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Ministry of Health

THE NATIONAL STANDARDS AND GUIDELINES FOR WATER, SANITATION, AND HYGIENE IN HEALTH FACILITIES

2024

First Edition

GOVERNMENT OF THE REPUBLIC OF MALAWI

Ministry of Health

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FOREWORD

Health facilities (HFs) are crucial in providing essential medical and quality health care to the sick. This is possible when improved water, sanitation, and hygiene (WASH) services are readily available in HFs. The WASH services are imperative to ensure that medical care is provided without compromise and that infection prevention control is promoted. However, most of the HFs in developing countries lack basic WASH services, hence posing stern health risks to patients, guardians, and health care workers (HCWs). Inadequate provision of WASH services in HF puts patients at higher risk of developing Health-associated infections (HCAIs). The risk of infection is predominantly preeminent in newborns leading to fatal sepsis cases. Inadequate WASH services in HFs are also reported to discourage women and girls from giving birth in HFs.

In Malawi, although most of the HFs provide basic and improved WASH services, there have been no standardized and harmonized guidelines and standards. There have been no uniform and nationally well-organized guidelines and standards to support the provision of WASH services in HFs in Malawi. In response to the critical need for improved and standardized WASH services, the Ministry of Health (MoH), in collaboration with key partners, has developed these standards and guidelines aimed at ensuring that all HFs in Malawi have fundamental WASH facilities by 2030. This initiative is deeply rooted in Malawi's overarching development goals, such as Malawi 2063, the National Health Policy (2017), the Health Sector Strategic Plan III (2023-2028), and the Sustainable Development Goals 6 (SDGs) targets 6.1 and 6.2, and SDG 3. The established and comprehensive national standards and guidelines, provide a robust accountability mechanism, to govern WASH services within HFs. The climate-resilient (climate-proof), sustainable, harmonized and standardized guidelines for WASH services ensure that HFs can provide the service even during emergencies or natural disasters.

In addition, the developed WASH guidelines will provide a standard approach to guide stakeholders in addressing WASH challenges in both public and private HFs countrywide. Specifically, they offer practical guidance for planning and budgeting, as well as technical designing and construction of recommended WASH facilities, operation and maintenance (O&M), and monitoring of the performance of the services. Furthermore, adherence to these WASH guidelines and standards will create a safer working environment for HCWs, which will improve their performance. Additionally, these guidelines will enhance the overall safety and health of patients and newborn babies, ensuring better care and outcomes. It is expected that all practitioners and managers in HFs in Malawi will follow these guidelines.

The development of these standards and guidelines involved a consultative process where all categories of Health service providers, key stakeholders, key development partners, academia, and researchers provided input through surveys, workshops, literature reviews and interviews.

Minister of Health (MoH)

Hon. Khumbize Kandodo Chiponda, MP.

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Dr. Samson Mndolo
SECRETARY FOR HEALTH

ABBREVIATIONS AND ACRONYMS

CHAM	Christian Health Association of Malawi
DEHO	District Environmental Health Officer
DHOs	District Health Officers
DNOs	District Nursing Officers
EAD	Environmental Affairs Department
EHOs	Environmental Health Officers
EPA	Environmental Protection Agency
FBOs	Faith-Based Organisations
GoM	Government of Malawi
HAS	Health Surveillance Assistants
HCAIs	Health-associated infections
HCFs	Healthcare Facilities
HCWM	Health Care Waste Management
HCWs	Health Care Workers
HFs	Health Facilities
HMIS	Health Management Information System
IHAM	Islamic Health Association of Malawi
IPC	Infection Prevention and Control
IPCC	Infection Prevention Control Coordinator
IPD	Inpatient Department
JMP	Joint Monitoring Program
M&E	Monitoring and Evaluation
MBS	Malawi Bureau of Standards
MEPA	Malawi Environmental Protection Authority
MHH	Menstrual Health and Hygiene
MHM	Menstrual Hygiene Management
MoEST	Ministry of Education, Science, and Technology
MoG	Ministry of Gender

MoH	Ministry of Health
MoWS	Ministry of Water and Sanitation
MS	Malawi Standards
NGOs	Non-Governmental Organizations
NSHTC	National Sanitation and Hygiene Technical Committee
NWRA	National Water Resources Authority
O&M	Operation and Maintenance
OD	Open Defecation
OPD	Outpatient Department
PPE	Personal Protective Equipment
SDG	Sustainable Development Goal
SoPs	Standard Operating Procedures
UN	United Nations
UNICEF	United Nations Children's Fund
VIP	Ventilated Improved Pit Latrine
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization
WUA	Water Users Association

GLOSSARY

Adequate water supply: A sufficient quantity and suitable quality water physically, legally, and continuously available to satisfy the water demands of a user.

Antimicrobial soap: Soap (detergent) containing an antiseptic agent at a concentration sufficient to inactivate microorganisms and/or temporarily suppress their growth.

Basic water source: Drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip, including lining up and waiting

Blackwater: Wastewater containing faecal matter and urine.

Carer: a family, friend, or voluntary worker who accompanies a patient to a Health Facility and provides basic, non-professional care.

Changing room: A room within HFs where Health workers dress in protective clothing and dispose of soiled and contaminated protective clothing.

Climate-resilient health systems: are health systems that are able to anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stresses, allowing sustained improvements in population health, despite an unstable climate.

Climate change: refers to any change in climate over time, generally decades or longer, whether due to natural variability or human activity.

Disinfection: A process of removing or inactivating microorganisms

Drinking water: Water with acceptable quality complying with national and international standards used specifically for drinking.

Emergencies: Sudden, unexpected, or impending situations or events that may cause injury, loss of life, or damage which require immediate assistance or relief.

Flush toilet: this is the toilet that disposes of human excreta (faeces and urine) by using water to flush it through a drainpipe to another location for disposal.

Grey water: All wastewater generated in households, HFs, or office buildings mainly from cleaning activities like laundry, showers, dishwashing, floor cleaning, and bathing.

Hand washing facility: A facility characterized by running water and soap and mainly used for hand washing.

Hand washing: Washing hands with plain or antimicrobial soap and water.

Health Care Waste: A by-product of Health services that includes all waste, hazardous or non-hazardous, generated in the process of performing medical activities.

Health Standards and Guidelines: Clear and verifiable requirements that must be met to achieve minimum essential environmental health conditions in Health facilities.

Health-associated infections: Infections occurring in a patient during the process of care in a Health facility or after discharge, which was not present or incubating at the time of admission.

Hygiene: Conditions and practices conducive to helping maintain the health and cleanliness of oneself and the environment to prevent the spread of diseases.

Improved latrine: A sanitation facility, which ensures hygienic separation of human excreta from human contact.
Improved sanitation facilities: These are facilities that ensure hygienic separation of human excreta from human contact, and they include; flush/pour flush (to piped sewer system, septic tank and pit latrine); ventilated improved pit latrine (VIP); pit latrine with slab and composting toilet.

Improved water sources: Are safe and sustainable water sources of good quality and quantity that is adequately protected from outside contamination, particularly faecal matter. These may include household connections, public standpipes, boreholes, protected dug wells, protected springs, rainwater collection and packaged or delivered water.

Operation and Maintenance: Refers to all post-construction activities needed to operate and maintain and manage a water supply and sanitation system, including technical and managerial aspects to run WASH infrastructures on a sustainable basis.
Privacy: Ability of the sanitation facility to protect from disturbance and being observed, shelter against rain and sunrays, and security to the user.
Safely managed water source: Drinking water from an improved source that is accessible at home, available when needed, and free from fecal and priority chemical contamination.

Sanitation: Refers to the provision of facilities and services for the safe management of human excreta (urine and faeces).
Shallow wells: Refer to a hole that has been dug (usually by hand), bored, driven, or drilled into the ground with a minimum of 30 m deep to extract water.
Shared sanitation facilities: these are sanitation facilities shared between two or more households or users in any set-up including Health and public places (e.g. public toilets)

Soak away pit or soak pit: A simple excavation in the ground either lined or filled with stones, which allow water to percolate into the surrounding soil.
Sterilization: The use of physical or chemical procedures to destroy all microbial life in a material or utensils e.g. use of saturated steam sterilization in HFs.
Unimproved drinking water sources: these are water sources deemed unsafe and unsustainable, and of poor quality and quantity likely exposed to outside contamination, particularly faecal matter. Examples include: unprotected dug well, unprotected spring, surface water (river, dam, lake, pond, stream, canal, irrigation channel), vendor-provided water, bottled water*, and Tanker truck water

Water availability: Sufficient and reliable quantities of quality water that is supplied throughout to meet all uses in HFs.
Water treatment: Any process that makes the water more acceptable for a specific end-use to meet the demand for medical and non-medical use in HFs or at household or institution levels.
WASH in health care facilities: refers to the provision of water, sanitation, health care waste management, hygiene and environmental cleaning infrastructure and services across all parts of a facility

CHAPTER 1: INTRODUCTION

1.1 Background

The provision of improved water, sanitation, and hygiene (WASH) services in health facilities (HFs) is imperative to ensure that medical care is provided without compromise and that infection prevention control (IPC) is promoted. However, most of the HFs in developing countries lack basic WASH services, hence posing stern health risks to patients, guardians, and health care workers (HCWs). For example, inadequate provision of WASH services in HFs puts patients at higher risk of developing Health-associated infections, and discourages women and girls from giving birth in HFs.

In Malawi, the Health Care System has three delivery levels, namely: primary, secondary and tertiary. Formal care is delivered by three providers comprising: public, private-not-for-profit, and private-for-profit. The Government of Malawi through the Ministry of Health (MoH) is the largest provider of modern Health services followed by the Christian Health Association of Malawi (CHAM), and independent private health facilities. Although most of the HFs provide basic and improved WASH services, there have been no standardized and harmonized standards and guidelines. In response to the critical need for improved and standardized WASH services, the Government of Malawi through the MoH developed these guidelines and standards. The undertaking was facilitated through the Preventive Health Directorate, specifically the Environmental Health Services division. This was done through a consultative process where all categories of Health service providers, key stakeholders, development partners, academia, and researchers provided input through surveys, workshops, and interviews. The guidelines ensure that all HFs in Malawi have fundamental WASH facilities by 2030. This initiative is deeply rooted in Malawi's overarching development goals, such as Malawi 2063, the National Health Policy (2017), the Health Sector Strategic Plan III (2023–2028), and the Sustainable Development Goals (SDGs) 3 and 6 (targets 6.1 and 6.2).

The established standards and guidelines, provide a robust accountability mechanism, to govern WASH services within HFs even during emergencies or natural disasters (climate-proof and resilient). In addition, the guidelines provide a standard approach to stakeholders in providing a safer working environment countrywide. Specifically, they offer practical guidance for planning and budgeting as well as technical designing and construction of recommended WASH facilities, operation and maintenance (O&M), and monitoring of the performance of the services.

1.2 Scope of the Standards and Guidelines

These climate-resilient standards and guidelines provide a blueprint and harmonized procedures related to the provision of WASH services in HFs in Malawi. The guidelines apply to all HFs including hospitals, referral hospitals (Central), health centers, clinics, health posts, private for-profit health facilities, and dispensaries run by either government, non-governmental organizations (NGOs), Christian Health Association of Malawi (CHAM), Islamic Health Association of Malawi (IHAM).

1.3 Users of The Standards and Guidelines

These guidelines for WASH services have been established for use by all the following:

- *national health authorities, managers and planners at MoH, Ministry of Water and Sanitation (MoWS), Ministry of Local Government, community members, health managers for CHAM, private health facilities managers, academia, infrastructure, and financing.*
- *global and national WASH and health partners, including donors and health funders; and actors working on climate-resilient and low-carbon health facilities and systems.*

- *infection prevention and control (IPC) officers; and WASH officers and health practitioners at different HFs at all levels.*
- *health practitioners (e.g. IPC and WASH Officers), all architectural and construction works contractors, key stakeholders, and partners involved in the implementation and promotion of health services in Malawi.*

1.4 Rationale for Developing the Standards and Guidelines

The provision of improved WASH services is a requirement for the delivery of high-quality care that improves the health, welfare and dignity of clients, patients and staff. Consequently, the HFs nethe ed to have a safe, improved and accessible water supply; clean, safe and inclusive sanitation facilities; hand hygiene facilities at points of care and within 5 meters of toilets; and appropriate waste disposal systems. Infrastructure and systems that support WASH and Health waste management practices help prevent the spread of diseases within HF and to the surrounding community.

In Malawi, there have been no nationally harmonized standards and procedures to guide the provision of WASH services in HFs. In the absence of such standards and guidelines, the Ministry of Health and other key stakeholders and practitioners have been facing challenges to monitor and ensure quality control in the provision of WASH services. In addition, the absence of standardized guidelines in WASH services in HFs has led to a lack of uniformity, especially in planning and budgeting, technical designing and construction, O&M, quality control and monitoring of WASH interventions. There is a need, therefore, to have a standardized and harmonized approach to guide health practitioners and actors at all levels.

1.5 Objectives of The Standards and Guidelines

The main objective of these standards and guidelines is to provide a harmonized, climate-resilient, and robust accountability mechanism to govern the implementation of WASH services in health facilities in Malawi. Specifically, the WASH standards and guidelines are aimed to:

a). *Offer technical guidance on planning, budgeting, implementation and maintaining WASH services and infrastructures in HFs.*
b). *Provide basic information on technical designs and O&M to guide the implementation of WASH services for sustainable delivery.*
c). *Establish systems and guidelines for monitoring WASH services in HFs for continuous quality improvement.*
d). *Provide minimum guidelines for WASH services during normal settings, emergencies and disasters*

1.6 Organization of this Guide

The climate-resilient, and standardized WASH guidelines are organized into chapters, as follows:

- *Chapter 1: Introduction*
- *Chapter 2: Overview of WASH*
- *Chapter 3: Legal and institutional framework for WASH*
- *Chapter 4: Planning and Budgeting of WASH in Health Facilities*
- *Chapter 5: Water Supply in Health Facilities*
- *Chapter 6: Sanitation in Health Facilities*
- *Chapter 7: Hygiene in Health Facilities*
- *Chapter 8: WASH services in Health facilities during emergencies*
- *Chapter 9: Environmental Cleanliness and Sanitation*
- *Chapter 10: Monitoring of WASH in Health Facilities*

CHAPTER 2: OVERVIEW OF WASH IN HEALTH FACILITIES

This chapter gives an overview of WASH services in HFS both at global and country levels. The chapter also provides a summary of global initiatives for improved WASH in the HFs. Finally, the chapter provides strategies for improving WASH in Health facilities in Malawi

2.1 WASH in Health Facilities: A Global Perspective

The significance of WASH in Health facilities is widely recognized and implicitly highlighted in the 2030 Agenda for Sustainable Development. The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), through the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), have produced regular updates on WASH since 1990. Together, they are responsible for monitoring the 2030 Sustainable Development Goal (SDG) targets 6.1 and 6.2 and other WASH-related SDG targets. The SDG targets 6.1 (drinking water) and 6.2 (sanitation and hygiene) highlight the need for expanding WASH monitoring beyond the household to include non-household settings, such as Health facilities and schools. Furthermore, WASH in HF is crucial for meeting several targets under SDG 3 (good health and well-being for all).

The WASH in HFs includes the provision of water, sanitation, health care waste management, hygiene, and environmental cleaning infrastructure and services at HFs. According to a report by the WHO/UNICEF JMP (2023), the provision of better WASH in Health facilities is reportedly fundamental to reducing costs and saving lives. About 8 million people die annually in 137 low- and middle-income countries from poor-quality care, resulting in US$6 trillion in losses.

2.2 Global Initiatives for Improved WASH in Health Facilities

The WHO and UNICEF in partnership with other WASH partners committed to implement a global action plan on WASH in HFs. The vision of the global action plan is '*to ensure that by 2030, every HF, in every setting, has safely managed, reliable water, sanitation and hygiene facilities and practices to meet staff and patient needs …'* (WHO/UNICEF, 2017). The five change objectives (COs) were developed to support implementation of the vision:

- ***CO1:*** *WASH in HFs is prioritized as a necessary input to achieving all global and national health goals, especially those linked to universal health coverage. Key decision-makers and thought leaders champion WASH in HFs.*
- ***CO2:*** *All countries have national standards and policies on WASH in HFs and dedicated budgets to improving and maintaining services.*
- ***CO3:*** *Global and national monitoring efforts include harmonizing core and extended indicators to measure WASH in HFs.*
- ***CO4****: The existing evidence base is reviewed and strengthened to catalyze advocacy messages and improve the implementation of WASH in HFs.*
- ***CO5:*** *Health facility staff, management and patients advocate for and champion improved WASH services. Risk-based facility plans are implemented and support continuous WASH improvements, training and practices of health care staff.*

2.3 WHO Minimum WASH Standards in Health Facilities

According to the WHO/UNICEF joint monitoring tools, the following are the core global WASH indicators significant for HFs:

- ***Basic water services:*** *the HFs should have an improved main source of water, located on the premises, from which water is available.*
- ***Basic sanitation services:*** *the HFs should have improved and usable sanitation facilities, with at least one toilet dedicated for staff, at least one sex-separated toilet with menstrual hygiene facilities, and at least one toilet accessible for users with limited mobility.*
- ***Basic hygiene services:*** *the HFs should have functional hand hygiene facilities available at one or more points of care and within 5 m of toilets.*
- ***Basic health care waste management services:*** *the HFs should ensure waste is safely segregated in consultation areas and sharps and infectious wastes are treated and disposed of safely.*
- ***Basic environmental cleaning practices:*** *the HFS should have protocols for cleaning, and staff with cleaning responsibilities have all received training on cleaning procedures.*

2.4 Overview of WASH in Health Facilities in Malawi

The WASH in HFs in recent years received international attention – setting the momentum for the passing of the World Health Assembly (WHA) Resolution on WASH in HF in 2019 and the launch of the global baseline report on '*The status of WASH in HFs'* by the WHO and UNICEF. Consequently, to assist countries in implementing the resolution, the WHO and UNICEF recommended eight (8) practical steps to ensure that 100% of HFs have basic WASH facilities by 2030. Malawi committed to increasing investment in WASH services in HFs as agreed by all member states in keeping with the WHA 72 resolutions. This gave opportunities for Civil Society Organizations (CSOs), donors, the Government, and key stakeholders to collectively advance the WASH in HF agenda in Malawi where the WASH service provision has been inadequate. According to the WHO/UNICEF (2020) Global Progress Report on WASH in HFs, about 24% of HFs in Malawi lacked basic water services while 32% lacked hand hygiene facilities at points of care. Furthermore, of the same facilities, about 23% were reported to lack improved and usable sanitation facilities. In the same report, slightly above half of the HFs in Malawi (58%) were reported as not having adequate waste management facilities.

