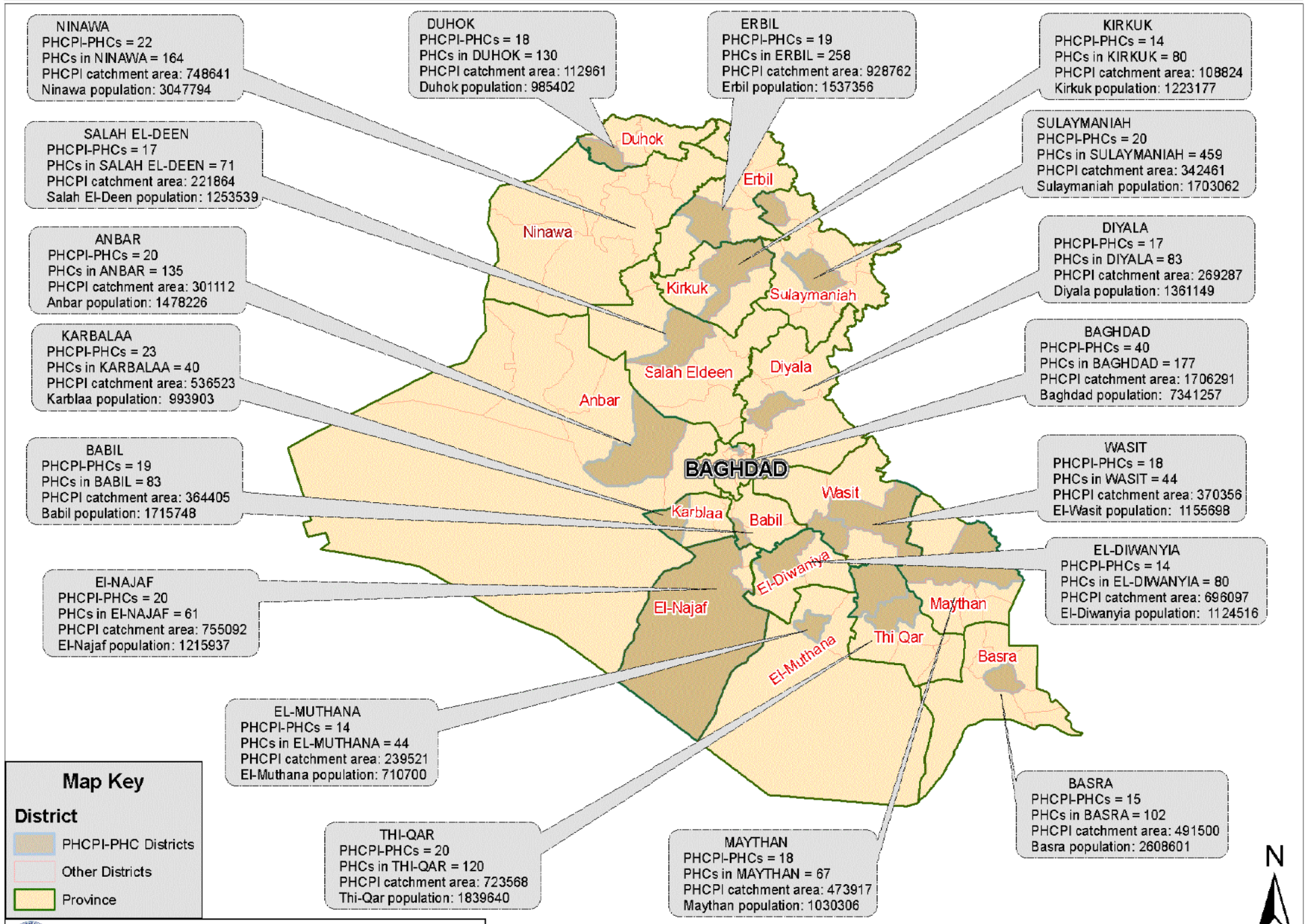
- **Basma Fawzi / Rusafa District**
- **Engineer Saeed Jassim / PHCPI**

PHCPI-PHCs population mapped to IRAQ population



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PRIMARY HEALTH CARE PROJECT

The Geographic data of the PHCs clinics are currently being updated and verified by MOH (September, 2011).

U.S. Agency for International Development
Primary Health Care Project In Iraq
http://phciraq.org/
www.usaid.gov