2.5 Strategies for Improving WASH in Health Facilities In Malawi

The vision of the roadmap is to provide direction for the health sector to strengthen the WASH interventions being implemented in Health facilities. Malawi's roadmap for WASH in HFs identified eight (8) strategic action areas and opportunities for investments to improve WASH, and these areas are:

- *Conduct a Situation Analysis and Assessment;*
- *Set National Targets and Define a Roadmap;*
- *Develop National Standards and Accountability;*
- *Improve and Maintain WASH Infrastructure;*
- *Monitor and Review Data;*
- *Develop Health Workforce;*
- *Engage Communities; and*
- *Operational Research and Learning.*

CHAPTER 3: LEGAL AND INSTITUTIONAL FRAMEWORK FOR WASH

3.1 Overview

This chapter provides insights into the complex legislative and institutional framework that governs the implementation and promotion of WASH in Malawi. The chapter has also examines several institutions that have been established to provide and manage WASH-related services at national, district and community levels. These institutions guided by the legislation and policy framework work collaboratively with other institutions that may not be directly related to WASH.

3.2 Legal and Institutional Framework for WASH in Health Facilities in Malawi

A summary of the legal and institutional frameworks for water sanitation and hygiene in health facilities in Malawi is given in Table 3.1.

3.3 Roles and responsibilities for the implementation of WASH Standards in Health Facilities

There are various actors and key players responsible for the implementation of WASH in health facilities in Malawi. Table 3.2 gives a summary of the implementation levels, key actors, and their roles and responsibilities in the implementation of WASH in health facilities.

Table 3.1: Summary of Legal and Institutional Framework for WASH In HFs in Malawi

Legal and institutional framework	Linkage to WASH in HFs	Roles and Mandate
National Health Policy (2018)	• highlights the importance of WASH and the integration of clean water, sanitation, and hygiene practices in Health settings in Malawi. • implementation timeframe similar to SDGs: 2018-2030	• Policyholder and implementer: MoH • Supporting Ministries: MoWS and Ministry of Forestry and Natural resources
National Health Research Policy (2018)	• aims to prioritize activities around health research to ensure coordinated conduct of health research. • advancements in research support in the provision and implementation of WASH services in Malawi • supports and promotes decentralization of conducting research in different health fields including WASH at district and health centre levels	• Policy holder and implementer: MoH • Supporting Ministries: MoWS and Ministry of Education
National Water Policy (2023)	• articulates a comprehensive framework targeted at the sustainable management and usage of water resources • sets the stage for equal access to potable water and sanitation services for all • sets the standards for recommended water accessibility at community and different institutions	• Policy holder and implementer: MoWS • Supporting Ministries: MoH, Department of Environmental Affairs,
National Sanitation Policy (2008) – under review	• promote WASH and use of potable water and improved sanitation and hygiene practices in schools, markets, workplaces and Health facilities etc • promotes the development of cost-effective and climate-resilient infrastructure, the strengthening of governance frameworks, the assurance of financial resources, and the accountability of results • sets recommended standards for different institutions e.g. schools and health facilities • promotes new sanitation technologies	• Policyholder and implementers: MoWS • Supporting Ministry; MoH
National Environmental Policy (2004)	• promote sustainable management of the environment, natural resources and WASH including solid and liquid waste management in institutions like schools, markets and health facilities • by addressing critical environmental issues influencing water quality and sanitation in Health settings, the Policy indirectly supports WASH	• Policyholder and implementer: Min. of Natural Resources • Supporting Ministries: MoH, Local Government, MoEST:
National Education Policy (2013)	• advocates for the promotion of school health; water, sanitation, and hygiene; HIV and AIDs; gender; and for the management of health training institutions • sets and implements WASH standards in their institutions.	• Policy holder; MOEST • Supporting Ministries: MoH, MoWS

	• Advocates for inclusion of WASH in their curriculum	
National Gender Policy (2011)	• advocates for mainstreaming gender in health services to benefit women and girls, men, boys and vulnerable groups • promotes implementation and promotion of WASH services in HFs to take into account Gender Equality and Social Inclusion (GESI) and leave no one behind. • Advocates for disability friendly WASH facilities	• Policy Holder: and implementer MoG • Supporting Ministries: MoH, MoWS
Infection prevention and control policy	• Advocates for the provision of adequate WASH facilities including potable running water in all health facilities	• Policy holder: MoH • Supporting Ministries: MoWS, Ministry of Labor • Partners
Health Care Waste management (HCWM) policy and guidelines	• Provides guidance on the management of health care generated wastes at the point of service delivery e.g. wards, outreaches, laboratory etc	• Policy holder: MoH • Supporting Ministries and partners: MoWS, WHO, UNICEF, WaterAid
Environmental Management Act (1996) - under Review	• establishes a strong legal framework for environmental sustainability, with a special emphasis on water resources. • It assures the upkeep of environmental sustainability and standards, which has a direct impact on water quality and sanitation in health facility settings. • Certifies the treatment and disposal(management) practices of general wastes and health care waste e.g. incinerators in health facilities	• Policyholder: Department of Environmental Affairs • Supporting Ministries: MoH, MoWS, Local Government/municipals, NWRA, Water Boards, EAD
Occupational Health and Safety Act (1997) – under review	• It covers the supply of adequate and appropriate sanitary facilities, requiring separate accommodations with distinct approaches for individuals of each sex. • It also underlines the need to clean and keep sanitary and hygiene amenities clean • Advocates for each work place to develop SoPs and guidelines that take on board the availability and use of WASH facilities within work place such as Infection prevention and control SoPs in health facilities • Provides powers to Environmental Health Officers to conduct WASH inspections using the standard WASH checklists for HCs	• Policy holder and implementer: Ministry of Labor • Supporting ministries: MoH, MoWS
Local Government Act (1999)	• gives local governments the role in public health management within their jurisdictions, including the provision of WASH services at HFs. • local governments are mandated to ensure good drainage, sanitation proper supply of drinking water, cleaning, and availability of WASH services in Health institutions under their jurisdiction within their jurisdictions	• Implementers: Ministry of Local Government • Supporting ministries: MoH, MoWS
Public Private Partnership Act (2021)	• provides for partnerships between the public and private sectors for the supply of infrastructure and delivery of services. • HFs can utilize this Act to engage effectively with other key partners and practitioners to implement and improve WASH service delivery	• Implementers: Ministry of Local Government
Public Financial Management Act (2003)	• fosters and enhances effective and responsible economic and financial. • The MoH, MoWS and all HFs in Malawi must, in compliance with this Act, ensure responsible economic and financial management of health sector resources, for example, in the promotion and implementation of WASH. • Provides borehole funding direct to councils and politicians which has a role of allocating the resources to various sectors including Health for its facilities	• Implementer: Ministry of Local Government
Public Procurement Act (2003)	• Provides for the principles and procedures to regulate and to be applied in the public procurement of goods, works and services in Malawi, including in the health sector. • Any procurement of WASH-related goods or materials in the HFs, therefore, must follow this Public Procurement Act accordingly.	• Implementers: Ministry of Local Government
The Water Resources Act (2013)	• It provides for the management and conservation of water resources in Malawi • It safeguards and prevents pollution and encourages safe waste storage, treatment, discharge, and disposal to protect water quality and human health. • The act, therefore, creates a solid legal foundation that has a direct impact on the availability of clean water for HFs.	• Implementers: MoWS • Supporting Ministries and Institutions: MoH, Water Authorities (NWRA), Water Boards, WUAs, MEPA, EAD
Waterworks Act (No.17 of 1995)	• The Act provides for the establishment of Water Boards water-areas and the administration of such water-areas for the development, operation	• Policyholder and Implementers: MoWS

	and maintenance of waterworks and water-borne sewerage sanitation systems in Malawi	• Supporting Ministries and Institutions: MoH, NWRA, MEPA, EAD
Malawi Energy Regulatory Authority (MERA)	• MERA is primarily concerned with energy regulation, and its scope includes the Energy Regulation Act 2004, the Electricity Act 2004, the Rural Electrification Act 2004, and the Liquid Fuels and Gas (Production and Supply) Act 2004. • They provide guidance and standards in cases where HFs use particular sources of energy such as solar, and electricity to pump and supply water.	• Implemented by Ministry of Energy
National Water Resources Authority (NWRA)	• Established under Water Resources Act (2013) • Has a mandate to manage, preserve, use, and control water resources, and regulate water rights. • For the establishment of new water sources in HFs, it is imperative to consult the NWRA for proper guidance.	• Policyholder and implementer: MoWS • Supporting Ministries and Institutions: MoH, EAD, MEPA
National Sanitation and Hygiene Strategy (2018-2024)	• lays out a bold plan to attain a healthy environment, human dignity, privacy, rights, and an enhanced quality of life for all Malawians by 2030. • aligned with the SDGs, it focuses on critical areas like rural sanitation and hygiene, urban sanitation and hygiene, institutional sanitation and hygiene, behavior change and communication, waste management, menstrual hygiene management, and cross-cutting issues • works hand in hand with the sanitation policy, Health care management policy and Infection prevention and control policy in promoting WASH in health facilities	• Strategy holder: MoH • Supporting ministries and institutions: Ministry of Local Government, MoWS, UNICEF
Malawi Health Sector Strategic Plan III (HSSP III) (2023– 2030)	• outlines the objectives, strategies, and activities to accelerate Malawi's progress in achieving Malawi's Universal Health Coverage (UHC) targets by 2030 • provides a roadmap for the implementation of various services including WASH in HFs • highlights 6 pillars including WASH improvement in HFs	• Plan holder and implementer: MoH • Supported by partners: WHO, UNICEF, Ministry of Local Government, MoWS, Water Aid,
Malawi National Waste Management Strategy (2019-2023)	• provides a legal foundation for waste management through the formulation of policies, legislation, and economic instruments to protect public health and the environment. • advocates for waste segregation, public-private collaboration, waste treatment, and the development of eco-friendly infrastructure consistent with legislative and institutional frameworks for WASH in Malawi.	• Implementers: Ministry of Local Government (Municipal Councils) • Supported by: MoH, MoWS, partners
Abuja Declaration (2001)	• calls for governments in Africa to commit at least 15% of their total expenditure target towards health financing. • Through this declaration, it is envisaged that all HFs will receive enough financial support for the implementation and promotion of WASH	• Implementers: Ministry of Finance • Supported by: Partners
Ouagadougou Declaration on Primary Health Care and Health Systems (2008)	• The declaration sets a framework for African countries to achieve primary Health-led health systems. • Through this declaration, the Malawi government and its partners will improve its Health systems and services, especially in the areas of WASH. • Considers WASH in communities and health facilities as one of its core elements	• Implementers: MoH • Supported by: MoWS, UNICEF, WHO and other partners
Malawi 2063	• Enabler 5 (Human Capital Development) under the "Health and Nutrition" aims to attain universal health coverage with quality, equitable and affordable health care for all Malawians. • Under "Clean Water, Sanitation and Hygiene", the MW2063 envisions a healthy population of Malawians, through the provision of clean water, sanitation and hygienic services at the household and community levels. • The Malawi government aims to provide and promote the use of improved and accessible sanitation facilities in all public places as well as improving the management and disposal of liquid and solid waste. The successful provision of WASH services in all HFs will therefore contribute significantly to the attainment of Malawi 2063	• Implementers: Malawi Government • Supported by partners: All partners including WHO, UNICEF, Ministry of Local Government, MoWS, Water Aid, MoH
Sustainable Development Goals (2016-2030)	• SDG number 6 aims and ensure the availability and sustainable management of water and sanitation for all. • The SDG 6 targets 6.1 (safe and affordable drinking water), 6.2 (end open defecation and provide access to sanitation and hygiene), 6.3 (improve water quality, wastewater treatment and safe reuse), and 6.8 (support local engagement in water and sanitation management) are very crucial in the implementation and promotion of WASH in HFs.	• Implementers: Malawi Government • Supported by partners: All partners including WHO, UNICEF, Ministry of Local Government, MoWS, Water Aid,

	• The SDG 3 aims to achieve universal health coverage, including financial risk protection, access to quality essential Health services and access to safe, effective, quality and affordable essential medicines and vaccines for all.	

Table 3.2: Roles and responsibilities for the implementation of WASH Standards in HFs

Level of implementation	Key actors	Roles and Responsibility
National Level	Ministry of Water and Sanitation (MoWS)	• Coordinating WASH services across the country. • Develop and coordinate policies, strategies, guidelines, laws, and regulations on water supply • Mobilize resources towards improvement of WASH in the country • Set WASH standards for different institutions and at community levels
	Ministry of Health (MoH)	• Responsible for developing, updating, and enforcing health policies, leading sector reforms, and creating standards and management procedures for service delivery • Support implementation of WASH services especially in HFs across the country. • Coordinating health research efforts, planning and mobilizing resources, and providing technical support • Setting WASH standards • Promoting WASH technologies
	Malawi government	• Takes a Sector-wide approach, emphasizing the interdependence of several related sectors for holistic development.
	The National Sanitation and Hygiene Technical Committee (NSHTC)	• Committee that orchestrates collaborative efforts, and facilitates sector dialogues with stakeholders such as ministries, Development Partners, NGOs, CSOs, and the private sector. • Conducts WASH inspections in HFs • Resource mobilization • Implements WASH interventions in emergencies e.g. disasters • Coordinates the development and implementation of different WASH policies, Acts, Guidelines and SoPs
	National Task Team on WASH	• Coordinates and review WASH programmes and plans before implementation • Resource mobilization
District Level	Ministry of Education, Science, and Technology (MoEST)	• responsible for ensuring that all schools, including Community-Based Child Care Centers (CBCCs), have dequate water and sanitary facilities • setting WASH standards
	Ministry of Gender, Children, Disability, and Social Welfare	• works with district councils to promote sanitation and hygiene practices in HFs and other institutions that are gender and disability friendly sensitive.
	Ministry of Local Government and Rural Development	• assumes responsibility for district-level coordination, orchestrating sanitation and hygiene activities through the District Coordinating Committee (DCT).
	District Environmental Health Officer (DEHO)	• Takes charge of the DCT to promote sanitation and hygiene activities • Conducts WASH inspections in institutions including HFs • Custodian of WASH data at district level • Coordinates WASH research activities at district level
	Non-State Actors (NSA)	• NSA includes CSOs, NGOs, Development Partners (DP), donors, and academia • NSA provides financial and technical assistance as well as active participation in the NSHTC and the DCT committees • Provides resources and implements WASH interventions in HFs
	District Health Officer (DHO)	• Oversee all WASH, IPC and other health-related activities at the district level
	District Medical Officer	• Oversee IPC and other health-related activities at the district level and report to DHO
	Infection Prevention Control Coordinator (IPCC)	• Coordinate and support the implementation of IPC and other health-related activities at the district level and report to DEHO and DNMO • Advocates for development and implementation of IPC guidelines and SoPs in HFs • Conducts IPC supervision, mentorship and evaluation in HFs
	Health Waste Management Coordinator	• Support implementation of Health waste management, WASH, IPC and health-related activities at the district level and report to DEHO

	Health Surveillance Assistants (HSA) or Assistant Environmental Officer (AEO)	• Support implementation WASH, IPC and health-related activities at the community and health facility levels and report to DEHO • Custodians of WASH data at community and HF levels
	Health Services Administrator	• Makes sure there are always adequate WASH facilities in all HFs • Facilitates payment for WASH as utilities at each HF
	District Nursing and Midwife Officer (DNMO)	• Making sure all personnel providing patient care are following recommended IPC protocols • Conducting WASH inspections at facility level • Ensuring occupational Health and safety to all in-hospital health workers
Facility Level	Hospital Director	• Takes charge of all Health, Sanitation, hygiene and all related WASH issues
	Quality Improvement Support Team (QIST) Committee	• The committee is responsible for resource mobilization, IPC, quality improvement, Health waste management, 7QI Thematic Areas
	WASH Coordinator	• Support implementation of WASH activities and issues at Hospital level and report to QIST Committee Chairperson
	IPC Chair/Coordinator	• Support implementation of IPC activities at Hospital level and report to QIST Committee Chairperson
	District Nursing Officer (DNO)	• Support implementation of WASH and IPC activities and issues at District level
	Nursing Officer/Nurse Midwife Technician	• Support implementation of WASH and IPC activities and issues at Ward or Department Level
	Quality Improvement Coordinator	• Support improvement of quality WASH and IPC activities and issues at Hospital Level and report to QICT Chairperson
	Health Waste Management Coordinator	• Support and implement health are waste management, WASH and IPC activities and issues at Hospital Level and report to QICT Chairperson
	Work Improvement Teams	• Support and implement WASH and IPC activities and issues at the Department or Ward Level
Community Level	Community Health Action Group (CHAG)	• coordinating body for sanitation and hygiene efforts at the group village headman level • works within the larger framework of the ADC and Area Executive Committee (AEC) to identify sanitation and hygiene issues in the community. • works closely with Water Point Committees (WPC) and Village Health Committees (VHC) in comprehensive planning, implementation, monitoring, and evaluation of community sanitation and hygiene programs
	Health Centre Management Committee (HCMC)	• works hand in hand with the health centre management team to ensure all necessary facilities including WASH are available and in good condition • mobilizes the community members to provide WASH facilities at HF level • mobilize resources from different partners including district council
	Water Point Committees	• conduct maintenance of water sources • advocates for hygiene at the water point • making sure communities and HFs have adequate quality water always
	Local Masons	• engage in construction of affordable improved sanitation facilities

CHAPTER 4: PLANNING AND BUDGETING FOR WASH IN HEALTH FACILITIES

4.1 Introduction

Effective planning and budgeting are crucial for WASH in HFs. Proper allocation of resources ensures successful WASH interventions, ultimately improving Health services. The HFs need to strategically plan and allocate resources for WASH improvement. The goal is to create a clean and safe environment for IPC.

4.2 Planning Process

The following steps are recommended when planning for the improvement of WASH services in HFs:

Step 1: Integrate situational analysis and needs assessment for WASH services in HFs

- *Conduct a thorough needs assessment for WASH services in all HFs under the jurisdiction of councils in collaboration with HCFMTs and HCFGCs to establish the WASH needs and feasibility.*

Step 2: Scrutinize WASH plans

- *To ensure the inclusion of WASH activities in plans and budgets of HFs within its area of authority, each council should scrutinize WASH plans.*
- *To ensure budgets at the council level are aligned with National and International ratified instruments and agreements e.g Ethikwini Agreement*

Step 3: Establish costs for each identified WASH needs

- *Capture WASH activities for each level of a facility within the CCHPs and allocate funds accordingly.*
- *The allocated funds should aim to facilitate the operation and maintenance of WASH services and for the construction of new facilities when needed.*

Step 4: Prioritize WASH needs

Prioritize WASH activities in council plans by considering the following:

a) *Activities must be categorized as minor or major works for technical engagement and contracting. Minor works involve tasks like fixing or installing water pipes and doors, while major works encompass larger projects such as constructing new structures or replacing roofs and ceilings.*

b) *Prioritization should be with the support from Council experts to review the planned technical options if they are socially acceptable, financially feasible and environmentally suitable.*

c) *The plan should include initial investment costs, maintenance, replacement and extension of services.*

d) *The urgency of the WASH needs should matter when prioritizing WASH activities to ensure the most pressing needs are addressed first.*

e) *Prioritization should consider the feasibility of the WASH activities – resource availability, technical capacity, and environmental context to enhance impact.*

f) *Prioritization should consider the potential impact of the WASH activities such as activity type, target population, and environmental context for effective WASH initiatives.*

g) *The availability of resources such as financial, human, and technical are very crucial.*

Step 5: Explore different sources of funding for WASH interventions

It is recommended to explore varied sources of funding for WASH interventions in HFs. Typically, in Malawi major sources for financing health-related interventions include central government through subvention, the Ministry of Health, and UNICEF Malawi, comprising funds from DPs in the form of grants and or loans, collected user fees or cost-sharing charges from the community for services rendered by HFs, Community Health Fund (CHF) and funds from health insurances and NGOs like WaterAid, Water for People, and Welthungerhilfe (WHH).

4.3 Funds allocation criteria

Prudence is critical in allocating resources amidst scarcity. When it comes to WASH services in HFs, prioritizing different activities should be guided by the following principles:

a) ***Identifying Priority Needs****: Based on the situational analysis, it's crucial to determine the most urgent WASH needs in Health facilities (HFs).*

b) ***Allocating Funds****: HFs with the greatest demand for WASH services, especially those currently lacking adequate facilities, should receive priority when allocating available funds.*

c) ***Immediate Impact****: Prioritize investments in upgrading existing infrastructure, repairs, and maintenance. These actions can yield quick results.*

d) ***Resource Matching****: Give priority to HFs that demonstrate high demand and have committed their resources. Matching their efforts can enhance impact.*

e) ***Vulnerable Groups****: Focus on WASH activities that directly benefit vulnerable populations, including pregnant women, children under five, and individuals with special needs or compromised immune systems.*

4.4 Major considerations in planning and designing of WASH interventions

When planning and designing WASH interventions in HFs, it's essential to consider factors beyond technical design. While financial resources, physical conditions, and socio-economic context play a role, there are other critical aspects to address as follows:

A) WASH plans as an integral part of Council Health Plans

WASH plans in HFs at the Council level should be integrated into the Council Health Plans and aligned with national health guidelines. These plans must thoroughly address the planned interventions, clearly define targets, and outline specific activities. It is recommended to allocate at least 15% of the HF's budget for WASH services within each facility.

B) Involvement of community/users

Engage the community surrounding the HFs and the potential users throughout all phases of the design process for collective ownership and responsibility.

C) Strategic partnership with other stakeholders

Consider actively engaging various agencies, both public and private, including political leaders, local and international NGOs, Faith-Based Organizations (FBOs), the United Nations (UN), and bilateral donors in WASH in HFs. Planners should intentionally incorporate collaboration with these partners into the council's health initiatives.

D) Choice of low-cost and quality WASH facilities

When determining the most suitable technical solution for WASH facilities in HFs, the initial step involves conducting a baseline assessment of WASH needs at each HF. This assessment reveals which facilities require upgrades or improvements to meet the necessary standards. If constructing new WASH facilities is the preferred approach, planners should explore cost-effective options without compromising quality. Planners should compile a range of technical design options for WASH facilities, along with estimated costs to select the most appropriate, affordable, durable, and easy-to-maintain solutions.

E) WASH facilities for people with special needs

In the design of WASH facilities, it is crucial to consider the needs of users with disabilities or serious illnesses to embrace the concept of "*Leaving No One Behind*".

F) Needs for women, girls and children

Planners should recognize that certain WASH needs are specific to gender. These differences arise from varying physical requirements and socio-cultural roles, which are distinct for women, girls and children. For instance, when designing WASH facilities, a critical consideration is creating an environment conducive to Menstrual Hygiene Management (MHM). This involves providing adequate toilets and water for women and girls to comfortably change and dispose of sanitary pads while maintaining privacy during menstruation. Neglecting proper WASH facilities disproportionately affects the dignity and social well-being of women and girls, and at worst, perpetuates discrimination.

When designing WASH facilities in Health settings, it's crucial to consider children's needs by incorporating dimensions that suit their physical stature. This ensures accessibility and appropriateness for young users. Recommended child-size dimensions for HF WASH design include:

i) *Height of taps and hand-washing facilities.*
ii) *Height of doorknobs and locks*
iii) *Height of steps and handrails of stairs in toilets and for water and hand wash facilities*
iv) *Height of toilets seats in case seats are to be used*
v) *In urinals, distance from the squatting platform into the wall.*
vi) *If elevated urinals are being used, consider the height of urinals*
vii) *Diameter of the squatting hole (consider children's fear of falling in the toilet)*

Similarly, since children have different levels of physical strength and motor skills than adults and the following aspects have to be considered and measured: *Force needed to open toilet doors and Strength needed to open taps, fetch water, etc.* For the youngest children up to 8 years, WASH facilities and adaptations should be made to allow for adults to supervise and/or help when children are using them.

G) Environmental safeguards

In the context of WASH facilities, environmental safeguards refer to actions taken to prevent undue harm to both people and their surroundings. For example, certain facilities may lead to soil or groundwater contamination, while others generate wastewater. To mitigate these risks, planners and designers should ensure that toilets are located at least 30 m away from water sources to prevent pollution. Further, it is important to consider the location in terms of altitude – which may influence the flow of water. Water sources should not be located in lower areas compared to toilets and waste disposal sites. Integrating measures to minimize negative environmental impacts should be an essential aspect of WASH facility planning, design, implementation, and ongoing maintenance.

H) Sustainability plans

Sustainability is a crucial aspect of WASH facilities. WASH services are sustainable when they are owned, managed, and maintained by the community, and when appropriate behavior exists to support the effective usage of the WASH infrastructure. To ensure that the constructed facilities continue to provide the intended services for a longer period, a clear sustainability strategy should be embedded in the WASH plans. The sustainability strategy should include the O&M plans and reliable sources of funding for WASH facilities.

CHAPTER 5: WATER SUPPLY IN HEALTH FACILITIES

5.1 Water Needs in Health Facilities

The HFs demand high-quality water for various critical uses, such as patient care, sterilization of medical instruments, sanitation, and laboratory operations. Ensuring a consistent and reliable water supply is essential for maintaining hygiene, preventing infections, and supporting health delivery. This chapter outlines water supply plans and implementation strategies for HFs to meet these diverse needs, emphasizing the importance of an uninterrupted water supply.

5.2 Water Sources

5.2.1 Types of Water Sources

Generally, surface water and groundwater are the two types of water sources for HFs. Groundwater is obtained from aquifers underground. It is abstracted through boreholes. For detailed specifics on drilling boreholes and reticulation systems, reference should be made to Standard Operating Procedures for drilling and relevant documents at the Groundwater section of the Ministry responsible for water and sanitation. Surface water flows on the surface in rivers or is dammed or contained in lakes and ponds. The abstraction of water from these sources can be achieved through pumps, diversion, or gravity, depending on the locality. The HFs may use containers, tankers, or bowsers to transport this water. However, bowsers are mainly used as a backup system in emergencies, or relatively small Health facilities. While surface water is commonly used in many HFs, it is more prone to contamination than groundwater. Groundwater, accessed through boreholes, is typically used as a backup in most HFs in Malawi.

5.2.2 Guidelines for Selection of Appropriate Water Sources for HFs

i. *Water Quantity*: The quantity of water must be adequate for the current and future demand of the HF. When planning it is vital to consider all factors, including climate change and population growth.

ii. *Water Quality*: The quality of water is paramount in HFs. Using contaminated water may exacerbate disease transmission. Water quality should meet the minimum standards, particularly following the Malawi Bureau of Standards (MBS) and the WHO guidelines for drinking water.

iii. *Protection of Water Sources*: Selected water sources should be protected from pollution and contamination by observing the following:
   - Domestic livestock and other animals should be kept away from the water source.
   - Defecation, urination, burial grounds and disposal of other solid and liquid wastes around the water source should be prohibited entirely.
   - Drainage and runoff waters should be led away from the water source.
   - Ensure water sources are protected from flooding, which may contaminate water.
   - In the case of surface water from rivers and streams, river banks should be reforested to minimize soil erosion and siltation.
   - Ensure regular cleaning by draining swamps and pools around the water source or reservoir to prevent Algal growth.

iv. *Accessibility and costs*: Consider undertaking a comprehensive feasibility study to ensure that the cost of abstraction is minimal.

5.3 Recommended Water Sources

WASH facilities are a key element for functional HFs and must adhere to global guidelines. WHO/UNICEF/JMP recommends 'improved water sources' as a minimum requirement for HFs. Based on the JMP definition, '*improved drinking-water sources*' are defined as those that are likely to be protected from outside contamination and faecal matter in particular. Improved water sources include household

connections that feed piped water into dwelling units, public standpipes, boreholes, protected dug wells, and protected springs. Despite being designated as an *'improved water source'* it is recommended that water sources should be subject to regular treatment and monitoring. Generally, varied water sources are recommended where possible to act as a backup to the primary water source of a facility. Common recommended water sources for particular facility levels are outlined in Table 5.1.

5.3.1 Connection to existing water supply systems

Guided by the regulatory framework (Water Resources Act 2013, Waterworks Act 1995, Water Resources Regulations 2018), all cities, and towns are supplied by water utility companies. Northern Region Water Board (NRWB) supplies Mzuzu and all towns in the north. Central Region Water Board (CRWB) supplies water to all urban centres and towns in the center, and Southern Region Water Board (SRWB) caters for and all urban centres and towns in the south. Blantyre Water Board (BWB) supplies the city of Blantyre and surrounding areas. Lilongwe Water Board (LWB) supplies water in Lilongwe city. Thus, all HFs in areas served by water utility companies should be connected to a particular water utility company. However, in rural areas with no water utility company, HFs should be connected to a community-based water supply system, referred to as a Water User Association (WUA) if available, or develop their water supply system using the sources outlined above. In any case, it is recommended that despite having an existing water supply system by a water utility company, HFs should have a backup system considering the challenges of power outages in Malawi.

5.3.2 Development of Own Water Sources

As outlined in 5.3.1, HFs located in areas with no piped schemes either owned or operated by a water utility company or community water supply system (e.g. WUA), will have to develop their water sources. The most likely options would be drilled boreholes or abstraction from a river or stream.

When a borehole is the most feasible option, it should be drilled following guidelines by the National Water Resources Authority (NWRA) and the National Construction Industry Council (NCIC). Generally, a comprehensive geophysical survey to ascertain the suitability of drilling is recommended before drilling. Anyone needing to drill a borehole or abstract surface water in Malawi is required by law to apply for a water right from NWRA. Therefore, when developing its water sources, HFs must engage NWRA for guidance.

5.4 Water Sources Protection

Treatment of water is mostly an end pipe solution. As such protection of water sources from possible pollution is recommended. Various water sources can be protected as described in Table 5.2

5.5 Minimum water requirements for Health facilities

Water demand in HFs refers to the total amount of water to be used by the HCWs, patients and carers at a specific time. Hence, water requirements will vary from one HF to another depending on the average number of people being served at a particular time, the number and type of tasks carried out in different units and the level of the health facility. Water in HFs is primarily required for domestic use, medical procedures, sanitation, and hygiene use. Table 5.3 provides the national minimum water requirements for different levels of HFs in both urban and rural areas.

Table 5.1: Recommended water sources for each level of facility

Health Facility level	Recommended Water Sources
Dispensaries, Community Hospitals, Health Posts, Health Centres, Rural Hospitals, District Hospitals, Central Hospitals	• Existing water supply system, mainly supplied by a Water Utility Company (depends on location) • Water source (e.g. hand pump) approved by local authority (NWRA). • Drilled borehole fitted with a hand pump or piped system approved by NWRA and the water utility company (Water Board) • Pumped water from a protected spring if available

Table 5.2: Water source protection

Water source	Protection Measure
Groundwater (borehole)	***Casing***: the inside wall of the well should be made waterproof by cementing from the top of the well down to a minimum depth of 3 meters. The deeper it is extended, the better. The casing of the well should also be extended for a minimum of 60cm above the surrounding ground level. ***Cover***: A concrete cover should be fitted over the casing to prevent dust, insects, small animals, etc from falling into the well and also to prevent leakage of flushed water. Sanitary water drawing device: Ideally, a pump should be installed. ***Fencing***: The immediate area of the well should preferably be fenced to keep animals away. ***Diversion ditch:*** The area surrounding the well should be graded off to prevent the flow of stormwater into the well. ***Cleanliness***: The area surrounding the source should be maintained clean

Table 5.3 Minimum water requirements for different levels of HFs.

Health Facility	Visitors/ Outpatient	Inpatient	Total No of Patients	Litre/day/person	Total Litres/day/ HF
Dispensary	70	0	70	10	700
Health Centre	60	24	84	100	8,400
District Referral Hospital	170	175	345	200	69,000
Regional Referral Hospital	500	450	950	400	380,000
National /zonal and specialized Hospitals	800	1000	1800	400	720,000

Table 5.4: Water storage requirements for patients and staff in Health facilities

Health Facility	Total Litres/day/Health Facility
Dispensary	830
Health centre	11,550
District hospital	82,860
Central hospital	427,600

5.6 Water storage

5.6.1 Minimum water storage requirements for HFs

Water storage requirement for HFs is determined by the water demand of each facility's level of service and the time required to carry out its activities during non-supply of water from the source. Water should be stored in HFs for the following reasons:

a) To guarantee a consistent water supply during intermittent/rational situations
b) To increase the volume and pressure during scarcity of water, as long as the tanks are correctly installed and work with adequate plumbing

The estimates of water storage requirements for different levels of HFs are given in Table 5.4. It is therefore recommended that each HF should have enough water storage within such estimates.

5.6.2 Cleaning and disinfection of water storage tanks

It is of practical importance for HFs to clean and disinfect water storage tank(s) at least once every 3 months. Cleaning and disinfecting water storage tanks aim at removing algae, silt, and bacteria which may be harmful. The steps below should be followed in cleaning and disinfecting water storage tanks:

a) *Empty tank*
b) *Scrub or pressure wash the interior walls to remove dirt and grime with detergents*
c) *Rinse out the tank*
d) *Scrub the interior walls of the tank with 0.2% chlorine solution and leave it for 2 hours*
e) *After 2 hours, thoroughly rinse the tank with clean water and refill the tank with water.*

5.7 Water quality standards for health care facilities

a) *Water quality, as defined by these guidelines, refers to water that is safe for domestic and medical use, and free from any chemical, physical, biological, or faecal contaminants.*
b) *To ensure that water supplied in health care facilities is safe for use and free from any microbiological, chemical, or physical contaminants, it is essential to maintain a standard quality. Therefore, all water supplied in Health facilities should meet the minimum standards as recommended by the Malawi Bureau of Standards (MBS): Borehole and shallow well water quality specifications (MS 733:2005); Bottled drinking water quality specifications (MS:2004); Drinking water quality specifications (MS 214:2013), regardless of its intended use.*

5.8 Water treatment and disinfection

a) *Chlorine disinfection is the most commonly used and effective method for ensuring microbial safety in most Health facilities in Malawi. Depending on local availability, bleaching powder, liquid bleach, chlorine tablets, and other sources of chlorine may be used.*
b) *To ensure that water is adequately disinfected, allow a contact time of at least 30 minutes after adding chlorine (1% stock solution). The free chlorine residual should be within the range of 0.2 – 0.5 mg/L at all points of the system. Simple equipment such as a color comparator and diethyl-p-phenylenediamine (DPD) tablets can be used to measure residual chlorine.*
c) *To ensure effective disinfection, it is recommended that water has low turbidity. Ideally, the median turbidity should be below 5 NTU (WHO, 2017) with pH<8. If the turbidity exceeds 5 NTU, the water should be treated to remove suspended matter before disinfection. This can be done through sedimentation and/or filtration.* ***NOTE****: For more details on chlorine use, refer to "IPC Malawi Government (2023) and IPC Standard Operating Procedures for Cholera Treatment Centres and Units in Malawi"*

5.9 Major considerations in water access and distribution in HFs

a) *Have a dependable water source that provides soap or a suitable antiseptic or sanitizers at all critical points, including operating theatres, wards, consulting rooms, dressing rooms, sterilization areas, laboratories, kitchens, laundry rooms, showers, toilets, waste zones, and mortuaries.*
b) *A reliable drinking water point should be accessible for staff, patients, and caregivers at all times.*
c) *For wards with more than 20 beds, there should be a minimum of two hand-washing basins.*
d) *For inpatient settings, there should be a minimum of one shower available for every 40 users, including patients, Health workers, and caregivers.*
e) *Inpatient settings should have laundry facilities that provide soap or detergent, hot water, and a disinfectant (like chlorine solution).*

NOTE: Before using a new source of water, conduct a water quality analysis to determine its physical, chemical, and bacteriological composition. There is a need for routine water quality assessment and monitoring of water sources quarterly. In case of disaster, water quality monitoring and assessment must be done immediately.

CHAPTER 6: SANITATION IN HEALTH FACILITIES

6.1 Introduction

Within the context of these guidelines, sanitation includes the building, restoration, and management of sanitation facilities in HFs, plus the maintenance of sanitary conditions through services like garbage collection and wastewater disposal. It includes monitoring waste from ablution fittings, storm water, health waste, and overall environmental cleanliness. The primary objective of improving sanitation facilities is to prevent infections by disrupting the transmission pathway of pathogens.

6.2 General Adequacy Criteria for Health Waste Disposal Facilities

For sanitation services within HFs to be deemed satisfactory and adequate, the following minimum requirements must be fulfilled: *User Convenience, Accessibility, Reliability, and Safety.*

6.2.1 User Convenience, Privacy and Accessibility

The guidelines necessary under this section are as follows:

a). *There should be separate restrooms for male and female users among Health workers (HCWs), visitors, patients, and those with special needs such as the physically impaired, pregnant women, the elderly, critically ill people, and young children.*

b). *Additional facilities, such as those for wheelchair users and those with vision impairments, should be available to accommodate people with special needs.*

c). *Signs denoting male and female bathrooms should be prominently displayed to allow easy location.*

d). *The design and equipment of the toilets should conform to social and cultural norms, with elements such as water supplies for anal cleansing, lockable doors to provide privacy, and a well-lit access walk, especially at night.*

e). *Toilets should be strategically placed, preferably within a 30-meter radius of all users, to ensure quick access without any physical or non-physical impediments.*

f). *Bathrooms must be always accessible and free of blockages.*

6.2.2 Reliability and safety

a). *Toilets must consistently be well-maintained and operational all the time.*

b). *Sanitation facilities should play a role in reducing infections within the HFs rather than acting as transmission points for illnesses.*

c). *The design and construction of sanitary and waste disposal facilities should ensure that sanitary waste or human excreta does not contaminate the environment or spread hazardous agents, such as microbiological and physical contaminants, or serve as a breeding ground for vectors or vermin. Special consideration should be given to methods that restrict the breeding of flies and mosquitoes, particularly in restrooms.*

d). *Sanitary facilities should be structurally solid, with no risk of collapse, falls, or user injuries.*

e). *To reduce the risk of violence, particularly sexual violence, there is a need to have adequate bathrooms, lockable doors, and lighting access at night.*

6.3 Recommended Public Toilet for Health Facilities

A 'toilet' refers to the user interface with the sanitation system, where excreta is captured and can incorporate any type of toilet seat or latrine slab, pedestal, pan or urinal. There are several types of toilets e.g. pour- and cistern-flush toilets, dry toilets and urine-diverting toilets.

The superstructure of the toilet may be a stand-alone structure, or the toilet may be located within a building (e.g. private house, a school, a health facility, a workplace, or other public settings). In response to public health considerations within HFs, it is essential to furnish flush toilets, whether of the pedestal or squatting variety. Essentially, every HF should adopt water-based sanitation systems. Given the significant limitations in water availability in rural areas, it is advisable to consider the implementation of VIP latrines. Figure 6.1 outlines a range of water-based toilet options recommended for integration into Health facilities.

a. Pedestal Flush Toilet

b. Squat Flush Toilet

Figure 6.1: Types of Toilets recommended in health facilities

6.4 Designing and Construction of Sanitation Facilities

6.4.1 General Considerations for Toilets

Sanitation facility design should be incorporated as part of the basic planning for HFs. When existing sanitary infrastructure and services fall short, it is equally important to plan for the development of new facilities or the improvement of existing ones. Detailed guidelines on the design and construction of sanitation facilities can be referred to WHO (2018) Guidelines on Sanitation and Health. Users and implementers can also refer to the Guidelines and Standards for On-Site Sanitation Systems in Lilongwe City by the Government of Republic of Malawi (2021).

The minimum standards and technical options to consider when selecting specific sites for sanitary facilities should take into consideration site geophysical conditions; the option's design features; social and health factors; environmental factors; and cost and socio-economic factors. Table 6.1 summarizes the key major factors and key elements to be considered when siting a sanitary infrastructure.

The following guidelines should be followed for toilet design and construction:

a) *The toilet should be compatible with current and predicted future water availability for flushing (if required), cleaning and hand hygiene.*
b) *The toilet should be compatible with the subsequent containment, conveyance and treatment technologies (on-site or off-site).*
c) *The toilet should provide privacy and be safe to use for all intended users in line with gender, age and physical mobility (e.g. disabled, sick, children, elderly etc.)*
d) *The slab (or pedestal) should be constructed from durable materials that can be cleaned easily (e.g. concrete, fiberglass, porcelain, stainless steel, durable plastic, or smooth wood).*

e) *Dry toilets must be fitted with a removable, closely-fitted lid, to prevent rodents or insects from entering the containment technology and, if fitted with a ventilation pipe, a corrosion-resistant fly screen should be installed.*

f) *The superstructure should be designed and constructed to prevent intrusion of rainwater, stormwater, animals, rodents, or insects. It should provide safety and privacy with doors that are lockable from the inside for public toilets, or toilets shared between households.*

Table 6.1 Major elements considered when siting a sanitary infrastructure

Factor	Major elements to be considered
Geo-physical and Technical factors	• Technical robustness • Ground/soil conditions and permeability • Footprint and land requirement • Low maintenance requirement • Dependence on other services (water supply, public sewer, emptying, etc.) • Facility size and catchment population/future projections • Nature of services provided at the facility
Social and health factors	• Protection against mosquitos and bad odours • Number of users • Health protection • Acceptability, perception, and usability • Satisfaction/cultural barriers (socio-cultural norms among users)
Environmental factors	• Pollution and pathogen risk • Groundwater protection • Water table level and soil permeability to gauge pit depth and risk of groundwater contamination • Flooding risk • Nutrient recovery
Cost and socio-economic factors	• Investment cost of sanitation infrastructure • Maintenance and operating cost • User affordability • Resource optimization/re-use

6.4.2 Flush Toilets

Flush toilets can be built in either a sitting or pedestal design. Effluent from flush toilets should be channeled into a septic tank, a soak away or a public sewage system. The choice between western and eastern flush toilets is influenced by factors such as the number of users and socio-cultural concerns. Many public establishments, including institutions, prefer the squatting style because of various socio-cultural and sanitary issues, especially when hosting a large number of users.

6.4.2.1 Structural Components of a Flush Toilet

a) ***Technical specification:***

- Water-flushed toilets should have a bowl or pan for excreta deposition and a water seal or trap-door to control odour and prevent rodents or insects from entering.
- The bulk of 'commercial' toilets should be made of ceramic or tough plastic for easy cleaning. However, more affordable versions may use cement mortar with a smooth 'mosaic' texture to prevent feces from clinging to the sides.
- Traditional toilets normally have a 50 mm deep water seal, while some designs reduce this to around 25mm to reduce the quantity of flush water required.

b) *Water Consumption:*

- The waste pipe should be connected to the drain opening of the bowl positioned at the back of the bowl.
- Traditional flush toilets often consume a significant portion water daily in HFs. This can equate to up to 50 liters per person per day if a person flushes the toilet five times per day at a rate of 10 liters per flush. HFs should consider implementing modern low-flush toilet designs (reduced water usage) ranging from 4.5 to 6 liters per flush.

A summary of minimum guidelines and standards for sanitary infrastructure at a health facility is shown in Figure 6.2

Table 6.2: Minimum standards for sanitary infrastructure at a health facility

Structure Element	Minimum Standards and Recommendations
Toilet Room Size	• 1.0 m x 1.5 m internal dimensions where the door opens inwards; • 1.0 m x 1.2 m internal dimensions where the door opens outwards; • Height: 2.15 m from the floor-to-ceiling level. • outward opening door of 950mm wide with an 850 – 900mm opening to allow enough space for wheelchair users.
Pan / Bowl and Fittings (for Pour Flush toilet)	• 450 mm long and 200 mm wide and oval or pear-shaped; • Rear outlet with 25 – 30 °C bottom slope towards the back; • Water seal depth of 20 mm and an outlet of 70 mm diameter; • Discharge pipe: 75 mm diameter fitted at a slope of 1:30 to ensure self-cleaning.
Toilet Siting and Access	• A minimum of 1.5 m from any plot boundary. • 30 m away from any water source • For pit latrines outside wards or offices; must be within reach of the health facility (<100 m) • For pit latrines within wards or offices; must be within reach of users (<30 m) • Ensure access to emptying services; • Provide access for children, the sick, the elderly, and people with disability.
Pit, Substructure and Material Options	• Pit walls to be fully lined; • Minimum internal effective pit depth to be 3.0 m and width of 1.2 m of the lined pit; • Bottom is to be at least 1.5 m above the water table. • For circular pits, the diameter to be at least 1.0 m. Diameters of more than 1.5 m increase the chances of collapsing. • In situ cast concrete and Precast concrete rings; • HDPE tanks supported by concrete structures made from blockwork and concrete base slabs. • Cement precast panels with vertical supports; • Prefabricated plastic toilet cubicles such as SafeSan or similar.
Slab (for Pour flush toilet and VIP)	• Reinforced 50 mm thick concrete; • Floor level at least 150 mm above the surrounding ground level, and increased to 300 mm in areas prone to flooding.
Roofing, superstructure and Materials Options	• 28-gauge iron sheets on timber or steel; • IBR roofing sheets on timber or steel; • Precast thin (lightweight) reinforced cement-sand slab /ferrocement. • Superstructure to have at least one standard window (450x600 mm) to allow entry of natural light and circulation of air
Vent (for VIP (Ventilated Improved Pit) and Pour Flush	• Diameter at least 110 mm; • Top end at least 300 mm above the highest part of the roof; • Fly screen (mesh) at the top of the vent pipe with openings/holes < 1.5 mm square. Mesh material should be corrosion, rain, heat, and sunlight resistant; • Connection to slab should be completely sealed.
State of Containment	• Sealed for areas near water bodies and for areas with high ground water tables.

Reference: Guidelines and Standards for On-Site Sanitation Systems in Lilongwe City by the Government of The Republic of Malawi (2021).

6.4.2.2 Maintenance and Hygiene of Flush Toilets

The following actions are advised for maintenance and hygiene when using flush toilets at an HF:

a) *Flush toilets should be used only when there is an assurance of the availability of water*
b) *Flush toilet users should be reminded of a need to flush and leave the toilet clean after use. This can be done using publicly displayed posters.*
c) *Cleaning professionals are in charge of keeping flush toilets clean by using toilet brushes and proper detergents.*
d) *Implement an organized cleaning schedule with scheduled cleaning hours and a supervisor's verification column, where signatures demonstrate rigorous cleanliness monitoring.*
e) *Regular examinations of flush toilets in HFs are required to detect mechanical defects, notably blocks in wastewater flow caused by malfunctioning cistern mechanisms.*
f) *Given the prevalent interior placement of flush toilets, timely adjustment of mechanical problems is critical to avoid the attraction of flies and the unpleasant aromas originating from blocked toilets.*
g) *Immediate washing and disinfection of bed pans after patient use is essential for maintaining hygiene.*

6.4.3 Ventilated Improved Pit Latrines

The Ventilated Improved Pit Latrine (VIP) is an evolution from the standard improved pit latrine. The pit, the cover slab and its foundation, the superstructure, and the screened vent pipe are the five main structural parts of both single-pit and alternating double-pit VIP latrines. Figure 6.2 depicts a graphic representation of a VIP latrine cross-section.

The following are guidelines and standards for VIP latrines:

a). *It is recommended that all VIP latrines include a concrete floor cover slab. This slab should be carefully built, with a drop hole near an inner wall.*
b). *The floor should include an opening to allow for the installation of a vent pipe. The squatting plate should be cast with a suitable contour for ease of use, taking into account regional social and cultural norms.*
c). *The VIP superstructure should be made up of walls and roofs made of strong materials like burnt bricks, cement blocks, or stones.*
d). *The roof should be made of corrugated iron sheets or other long-lasting roofing materials.*
e). *The inside of the VIP should be suitably lined with wall and floor tiles to permit easy cleaning and maintenance.*
f). *Handwashing and hand-drying facilities, including soap, should be available outside the VIP latrine.*
g). *The vent pipe, which is critical for optimal ventilation, should have a diameter of 27 – 200 mm, preferably 110 mm. It should be made of corrosion and sunlight-resistant materials, such as fiberglass and PVC. The vent pipe should be properly covered with a fly screen and should extend 0.8 meters above the roof level.*
h). *The VIP latrines at HFs should not be constructed in rocky or high-water-table areas.*

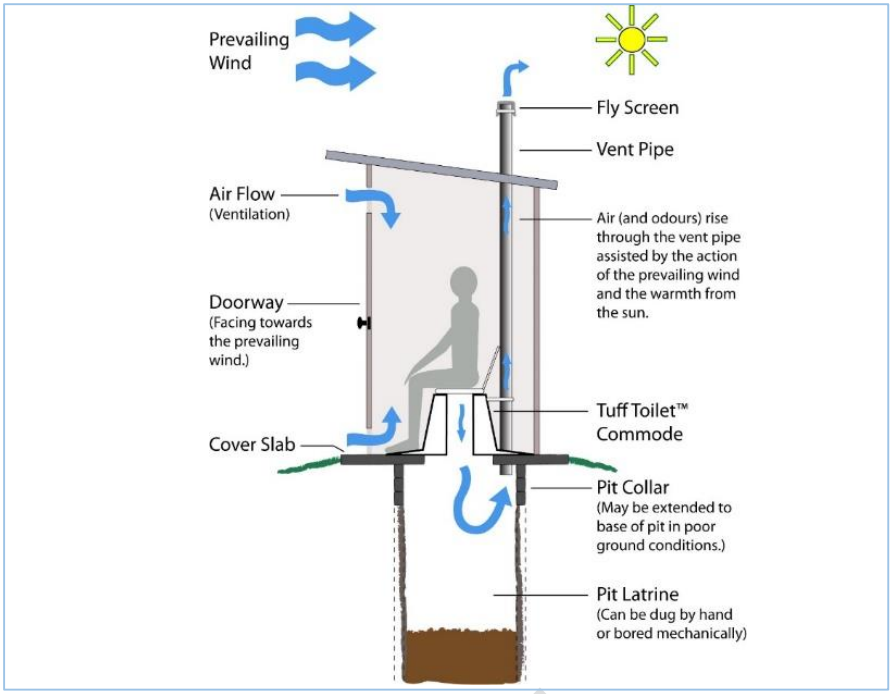


Figure 6.2: A cross- Section of a VIP latrine

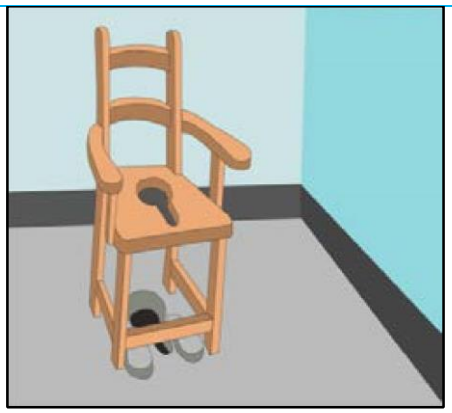
6.4.4 Toilet Features for People with Special Needs

Individuals with special Needs, such as those with physical disabilities and young children, may find it difficult to use public restrooms. As a result, HFs are required to include accessible toilets designed to suit these specific populations depending on their disabilities or special needs. Figure 6.5 shows a variety of technological alternatives for sanitation facilities, allowing them to select the best one for their specific needs.

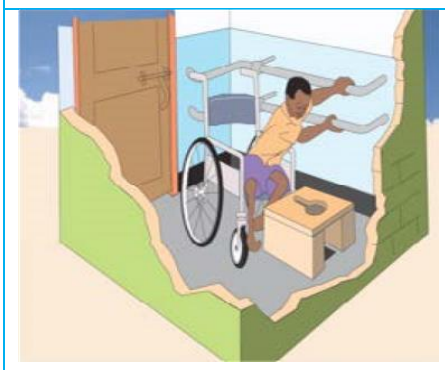
When planning to construct a toilet or sanitation facility to serve people with special needs or disabilities, the following factors should be considered:

a). *should be built to provide more space and strategically positioned bars for users to grasp and hold during transfers.*
b). *use and install correct ramp designs with proper landings and guardrails (Figure 6.3), so that individuals with wheelchairs, walkers, and other mobility aids can navigate independently.*
c). *Individuals who are blind or have impaired eyesight should be equipped with customized handles, guiding systems such as ramps, and appropriate lighting to meet their needs.*
d). *use wider doorways and unique handles or foldable seats in toilet design to cater for people who use wheelchairs or crutches.*
e). *a VIP toilet to support physical disabilities, particularly those who cannot squat should have a washable seat.*

Walkways with ramps



A VIP toilet with a washable seat



VIP toilet design with a permanent wooden chair and bars to support disabled users

A pedestal flush toilet for disabled people and children who are unable to use squat toilets.

Figure 6.3. Designs of sanitation facilities for people with special needs

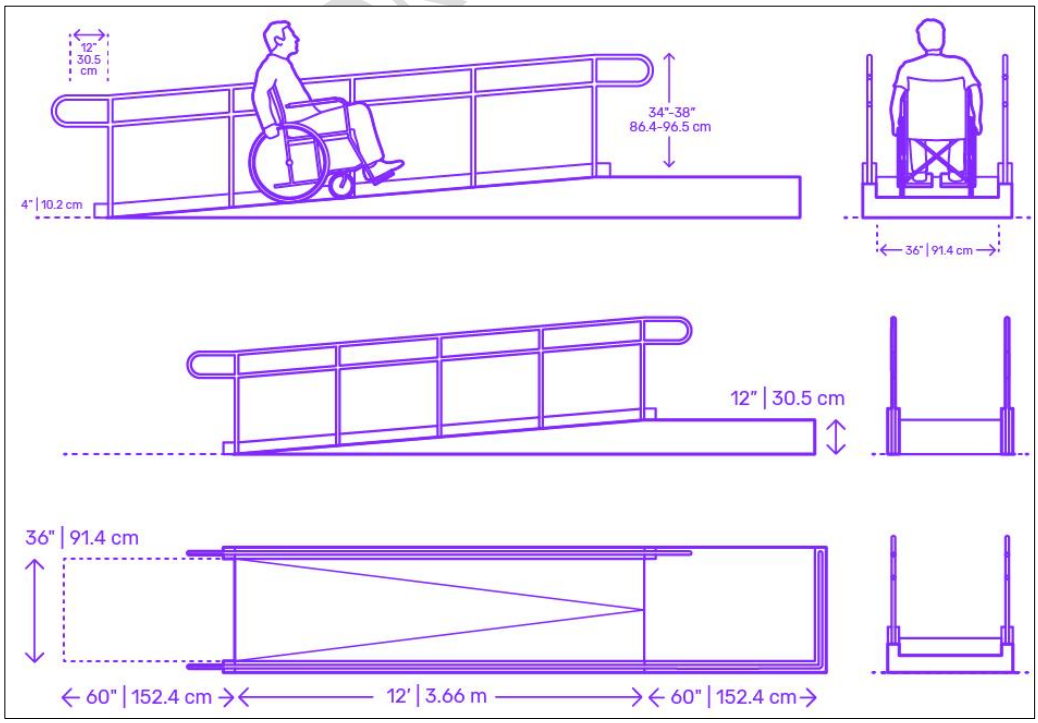


Figure 6.4. Types of wheelchair ramps with guardrails for disabled persons

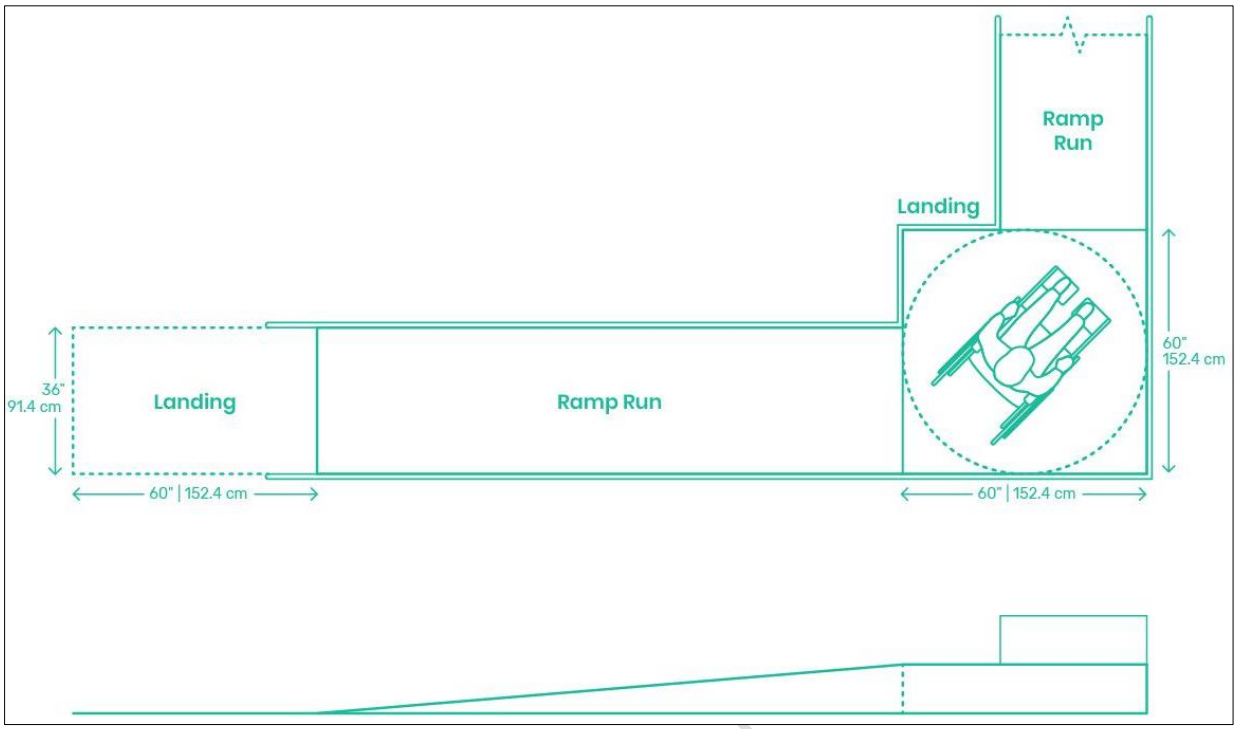


Figure 6.5: Ramp running, landing, and running

6.4.5 Urinals

6.4.5.1 Minimum Guidelines for Urinals

A urinal is a male-only sanitary plumbing appliance used for urination. It comes with drainage and either automated or manual flushing, and it can be shaped like a container or just a wall. Urinals need to be viewed as a component of the whole HF sanitation facility package. The installation of urinals, which are less expensive to build and operate than toilets, lessens the need for restrooms, particularly for male users. Additionally, using urinals could help avoid unintentionally fouling the boy's restrooms, which is frequently the main source of bad odors. The primary urinals recommended for HFs are displayed in Figure 6.6.

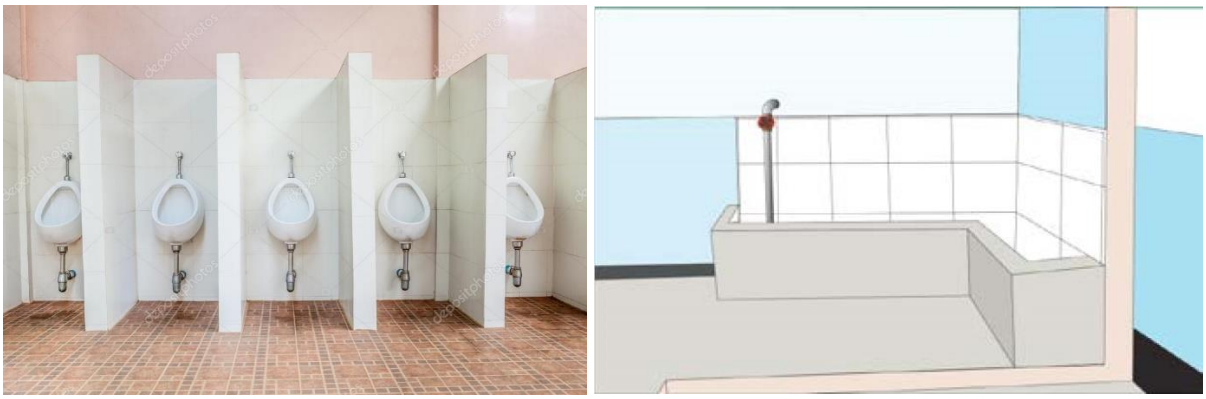


Figure 6.6: Types of urinal designs

6.4.5.2 Major Features of a Urinal

When designing urinals for HFs, the following factors must be considered:

a) *Multiple Urinal Spaces:* A single urinal can have multiple urinal spaces.
b) *Minimum Distance:* Each urinal spot should be at least 0.6 meters apart from the urinal channel.
c) *Options for Integration:* Urinals should be built as standalone structures or as part of a toilet block, employing the toilets' back or sidewalls.
d) *Raised Footstep:* To separate urine route from the concrete floor, include a raised footstep with a slope.
e) *Drainage:* Install a plastic or stainless-steel trap in the drain to keep debris from clogging pipes.
f) *Compartment Walls*: Ensure that compartment walls are plastered and steel floated up to 1.2 m above the floor. These surfaces should then be coated with a washable "urine" resistant paint.
g) *Soak-Pit Connection*: Connect the urinals to a soak-pit for effective waste disposal.
h) Urinal placement should take into account aspects such as the volume and frequency of users, including male children's patients.
i) During the planning and provision phase, the suitability of urinal designs, the availability of water, and the maintenance arrangements should all be considered.

6.5 Specific Excreta Disposal Requirements for Different Levels of Health Facilities

Following the sanitation adequacy criteria mentioned earlier, each tier of HF should have excreta disposal facilities, both in terms of types and quantity, following factors like the volume of clients and staff, the range of services offered, and the existing infrastructure, including blocks and departments. This guarantees that the sanitation provisions are matched to the specific needs and capabilities of each facility level.

Table 6.3: Guidelines for the number and type of excreta disposal facilities

Facility Level	Number and Types of excreta disposal facilities
Dispensary	i. Provide two distinct positions for HCWs, with separate facilities for both male and female users. ii. Provide one stance for every 25 OPD participants. iii. Reserve two stalls particularly for disabled people, with separate facilities for both men and women. iv. Designate one attitude specifically for children. v. Install urinals in male restrooms. vi. Take into account additional bathroom facilities depending on the building layout and specialized demands in the neighborhood, particularly near delivery and Reproductive and Child Health Clinics. vii. Make flush toilets with water seals the preferred option for dispensaries. VIP toilets, on the other hand, may be considered in places with serious water shortages. viii. Provide a lidded and foot-operated receptacle bin lined with a plastic bag for the disposal of sanitary pads in all female bathrooms. ix. Provide a post-delivery bathroom for moms. x. Create a placenta pit that meets composting requirements.
Heath Centers	i. Make sure there are separate bathrooms for staff and clients in both the Outpatient Department (OPD) and the Inpatient Department (IPD). ii. Provide at least two restrooms for Health Workers (HCWs) each department in the OPD and reception area, with separate facilities for males and females. iii. Maintain at least one stance for every 20 IPD users and one for every 25 OPD users

	iv.	Create separate toilets for female and male clients, as well as discrete postures for male and female impaired clients and a specific one for children, in the OPD.
	v.	Install urinals in all male restrooms.
	vi.	Provide male and female restrooms in office complexes for HCWs.
	vii.	Provide flush toilets in all health centers, particularly in locations with adequate water sources.
	viii.	Ensure that the delivery unit has flush toilets with water sealing and bathing facilities.
	ix.	Provide bed pans in compliance with Health Facility regulations, keeping infected and non-infectious wards clearly separated.
	x.	Install traditional onsite or offsite sewage systems in health centers to promote efficient liquid waste transportation and disposal.
	xi.	Implement wastewater treatment ponds or other recommended treatment technologies for final wastewater disposal, while also guaranteeing effective sewerage system maintenance and monitoring.
	xii.	Install a lidded and foot-operated receptacle bin lined with a plastic bag for the disposal of sanitary pads in all female bathrooms.
	xiii.	Create a placenta pit that meets composting requirements.
District Hospitals	i.	Establish separate toilets for staff and clients in both the OPD and IPD.
	ii.	Provide at least one stance for every 20 users in IPD and one for every 25 users in OPD.
	iii.	At OPD, ensure separate toilets for female and male clients, along with distinct stances for male and female disabled clients and one specifically for children.
	iv.	Install urinals in all male toilet blocks
	v.	Include a set of male and female toilets for Health Workers (HCWs) in office blocks.
	vi.	Consider the provision of sanitation facilities for people with disabilities and children in each functional block or department of the facility.
	vii.	Determine the actual number of toilets and urinals based on the average number of clients being attended.
	viii.	Provide at least one toilet for each ward and service unit, along with a set of male and female toilets for HCWs in office blocks and reception areas.
	ix.	Excreta disposal facilities (including urinals) in hospitals must be water-based and include a flushing system in order to meet high quality standards.
	x.	Pit latrines (even renovated ones) are not permitted in a hospital setting.
	xi.	Bed pans should be provided in accordance with hospital rules and separated into infectious and non-infectious wards.
	xii.	Excreta disposal facilities for hospitals must always have enough water for routine operations and maintenance.
	xiii.	A sufficient sewage system, either onsite or offsite (connected to a public sewer), should be provided to support excreta disposal systems, depending on the kind of sanitary infrastructure.
	xiv.	Delivery clients should have access to excreta disposal and bathing facilities. The delivery unit's toilets must be flush toilets with a water seal.
	xv.	A high-temperature incinerator (900 to 1100 °C) and a covered Placenta pit are recommended.
	xvi.	For the disposal of sanitary pads, all female restrooms should include a receptacle bin that is lidded and foot operated and lined with a plastic bag.
Regional Referral Hospitals	i.	Separate restrooms should be provided for workers and clients.

	ii. Two staff bathrooms (one for men and one for women) in each department. At least one stance should be accessible for every 20 IPD users and every 25 OPD users. iii. Separate bathrooms for male and female clients, as well as separate stances for male and female disabled clients and one for children, should be provided in OPD. iv. The actual number of toilets and urinals should be calculated based on the number of clients served. v. At least one toilet shall be provided for each ward and service unit, as well as a set of male and female restrooms for staff in office blocks and reception areas. vi. Bed pans should be provided following hospital rules and separated into infectious and non-infectious wards. vii. Each ward should have an adequate supply of mobile receptacles (wheelchairs with receptacles) and bedpans. viii. Regional referral hospitals should comply with the minimum standards for excreta disposal, wastewater, and solid waste management, and environmental cleanliness as specified for hospitals at the hospital level. ix. Delivery clients shall have access to excreta disposal and bathing facilities. The delivery unit's toilets must be flush toilets with a water seal. x. A high-heat incinerator (900 to 1100 °C) should be employed. xi. For the disposal of sanitary pads, all female bathrooms should include a receptacle bin that is lidded and foot operated and lined with a plastic bag.
National/zonal/specialized Hospitals	i. Ensure that separate bathrooms for staff and clients are available in both the OPD and the IPD. ii. Provide two staff restrooms per department, one for men and one for women. iii. Ensure that at least one posture is available for every 20 IPD users and one for every 25 OPD users. iv. Create separate toilets for female and male clients, as well as discrete postures for male and female impaired clients and a specific one for children, in the OPD. v. Provide at least one toilet for each ward and service unit, including a set of male and female toilets in office blocks and client waiting spaces for staff and clients. vi. Provide bed pans in line with hospital rules, keeping infectious and non-infectious wards separate. vii. Provide enough mobile receptacles, such as wheelchairs with receptacles and bedpans, in each ward. viii. Provide delivery clients with specific excreta disposal and bathing facilities, including flush toilets with water seals at the delivery unit. ix. Suggest using a high-temperature incinerator. x. Install a lidded and foot-operated receptacle bin lined with a plastic bag for the disposal of sanitary pads in all female bathroom

6.6 Guidelines for Waste and Faecal Sludge Management

6.6.1 Importance of Proper Handling and Disposal of Wastes

To prevent infections and injuries to patients, health workers, caregivers, visitors to the HF, and the surrounding community, it is critical to properly manage and dispose of contaminated and infectious wastes generated during the provision of medical services or from toilet use. Contaminated and potentially infectious wastes found in HFs include the following:

a) *On-site sanitation feces*
b) *Greywater produced by washbasins, showers, sinks, and flushing toilets*
c) *Patient bodily fluids and tissue specimens*

d) Objects that have been into contact with body fluids or tissues, such as intravenous catheters, wound dressings, gloves, and so on.
e) Sharp instruments such as Scalpels and needles.
f) Microbiology specimens, such as liquid cultures and plated cultures

6.6.2 Acceptable Procedures in Handling and Disposal of Wastes

In light of the possibility of coming into touch with microbes, the aforementioned wastes are considered potentially infectious. The HFs should follow the following accepted processes to guarantee proper waste processing and disposal

6.6.2.1 Management of Wastewater

All HFs should follow the following criteria for successful wastewater and faecal sludge management:

a) Treat HF wastewater before final disposal. This treatment can take place either on-site (via septic tanks and soakage pits) or off-site (via wastewater treatment ponds).
b) Connect inspection chambers, septic tanks, and soakage pits to flush toilets.
c) Before ultimate disposal, disinfect polluted liquids with chlorine in HFs without a wastewater treatment plant.
d) Install drainage systems in all Health delivery points, lavatories, sluice rooms, laundry, and other areas where greywater is produced to control ablution waste.
e) Depending on the complexity of the facility architecture and the accompanying health and safety issues, centralize or disconnect ablution waste drains.
f) Use basic ground seepage systems to dispose of wastewater from handwashing stations.
g) Route wastewater from delivery rooms, dressing rooms, and other areas where invasive procedures are performed to appropriate soak-away pits.
h) Connect HFs to existing sewer systems in metropolitan areas for wastewater disposal.
i) Implement adequate faecal sludge emptying methods with on-site sanitary facilities.

6.6.2.2 Wastewater Treatment Systems

To safeguard public health and the environment, it is strongly advised that wastewater generated at HFs be treated on-site before final disposal. In HFs, wastewater typically consists of black water (sewage), grey water (sullage), and stormwater. The following are the wastewater treatment options:

a). Anaerobic Reactor system: must include a primary and secondary treatment stage, where the HF area is large enough to accommodate a wastewater treatment facility.
b). Decentralized septic Tank system: The recommended minimum treatment approach for wastewater in HFs involves the use of a septic tank. This tank is equipped with a watertight receptacle designed to segregate the solid and liquid components of wastewater, facilitating the anaerobic digestion of organic matter.

6.6.2.3 Guidelines for Construction of Decentralized System

a). The capacity of the septic tank should be equal to the total amount of two days' worth of wastewater flow. In the event of a two-chamber system, the capacity of the first chamber should be two-thirds of the overall volume.
b). Access holes, inspection ports, and ventilation should be built in each chamber to ensure adequate maintenance and monitoring.

c). *If levels of solid matter cannot be effectively controlled, it is advisable to remove the accumulated solids at least once every two years. Regular removal is essential to maintain the optimal functioning and efficiency of the septic tank.*

d). *The retention time within the Septic Tank should not be less than 24 hours to ensure efficiency of solid settling and floating.*

e). *To avoid this, it is recommended that solid materials (sludge and scum) be removed from septic tanks while the chambers are half-full.*

6.6.2.4 Pre-Treatment of Liquid Waste

Some health facility departments may generate waste with a high concentration of heavy metals or other elements, which can reduce the effectiveness of the management system. As a result, liquid waste from these departments should be pre-treated before being discharged into waste treatment facilities. Table 6.3 provides a review of treatment methods for liquid water from several hospital departments that generate hazardous waste.

Table 6.3: Guidelines for pretreatment methods of wastes from hospital departments

Department/Section	Pre-Treatment Method(s)
Dental	Amalgam separators should be installed in sinks, especially near patient treatment chairs. Separated mercury trash is safely stored.
Radiography	Separate collection of radioactive wastewaters (e.g., urine from thyroid therapy patients) and storage for decay in a secure die-away basin until background concentrations have fallen sufficiently. Dispose of the effluent in the sewage system after the required storage time has passed.
Kitchen	Grease traps are installed to effectively remove grease, oil, and other floating pollutants.

6.6.3 Management of Faecal Sludge

While developing and building treatment systems for faecal sludge, it is critical to consider these various properties to ensure appropriate desludging and treatment processes.

6.6.3.1 Technology for Treatment of Faecal Sludge

Co-composting, co-treatment in waste stabilization ponds, and deep well entrenchment are all established technologies for treating faecal sludge. Depending on the therapeutic goals, HFs may experiment with novel ways, especially while attempting to recover resources. Strande et al. (2014) provide examples of resource recovery treatment methods such as vermicomposting, black soldier flies, ammonia treatment, thermal drying and pelletizing, and sun drying. Co-treatment in waste stabilization ponds is the most common method in Malawi, with other approaches often in the experimental or pilot stages. For more details on waste stabilization ponds, refer to Guidelines for Waste Stabilization Ponds in Malawi.

6.6.3.2 Selection Criteria for Treatment Technology

The type of onsite sanitation system in operation, the quantity and characteristics of the sludge, rain patterns (both quantity and dispersion over time), and the institutional setup all influence treatment technique selection. Designers and planners should regard faecal sludge management solutions as a whole set of systems that promote efficient desludging, transportation, treatment, and end-use. Table 6.4 summarizes the Criteria for selection of fecal sludge treatment options.

Table 6.4: Criteria for selection of fecal sludge Treatment Options

Treatment Performance	Local Context	Operation & Maintenance requirement	Cost
National standards for effluent and sludge quality	• Sludge characteristics (dewaterability, concentration, degree of digestion, spreadability) • Sludge discharge quantity and frequency at Faecal sludge treatment plan • Climate • Land availability and expense • Interest in end use (fertilizer, forage, biogas, compost, fuel)	• Skills needed for operation, maintenance and monitoring available locally • Spare parts available locally	• Covered investment costs (land, infrastructure, capacity expansion) Covered operation and maintenance costs • Users' affordability

Source: Strande et al., 2014

6.6.5 Operations and Maintenance Of Sanitation Facilities

Maintenance of sanitary infrastructure and facilities necessitates precise planning and execution to ensure smooth operations and the provision of maintenance services in the case of structural or functional changes. Routine and periodic maintenance services are critical for keeping sanitation facilities in Health institutions in good working order.

a) ***Clear staff Roles:*** Define staff roles for sanitation infrastructure and service management. Depending on the facility level, form a committee comprised of a manager, supervisor(s), and attendant(s), each with assigned responsibilities for sanitary infrastructure maintenance.

b) ***Regular Toilet Cleaning***: Ensure that toilets are cleaned at least three times per day, using a disinfectant on all exposed surfaces and a brush to remove obvious soiling. Avoid the use of strong disinfectants in big volumes.

c) ***Cleaning Schedule:*** Implement a weekly and daily cleaning schedule that specifies when sanitation facilities should be cleaned and cleaning and hygiene chemicals should be supplied. Clearly identify persons or groups in charge of cleaning chores, as well as their superiors. Display the schedules for simple access and distribute them to the appropriate managers.

d) ***User Orientation, Training, and Education:*** Conduct user orientation, training, and education sessions. Make materials, persons, and time available to help newcomers, repeat visitors, and staff members.

e) ***Operation and Maintenance Plan:*** Develop and put into effect an operation and maintenance strategy that addresses the operation and repair of sanitary infrastructure and services. This should cover routine or ad hoc repairs as well as scheduled maintenance tasks.

f) ***Monitoring Tools:*** Centralize the development of sanitation monitoring tools in Health facilities. Each facility is responsible for acquiring monitoring and evaluation instruments and ensuring timely implementation.

g) ***Septic Tank Emptying:*** Establish a procedure for emptying fecal sludge when the septic tank is 75% percent full.

h) ***Documentation and Reporting:*** Weekly meetings should be used to document and report on cleaning and maintenance inspection operations.

6.7 Use of Medical Waste Incinerator

Incineration is a thermal waste treatment technique (controlled combustion process) with the primary objective of volume reduction and energy recovery from the waste stream. End products of incineration include ash, heat, and combustion gases. Currently in Malawi, there are very few incinerators that operate at the recommended pressure and temperature (900 – 1100 °C); Most of the incinerators in several health facilities and industries are batch burners. Other institutions in Malawi use Open burning or set dumpsites on fire to treat and manage solid waste treatment. Although use of batch burners and open burning are considered economical and easy to use, however, they are not recommended for treatment of medical of clinical wastes. Recommended incinerators to treat medical wastes must meet the minimum recommended international standards (ISO 14001).

When dealing with medical waste, managers and users of this guideline must further refer to Environment Management (Waste Management and Sanitation) Regulations 2008 and Malawi Standards (MS) 615: 2005: Waste within Health facilities, handling and disposal (Code of Practice). Before taking medical waste to the incinerator, it is recommended to segregate it into the following categories: Anatomical Waste, Infectious non-anatomical waste, Sharps and Similar Items, Chemical/ Pharmaceutical Waste, Pressurized Container Waste, and General Waste

The WHO and MoH have classified different types of medical waste as follows:

a) *Infectious Waste* – Anything that's infectious or contaminated. This waste has been in contact with human blood or bodily fluids and can spread disease. Examples include gauze, cotton, dressings, and gloves.
b) Highly infectious waste (pathological): Examples include laboratory cultures, IV fluid lines, anatomical waste and placentas, specimen containers, and blood containers.
c) Non-infectious waste: This is general waste that presents minimal or no risk to persons who may handle it. Examples include paper, packaging materials, office supplies, drink containers, cartons, unbroken glass, plastic bottles, and food remains.
d) *Sharps* – This waste has the potential to puncture the skin and cause injury. Examples include needles, infusion sets, scalpels, knives, blades, lancets, broken glass and razors
e) *Pathological Waste* – Human or animal tissue, body parts, blood and fluids
f) *Chemical and Pharmaceutical Waste* – This waste includes drugs and related waste, unused and expired drugs or medicines, like creams, pills, antibiotics
g) *Genotoxic Waste* – Cytotoxic drugs and other hazardous toxic waste, that's carcinogenic, mutagenic or teratogenic.
h) *Radioactive Waste* – Any waste containing potentially radioactive materials
i) *Chemical Waste* – Liquid waste, typically from machines, batteries and disinfectants
j) *General/Other Waste* – All other, non-hazardous waste.
k) *Pressurized Container Waste* – This category includes any container wastes that are pressurized and if punctured can explode, spray its contents or possibly be flammable. Examples include wastes consisting of full or empty containers with pressurized liquids, gas, or powdered materials, including gas containers and aerosol cans

Recommended Steps to treating medical wastes using Incinerators:

- **Step 1: Sort:** The first step of preparing your waste for incineration should be to sort through the waste. Pick out any high-value reusable or recyclable items (e.g. metal or glass bottles) for

resale. Furthermore, it is important to remove any dangerous items from the waste stream (e.g. batteries)

- Step 2: Shredding: Shredding the waste before incineration is an important part of preparation. It involves breaking the material down into smaller pieces to burn more waste in one batch to lower down running costs of an incinerator.
- Step 3: Drying: This process involves reducing the moisture content of the waste to facilitate the complete burn of the waste and to allow faster heating time to improve efficiency.
- Step 4: Determine batch size: You must determine a batch size suitable for your incinerator. This reduces heating costs and prevents damage to your burner and incinerator
- Step 5: Pre-heat: Before loading your waste you must first heat it at a temperature of 850 – 900 °C to kill any of these harmful pollutants before they are released.
- Step 6: Load your incinerator: Once you have completed all your pre-preparation steps and your temperature is up within 850 – 900 °C, it is time to load your waste into an incinerator. Make sure you wear all the necessary safety equipment to avoid the risk of injury during loading. The temperature of the heating elements can reach 1100 °C, so you must follow all the guidelines and safety rules when using the incinerator.
- Step 7: Let it cool: Once the combustion process is complete, it is important to allow the burner and ashes to cool down.
- Step 8: De-ashing: Once your incinerator and ash have cooled to a comfortable temperature, you can easily remove the ash system ready for the next batch.
- Step 9: Spot Check: Once the incinerator has been de-ashed and completely cooled, next inspect various areas of the incinerator e.g. burners, chamber and fuel lines. This will save you time and money by preventing any problems from developing.
- Step 10: Re-Load: After you have checked your incinerator, you are ready to repeat the steps to reload the next pile and batch of waste.

For more details on the use and management of incinerators refer to “Health Care Waste Management” Incinerator Operator Manual January 2009

NOTE: Use of waste pits for medical waste disposal is only recommended when the pit is lined, secure and well-protected from scavengers and any water sources (groundwater)

CHAPTER 7: HYGIENE IN HEALTH FACILITIES

7.1 Introduction

This chapter underlines the significance of hygiene standards in health facilities for maintaining a clean and safe environment for patients, the HCWs, caregivers, guardians and community members. It emphasizes important habits including hand hygiene, bathing, and wearing personal protective equipment (PPE) to avoid acquiring and transmitting infectious microbes. The chapter also includes guidelines for appropriate hygiene techniques, such as laundry and kitchen management, mortuary hygiene, and environmental management for vector and vermin control in Health facilities of all sizes. Furthermore, this chapter highlights the significance of WHO (2021) and Malawi IPC Guidelines in HFs. Several areas are covered and or introduced for further reference and these include: Hand hygiene, Standard Precautions, Transmission precautions, Rational Use of PPE, Environmental cleaning, Instrument and patient equipment Decontamination, and Health Care Waste Management.

7.2 Guidelines for Hand Hygiene in HFs

7.2.1 Awareness of Transmission of Pathogens by Hands

The HCWs need adequate knowledge of how Health-Associated Infections (HCAIs) are transmitted to take precautions and follow standard measures, including hand hygiene, personal protective equipment use, respiratory hygiene, and proper handling of materials, to prevent infection spread among patients and protect Health providers.

7.2.2 Hand Hygiene Practices

A) Routine Hand Washing and Proper Drying of Hands

i). Exercise effective hand-washing with soap to remove visible dirt, soil, and various organic substances from the hands and to reduce bacterial counts on the skin.
ii). Wash hands when visibly soiled, otherwise, use hand rub.
iii). Proper hand washing consists of eleven (11) steps and should take between 40-60 seconds. Figure 7.1 clearly illustrates these steps.
iv). Bacteria transmission is more likely from wet skin than dry skin. Adequate drying, using methods like automated dryers, and paper towels, can effectively remove bacteria. Paper towels are recommended for single use and should be disposed of in hands-free, non-risk waste bins.

B) Paper Towels

Paper towels are the optimal method for fast and safe hand drying after washing, with advantages including quick drying, reduced bacteria, and lower cross-contamination risk. Health facilities need to follow the following specific steps for effective paper towel utilization.

i). Provide paper towel dispensers in all areas where hand washing facilities are installed.
ii). Towel dispensers should be mounted such that access to them is free and splashing or dripping onto adjacent wall and floor surfaces is minimized.
iii). Provide single-use paper to turn off faucets to avoid hand recontamination.
iv). Air dryers are discouraged in HFs as warm air currents dry hands slowly and can be used by only one individual at a time which may result in unnecessary queues and the temptation to dry hands-on personal clothing.
v). Provide lidded, lined, foot pedal-operated waste bins, with waste bags, near each hand washing sink.

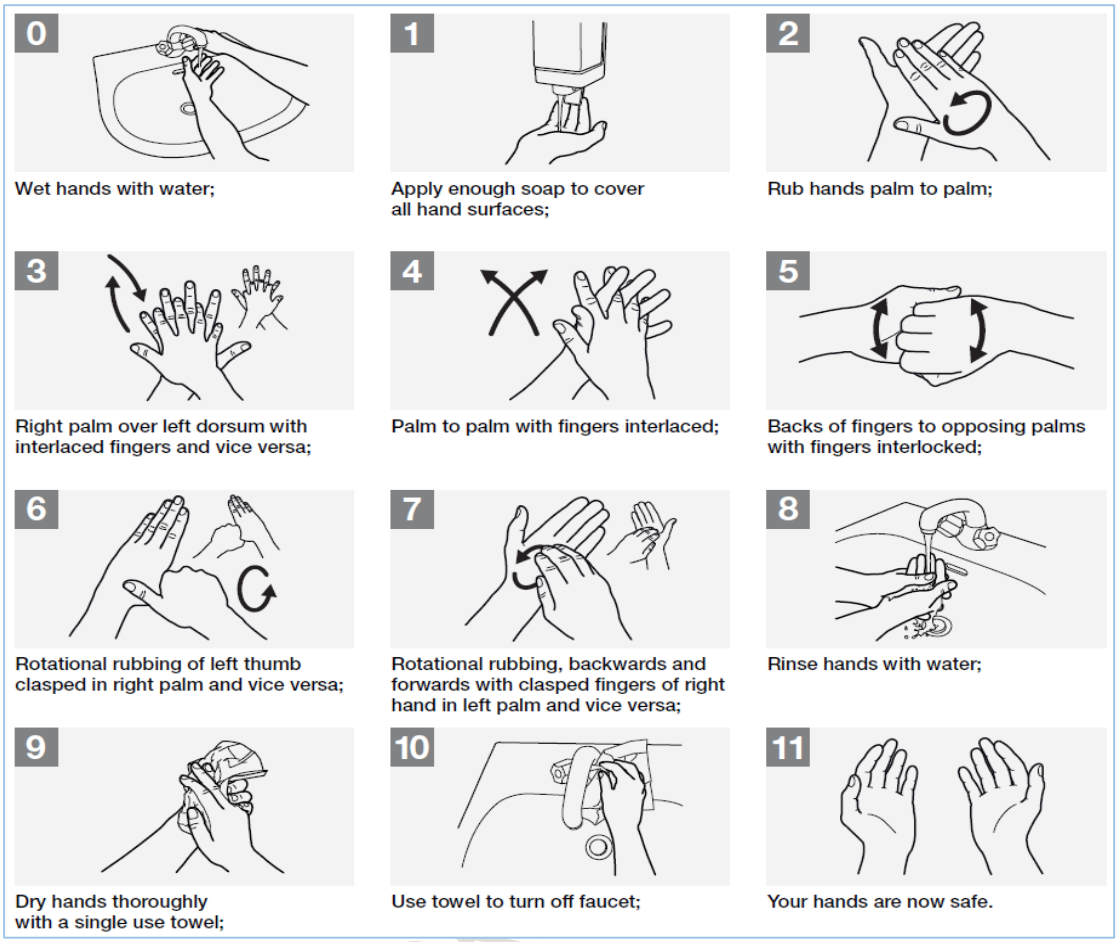


Figure 7.1: Steps for routine hand washing

(Adopted from WHO Guidelines on Hand Hygiene in Health Care, 2023)

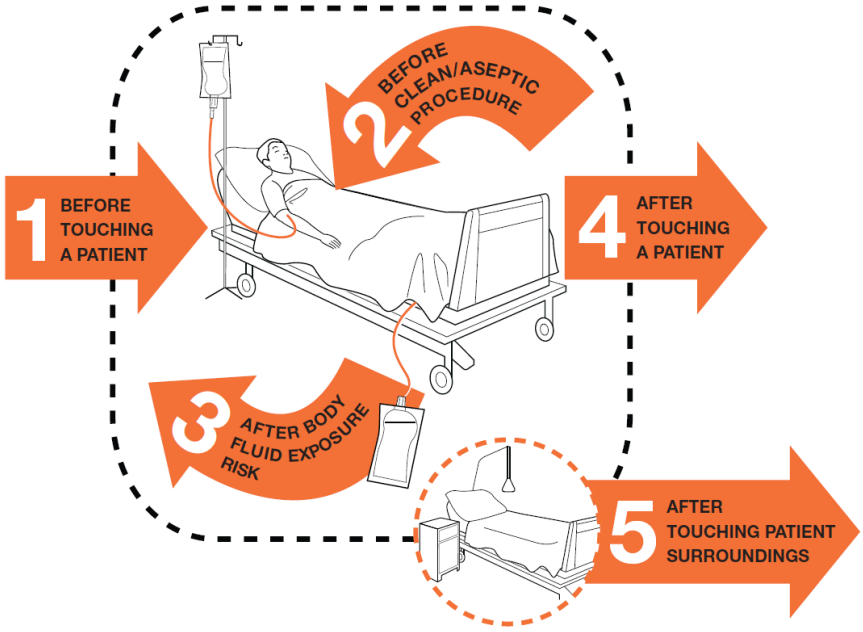
7.2.3 Critical Moments of Hand Hygiene in HFs

7.2.3.1 Hand Hygiene in Patient Handling

The HCWs must exercise caution before, during, and after patient contact. Figure 7.2 depicts key moments for hand hygiene, emphasizing proper hand washing with soap and water. Potential hand contamination can occur during various activities, including lifting patients, dressing wounds, and taking vital signs. Apart from handling patients, proper hand washing in HF environment should be done:

a). Before and after caring for any patient
b). When hands are visibly dirty, or soiled with blood or other body fluids.
c). Before entering and leaving inpatient wards or any working area of the health facility setting
d). After visiting the toilet
e). Before putting on gloves and immediately after removing gloves
f). Before and after feeding a patient
g). After contact with inanimate surfaces and objects (including medical equipment) near the patient
h). Before preparing food
i). Before eating

***Note**: Wearing gloves is a universally accepted standard during all patient care activities. However, gloves should not replace the need for proper hand washing, as they do not provide complete protection against hand contamination*



1	BEFORE TOUCHING A PATIENT	WHEN?	Clean your hands before touching a patient when approaching him/her.
		WHY?	To protect the patient against harmful germs carried on your hands.
2	BEFORE CLEAN/ ASEPTIC PROCEDURE	WHEN?	Clean your hands immediately before performing a clean/aseptic procedure.
		WHY?	To protect the patient against harmful germs, including the patient's own, from entering his/her body.
3	AFTER BODY FLUID EXPOSURE RISK	WHEN?	Clean your hands immediately after an exposure risk to body fluids (and after glove removal).
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
4	AFTER TOUCHING A PATIENT	WHEN?	Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
5	AFTER TOUCHING PATIENT SURROUNDINGS	WHEN?	Clean your hands after touching any object or furniture in the patient's immediate surroundings, when leaving – even if the patient has not been touched.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.

Figure 7.2: Critical moments of hand hygiene in HFs

Source: Guidelines on Hand Hygiene in Health Care (WHO, 2023)

7.2.4 Antiseptic Hand Rubbing

The HFs must provide alcohol rub (Isopropyl 60–70%, Ethanol 70–90%, including methylated spirit 70%) at the point of care, adhering to national specifications. The alcohol rub should be securely stored to prevent accidental or intentional ingestion by individuals. It is to be applied when hands are not visibly soiled, following the steps in Figure 7.3 for effective hand decontamination.

7.2.5 Antiseptic hand washing

Hand antisepsis is a procedure that eliminates or eradicates transient microorganisms and provides a lasting effect. It resembles plain hand washing but employs antiseptic or antimicrobial soap instead. The steps for antiseptic hand washing are akin to those recommended by the CDC (2002) Centers for Disease Control and Prevention and the WHO (2009). Refer also to Figure 7.1.

7.2.6 Surgical hand antisepsis

A surgical hand antisepsis aims to minimize the number of resident and transient flora on the hands, wrists, and forearms. The goal is to inhibit their regrowth for as long as possible.

Surgical hand hygiene is crucial for reducing bacteria on the surgical team's hands, wrists, and forearms to prevent bacterial release into open wounds, especially in case of unnoticed glove punctures. Unlike regular hand hygiene, surgical hand preparation aims to eliminate transient and reduce resident flora, inhibiting bacterial growth under gloved hands. This critical step in surgical procedures involves using antimicrobial soap or alcohol-based hand rub with persistent activity before donning sterile gloves. Adherence to safety procedures outlined in the WHO IPC Guideline, 2022, is essential.

It is important to strictly follow guidelines when performing surgical hand rubs for safety. Please refer to the WHO guidelines (2009) and Steps for surgical hand rub.

Figure 7.3: Steps for routine hand rub

(Adopted from WHO Guidelines on Hand Hygiene in Health Care, 2023)

7.3 Hand washing facilities and specifications for health care facilities

To practice effective hand washing, each HF must ensure that it provides adequate hand washing facilities. This sub-section outlines the basic facilities and materials required for this purpose. Annexes 1 and 2 provide a list of recommended numbers of hand washing facilities and their locations within different levels of HF.

Figure 7.5: Examples of hand washing facility

7.3.1 Hand washing facilities and specifications

Hand washing facilities and materials are crucial for promoting hand hygiene practices. To ensure effective hand washing, HF must have access to hand washing facilities and materials that meet the acceptable WHO (2009) specifications presented in Table 7.1.

Table 7.1: Specification of hand washing facilities in HFs

Handwashing Facility	Specifications
Hand washing basin	• Should be made of non-porous material, round shape inside with dimensions of 25cm by 35cm depth and without overflow • Should be of elbow, foot, or automatic operating taps, uPVC traps and plastic gadgets • Should be a wall-mounted basin fixed at 120cm above the floor
Soap/detergent dispenser	• Should be soap dispenser (manual or automatic)
Hand-drying equipment/ materials	• Should be a centered feed hand towel dispenser • Hand drying material should be a disposable paper towel
Water supply	• Both hot and cold water should be provided
Sanitizer	• Should be used when hands are visibly clean
Waste bin	• Should be a round black/blue pedal bin of 12 litters (340mm (height) x 270mm (diameter)
Hand washing basin for disabled people	• Wheelchair accessible hand wash basin which is wall mounted with dimensions of 510mm (length) by 685mm (width).

7.3.2 Surgeon scrub- sinks

Surgical scrub sinks are specialized fixtures in operating theaters, allowing medical personnel to wash hands before surgeries. These sinks promote proper hand hygiene, reducing contamination risks with sterilized tools. Equipped with hot and cold-water supply, activation is possible through knee-action mixing valves or wrist/foot controls

To maintain hygiene practices, surgical scrub sinks should have the following characteristics:

a) *Made of vitreous china, stainless steel, or a material that is equivalent in durability and imperviousness to vitreous china.*
b) *Adequately sized to allow for the scrubbing of both hands and arms without touching any surface.*
c) *Shaped and sized to prevent splashing of the user;*
d) *A non-swivel faucet that provides adequate flow for quick rinsing;*
e) *Hands-free operation (electric eye or knee/foot operation) to prevent contamination of the hands when water is activated,*
f) *Provide manual means for adjusting water temperature,*
g) *Equipped with a seam-free backsplash integral with sink that extends at least 60cm above sink level,*
h) *Provide backsplashes covering the areas under the paper towel dispenser and soap dispenser.*

7.3.3 Hand hygiene facility usage and maintenance

The following precautions should be taken to ensure proper use of hand hygiene facilities and maintenance:

(A) Hand hygiene facilities should not be dedicated to any other purpose

(B) Hand washing facilities should be regularly inspected and cleaned to ensure they remain in good working condition

(C) Paper towels and liquid soap should be provided at each hand washing sink

(D) A current hand washing guide should be posted at each hand washing sink to promote proper hand washing

Note: *It is recommended to provide hand washing facilities, including a sink, water, soap, antiseptic, and paper towel or drier, for all toilet compartments and sections/rooms that provide services.*

7.4 Guidelines for Bathroom Hygiene

Bathrooms are important infrastructures for both patients and HCWs for preventing and controlling the transmission of diseases. To improve hygiene practices within HFs it is necessary to have adequate numbers of bathrooms that correspond to the level of bed capacities and staffing levels with the ratio of patients per bathroom of 1:6. A proper bathroom within the HC should have the following basic and minimum qualities:

a). A minimum surface area of 3.25m
b). Well drained non-slippery floor
c). Impervious walls
d). Mixture taps for both cold and hot water
e). Adequate lighting and ventilation for use safety
f). Furnished with wall-mounted seats with a functional emergence alarm call system with a free room for wheelchair maneuvering
g). Bathrooms should be separated for HCWs and patients and clearly labeled to identify the type of users and sex.

7.5 Guideline for Laundry Hygiene

Soiled linen in Health facilities can harbor pathogenic microorganisms, increasing the risk of disease transmission to Health workers and patients. Proper handling of linen can help reduce the risk of transmitting disease-causing microorganisms from contaminated patient linens to Health workers and reduce hospital-acquired infections from linens to patients.

7.5.1 Safe handling of laundry

HC laundries should be well designed with good drainage systems easy to clean and must conform to the standards and procedures spelled out in the guidelines for Health Care Waste Management (HCWM). Hence, laundries in HFs must have the following minimum qualities:

a). *The laundry should not be located on a site that is directly accessible to the kitchen.*
b). *The design of the laundry should facilitate the creation of dirty and clean areas to prevent cross-contamination.*
c). *A separate hand hygiene sink for staff with wall-mounted dispensers for soap and paper towels should be provided.*
d). *All workers at the laundry should be vaccinated against Hepatitis B virus and TT*
e). *Appropriate PPE should be worn by laundry staff as required.*
f). *There should be a changing room for staff*
g). *Washable smooth walls, edges, corners and projections with glazed ceramic tiles should be fixed up to 8 inches high.*
h). *The laundry room should have a smooth ceiling, washable surface and enough height to allow installation and repair.*
i). *Laundry containers/skips should be part of a routine cleaning schedule.*

7.5.2 Basic principles for handling linen

All used linen should be handled with care to avoid dispersal or microorganisms into the environment and to avoid contact with staff clothing. Therefore, HFs should comply with the following principles for linen used by all patients regardless of their infectious status:

a). *All used linen should be considered soiled/contaminated thus requiring cautious handling.*
b). *All linen should be disposed into an appropriate linen container at the point of care.*
c). *Appropriate PPE must be worn during the handling of soiled linen to prevent skin and mucous membrane exposure to blood and body fluids.*
d). *Linen that is heavily soiled with blood and/or other body fluids that could leak should be contained by a leak-proof bag and secured before transport.*
e). *Hand hygiene must be done following the handling of all used Linen or clothing soiled with blood or body fluids and should be placed in alginate or water-soluble bags at the point of care.*
f). *Linen or clothes soiled with blood or body fluids should be machine-washed using soap/detergent at or above 60°C. A biological washing powder is highly recommended.*
g). *Always hold used linen and clothing away to avoid contaminating staff clothing.*
h). *Laundry service providers should avoid filling the alginate bags more than 2/3 full.*
i). *Rinsing or spraying clothes soiled with blood or body fluids by hand or carrying out manual sluicing should be discouraged.*
j). *Sharp objects and other items should not be inadvertently discarded into laundry bags.*
k). *Clean and soiled linen should be stored separately.*
l). *Clean soiled mattresses by wiping with 0.5% chlorine solution and letting them dry before putting clean linen on them.*

Basic guidelines for collection and transportation of health facility linen include the following:

a). Used linen is transported from the ward to the laundry in leak proof containers with lids or covers, to avoid leaking.
b). Clean linen is covered or wrapped during transportation
c). Extra linen is not left in patients' rooms.
d). Items are checked for cleanliness and rewashed if necessary.
e). Washed linen is placed in clean containers or on clean surfaces.
f). Carts, marked trolleys or other leak proof containers are cleaned before taking clean linen back to the wards.

Figure 7.8: Examples of laundry hampers and trolleys

7.5.3 Operation and maintenance of a laundry facility

To ensure that your washer-extractors and tumble dryers last longer, it is crucial to follow the recommended preventive maintenance practices. The following are the recommended preventive practices:

a) *Create a schedule for daily, weekly, and monthly laundry cleaning, and use a monthly assessment tool to identify any damage to the laundry facility and plan for repairs or replacements.*
b) *To prevent dirt from accumulating on the door gasket, which can cause leaking, staff working in laundry should wipe down the door seals at least once a day to ensure they are dry and clean*
c) *Laundry staff should inspect all visible hoses daily, with special attention to the water inlet valve hose connection on the machine's backside and any chemical connections.*
d) *The lint compartment and screen are to be cleaned on a daily basis. This will allow electrical components to blow, maintaining proper airflow and avoiding overheating.*
e) *Staff should be checking the cylinder daily for debris to avoid damage to the linens and the equipment.*
f) *Wipe down the outside surfaces of both washer-extractors and tumble dryers each day. This reduces the need for additional maintenance and deep cleaning caused by a build-up of lint, debris and chemical remnants.*

7.6 Guidelines for kitchen hygiene

Food can become contaminated at any stage of preparation or distribution if proper hygiene measures are neglected. Contaminated hands, polluted water, flies, and utensils pose risks in kitchens. Food handlers play a crucial role in preventing disease transmission. The HF kitchens should adhere to standards, featuring good drainage, ventilation, and cleanliness. Separate, well-equipped toilets and proper waste collection are essential. Kitchen services, whether outsourced or HF-operated, require close monitoring by an Environmental Health Officer for quality assurance.

7.7 Guidelines for Mortuary Hygiene

This section refers to the maintenance of hygiene in the Mortuary. Specifically, it highlights guidelines on general cleaning, laundering and disinfection of equipment. It also provides details about the functioning of refrigerators, availability of formalin, use of PPE, vaccination, available post-exposure prophylaxis, HCWM and information on hand hygiene facilities.

7.7.1 General cleaning

This includes cleaning of the different areas such as preparation tables, chairs, lights, doors, cupboards, floors, walls, washing sinks, washrooms and windows. The general cleaning procedures in the mortuary should be as follows:

a) *Cleaning is carried out every day in the morning hours, after every service or whenever necessary.*
b) *All parts of equipment and furniture that was used to provide mortuary services should be cleaned by using disinfectants mixed with soaps.*
c) *Linen and Mackintosh after post-mortem examination should be changed*
d) *Single-use gloves should be worn when handling contaminated re-useable linen and placed in a laundry bag for routine laundering.*
e) *Cleaning equipment such as mop and brushes should be cleaned after use. If they are soiled they have to soak in a Chlorine solution 0.5% for 10 minutes and then dried.*

7.7.2 Cleaning and disinfection of essential post-mortem/autopsy equipment

When cleaning and disinfecting essential equipment for post-mortem and autopsy the following aspects should be seriously taken into account:

a) *Cleaning of instruments must be done in a dedicated sink and not the normal hand washing sink,*
b) *Personal protective equipment preferably heavy utility gloves should be worn while cleaning,*
c) *Instruments used on contact skin should be cleaned and stored in a dry place, but instruments that penetrate the skin must undergo cleaning and sterilization.*
d) *Used items should be removed from their transport containers and sorted out according to the appropriate cleaning method,*
e) *If cleaning cannot be performed immediately, then instruments should be covered in warm water to prevent soils from becoming fixed, which would make cleaning difficult*
f) *Instruments should not be soaked for longer than one hour. Instruments that cannot be immersed should be cleaned immediately,*
g) *Disinfectant solutions should be labeled appropriately (with the name, date and dilution strength)*
h) *Chemical disinfection should be used only for items for which sterilization and thermal disinfection are not suitable for example, items unable to be immersed in water (thermal) or unable to withstand high-pressure gradients (sterilization),*
i) *Sufficient and appropriate disinfectant should be 0.1% hypochlorite solution for routine mortuary work, embalming and post-mortems,*
j) *Soaking should be done in 0.1% hypochlorite solution in a plastic container for 10 minutes then removed and rinsed with distilled water before being dried and stored,*
k) *Chemical disinfectant solutions should be discarded immediately after use,*
l) *The container should have a close-fitting lid.*

7.7.3 Other essential aspects of maintaining mortuary hygiene

In addition to the above guidelines, other critical hygiene practices in which each HC is properly addressed in the mortuary environment are outlined in Table 7.2.

Table 7.2: Other critical aspects of maintaining mortuary hygiene

Aspect	Precautionary measures
Appropriate PPE	• Mortuary staff and relatives should wear PPE (gloves, plastic aprons, gowns, protective eye wears, face masks covering mouths and noses, boots) when handling dead bodies • Personal protective equipment should be removed after handling of the dead body, then wash hands with liquid soap and water immediately • Placement of boots and procedures for discarding or washing of clothing must be designated. • Single-use PPE must be disposed of as an infectious waste
Instrument processing	• All items must follow instrument processing procedures as laid down by National guidelines and procedures (decontamination, cleaning, high-level disinfection and sterilization)
Body storage	• Bodies should be stored in a functioning refrigerator and must be maintained at a temperature between 2 to 6^{o}C. • If long-term storage is required, the body should be maintained at approximately-20^{o}C • A body suspected of harboring infectious diseases, decomposition, trauma or suspicious deaths should be contained within a body bag that is durable and impermeable to body fluids.
Embalming chemicals	• There should be an embalming chemical (formalin) to temporarily prevent decomposition and restore a natural appearance of the body
Washing facilities	• Changing rooms with shower facilities must be provided in the mortuary
Vaccination	• Hepatitis 'B' virus and TT vaccines should be provided to all mortuary staff
Accidental exposure to blood or body fluids	• In case of percutaneous injury or mucocutaneous exposure to blood or body fluids of the dead body, the injured or exposed areas should be washed with copious amount of water • All incidents of percutaneous or mucocutaneous exposure should be reported to the supervisor for proper wound care and post-exposure management
Health Care waste management	• Items classified as HCW must be handled and disposed of according to colour coding as stipulated in the guidelines of HCWM

7.8 Guidelines and General Cleanliness of HF Wards

Health facilities and hospitals must follow strict cleaning and cleanliness rules to ensure both patients and medical staff are safe. The cleaning of the wards or patients' bays or rooms should be done in line with standards and protocols outlined by MoH IPC and WHO guidelines. Cleaning a Hospital or health facility ward in a clear pattern establishes a routine so that items or areas are not missed during the cleaning process. Cleaning staff must understand what they should do; when they should do it; and why they should do it. An empty bed space is easier to clean since it lacks patients, visitors, clinical equipment, and personal belongings. However, attention should be paid to both occupied and vacant bed spaces. There are four stages to consider when cleaning a health facility ward or patient's bay or rooms, and these are LOOK; PLAN; CLEAN and DRY.

Stage 1: Look (Initial Inspection)

a) *Cleaners should have a visual assessment as the first stage of the cleaning process. Pay attention to visual dirt, spillages, rubbish, arrangement of beds and clinical equipment*
b) *Evaluate the cleanliness of a room by ambient temperature, smell, availability of visitors or staff, and patient status (e.g sleeping, absent, immobile, mobile, undergoing clinical intervention, unconscious, or dying).*
c) *It is essential to consider noise control; cleaning activities and equipment may upset patients and disrupt visiting or clinical care.*
d) *Cleaners should always seek advice for patients in isolation rooms because it is not always obvious why a patient has been isolated.*
e) *Wards or Rooms accommodating patients with Health-acquired infection may require a different cleaning and decontamination procedure than patients in multiple-bedded bays or wards.*

Stage 2: Plan (Create A Cleaning Schedule)

a) *The first step in cleaning a hospital is to make a plan for everything. This plan should have specifics like what needs to be cleaned, how often, and what goods and methods will be used.*
b) *The first action is to wash hands using clean water and soap*
c) *Next, the cleaner should then put on gloves and aprons, and other barrier protection (PPE)*
d) *Preparation for cleaning starts with attention to lighting and ventilation in the wards, bays, or rooms. Strong smells and temperatures may guide the cleaner to open the windows.*
e) *Natural ventilation, smell and temperature should be assessed by the cleaner in line with patient comfort, and with advice from clinical staff.*
f) *Furniture and beds may require realigning if access is blocked. This should be done in line with hospital guidelines on IPC and other national and local standards. Major maneuvers or movements of furniture or beds for the sake of cleaning must be avoided.*
g) *Bed rails may be raised to protect the patient before elevating the bed for easier access to the underside.*
h) *In other cases, with guidance from clinical staff, it is necessary to reposition the patient's belongings and clinical equipment (e.g. intravenous drip stands, fans, respiratory aids, chairs, window sill, ledge, or shelf,) or patient devices (e.g. catheter bags). This ensures all spaces to be cleaned are clear of any objects*
i) *Once the room or bed space has been organized for access, bins should be checked and emptied and visible rubbish on the floor and other surfaces removed. Ask the conscious patients, and visitors, if there are any unwanted items requiring disposal e.g. food and liquid waste and spillages. Waste should be separated into different types, like general, infectious, and dangerous wastes before being disposed of, managed or treated.*
j) *Spillages of blood and body fluids require attention from clinical or nursing staff and should be reported immediately*
k) *Cleaners should be aware of any areas challenged by plumbing leaks and building works, or contaminated air, spillages, and footwear.*
l) *Final preparations include the replacement of rubbish bags or bin liners, soap, paper towels and toilet paper; and the collection of discarded, glasses, cutlery, and water jugs.*
m) *Similarly, dirty linen and towels should be removed and placed in suitable receptacles.*
n) *At this stage, staff may collect equipment and cleaning consumables and bring them into the room.*
o) *Cleaning fluids (unexpired) should be freshly prepared, and the equipment itself should be clean and in a good state of repair. Choosing the right cleaning supplies is very important when cleaning a hospital.*
p) *Adequate clean water, fresh cloths or wipes, and mop heads should be readily available for cleaning staff with clear instructions on how to manage disposable and non-disposable items*

Stage 3: Clean

a) *Cleaning should always precede disinfection because the presence of soil impedes disinfectant activity.*
b) *Some hospitals use detergents for routine cleaning while others choose products that either inactivate or kill living microorganisms.*

c) *Follow general guidelines accepted as good practice whether detergent-based cleaning or disinfection cleaning is chosen. These guidelines are as follows:*

A. Direction of cleaning

- *Start cleaning at the furthest end of the bed space working towards the exit.*
- *Clean from high (hand height) to low, i.e. do not start with the floor.*
- *Clean sites nearest the patient first, e.g. bed head, nurse call button, locker; then sites furthest from patient, e.g. door handle, sink, bathroom.*
- *Consider hand-touch sites a priority*
- *Clean a site from least visually dirty to visibly dirty.*

B. Wiping action

- *Wipes should be used according to manufacturers' instructions.*
- *Use one wipe for each site; some sites may require several wipes, e.g. bed frame.*
- *Unfolding the wipe and using it flat on the surface maximizes the area cleaned and minimizes hand contact.*
- *Wipe in one direction without retracing the area already cleaned; wipe a large flat surface using an S-shaped pattern*
- *Apply the 'One wipe; one site; one direction' principle.*
- *Throw away disposable wipes after each site or if visibly soiled. If a single cloth is used, decontaminate between each site or discard and choose a fresh cloth.*
- *Note that microbes may be transferred between surfaces (via gloved hands, cloths, etc) and care should be taken when using PPEs and clothing materials.*

C. Detergent versus disinfectant

- *Detergent is used for physically removing soil; disinfectant is for killing microbes.*
- *Impregnated wipes should be used according to manufacturers' instructions*
- *Cleaning fluids should be prepared; applied; and discarded according to manufacturers' guidance and in adherence with IPC guidelines and local policy.*
- *Water and detergent are adequate for routine bed space cleaning provided the 'One wipe; one site; one direction' principle is applied.*
- *Always remove visible soil with detergent and water before disinfectant use.*
- *The physical removal of soil and microbiocidal activity from disinfectant may be achieved by the use of a disinfectant-containing wipe.*
- *Wiping an area >30 cm2 reduces the microbiocidal effect of a disinfectant wipe.*
- *Use disinfectants for infected patients or during an outbreak, unless local policy dictates routine disinfectant use for high-risk patients or sites, e.g. sinks, showers and toilets.*

D. Floors and bathrooms

- *Bathroom should be cleaned after the patient's room, beginning with the sink, then shower/bath and finally the toilet. Local policy should guide disinfectant choice.*
- *As with the near-patient environment, prioritize the hand-touch sites in the bathroom, i.e. taps, handles, nurse call buttons, grab bars, toilet roll holders, etc.*
- *Floor cleaning is the last task to complete.*
- *Place warning signage before floor mopping begins; verbally warn staff, patients & visitors if floors are wet.*
- *Sites or surfaces like bed rails, doorknobs, bed control (if electric bed); nurse call bell; bedside locker and bed table are the highest priority for cleaning because they are frequently touched.*

Stage 4: Drying

- *The final stage includes physical drying using clean paper towels or cloths and time for drying of cleaning fluids (detergent or disinfectant) on surfaces. The cleaning process is not finalized until all surfaces dry completely. Contact time is critical to disinfection*
- *While the surfaces dry, remove cleaning equipment and fluids outside the bed space area or room; discard used wipes; cloths; mops; linen; towels; and liquids.*
- *Reusable equipment should be inspected, cleaned, and dried before next use.*
- *Once cleaning utensils have been removed, surfaces can be visually assessed for dampness. If surfaces look and feel dry, then furniture (and bed) can be repositioned, doors and windows adjusted, and signage removed; patient belongings should be returned to the top of the locker or bed table, with the host site wiped over and similarly allowed to dry.*
- *The cleaner or nurse or clinical officer should make an assessment of the overall cleanliness of the bed space or room (Figure 5). If satisfied, next the area can be signed off by written notification, labeling, or use of a checklist.*
- *Any problems with cleaning should be reported to clinical staff and cleaning supervisors. This would include non-completion due to lack of access; patient status; or malfunction or breakages of bed space and bathroom items or cleaning equipment.*
- *Sites missed during cleaning and items or surfaces that are difficult to clean should be reported.*
- *Any sightings of pests like mice, insects or termites must be reported immediately.*
- *When leaving the patient area, the protective apparel may be removed and the gloved hand should be subjected to hand disinfection before further duties.*

7.9 Approaches for Promotion of hygiene practices in HFs

Effective infection prevention and control in HFs relies on instigating behavioral changes in hygiene practices. Promoting proper hygiene among health workers, patients, and caregivers requires adaptable approaches considering factors like education levels, customs, and the commitment of management and staff. The recommended guidelines suggest various approaches for HFs to ensure the gradual adoption of proper hygiene practices by all stakeholders, thereby minimizing the risks of disease transmission.

a) *Make WASH a permanent agenda in HFCs Quality Improvement Team,*
b) *Increase funding allocation for hygiene activities,*
c) *Orientation to the HF management on hygiene practices,*
d) *Conduct continuing hygiene education to all departments, for example, inpatient wards, RCH, and OPD,*
e) *Provide information, education and communication, self-explanatory posters including SOPs on hygiene behaviors in ward walls, notice boards and offices,*
f) *Provide adequate WASH facilities,*
g) *Ensure that proper hygiene practices are components of emergency response programs,*
h) *Developing strategies and tools to encourage hand-washing promotion by community health and outreach workers.*

7.10 Sustaining hygiene practices in Health facilities

Each HF should have an O&M strategy so that proper hygiene practices are maintained by staff, carers and patients and regularly monitored. The following hints will help HFs to ensure good hygiene practices are maintained:

a) *Conduct regular supportive supervision on matters related to hygiene. The template for O&M schedule is provided in Table 7.3.*

b) Prepare a checklist of issues which require regular monitoring

c) Prepare a working schedule which will show who is responsible for cleanliness, when and how it will be conducted.

d) Each HC should, according to its working environment adopt a behavior change and communication model which will be used by HCWs to educate client on behavior change to improve people's behaviors on personal hygiene.

Table 7.3: Template for O & M schedule for hygiene practices in HFs

Activity	Responsible person	Frequency	Materials, fixture & fitting conditions	Material, tools & equipment needed for replacement
a) Cleaning surrounding areas of hand washing facilities				
b) Check whether taps are c) functioning and not leaking				
d) Check whether there is functioning liquid soap dispensers next to the hand-washing facilities				
e) Check whether there is soap or detergent next to the hand-washing facilities				
f) Refilling the soap dispenser				
g) Check the cleanliness of toilets and bathrooms				
h) Check cleanliness and i) Functionality of laundry facility				
j) Check cleanliness and k) functionality of kitchen				

CHAPTER 8: WASH SERVICES IN HEALTH FACILITIES DURING EMERGENCY

8.1 Rationale of WASH in Health Facilities During Emergencies

Emergencies in Health refer to disruptions caused by emerging or re-emerging diseases, disasters, and crises such as Ebola, SARS, Cholera, COVID-19, floods, earthquakes, and accidents. These situations may overwhelm the HFs, risking infection transmission due to inadequate water, sanitation, and hygiene resources. A surge in patients can strain staff capacity for control, cleaning, and waste management. To address these challenges, HFs should establish preparedness plans, collaborate with relevant entities, and follow an emergency management framework. This chapter outlines step-by-step procedures and minimum WASH standards, applicable to all HFs, for maintaining operations and patient care during emergencies.

8.2 Preparedness and Response Planning

The effectiveness of Health facilities' response to WASH issues during emergencies relies on the nature of the emergency and the preparedness of mitigation measures. A validated response plan, detailing roles and responsibilities, is crucial. All HFs should have a prepared Response Plan and emergency response checklist. According to the World Health Organization (WHO) (2017) Emergency Response Framework and the Hospital Emergency Response Checklist by WHO (2011), each HF should create an "emergency response checklist" encompassing the following key components for effective preparedness and response planning.

- *Key component 1. Command and control*
- *Key component 2. Communication*
- *Key component 3. Safety and security*
- *Key component 4. Triage*
- *Key component 5. Surge capacity*
- *Key component 6. Continuity of essential services*
- *Key component 7. Human resources*
- *Key component 8. Logistics and supply management*
- *Key component 9. Post-disaster recovery*

8.3 Conducting Rapid Assessment of WASH

A rapid needs assessment is vital for informing authorities and actors about requirements for effective emergency response. Findings should inform national, regional, council, and Health facility levels of priorities and external support needs. The WASH sub-committee, in collaboration with others, conducts the assessment during emergencies. Utilizing the WHO Rapid Assessment Tool (RAT) (2012) for WASH in HFs ensures efficient data collection, facilitating better decision-making by emergency managers (refer to Annex 4 for details).

The initial emergency response is guided by the risk assessment conducted for public health events and the situation analysis conducted for sudden-onset emergencies (Figure 8.0). For acute events and emergencies, grading must occur within 24 hours of risk assessment or situation analysis

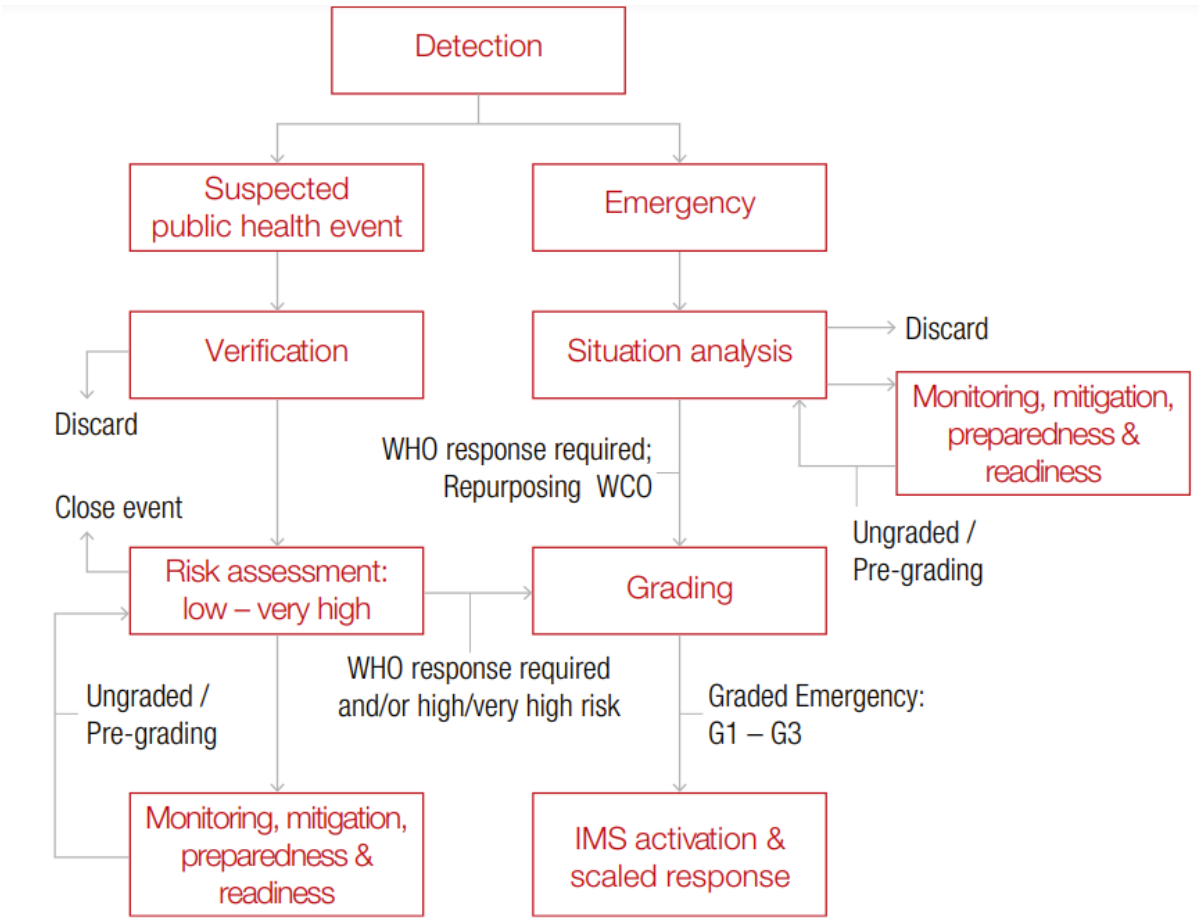


Figure 8.0: Initial detection, verification, assessment, grading and WHO operational response

According to WHO (2017) Emergency Response Framework, examples of common public health events and emergencies requiring assessment or analysis include the following

A. Public health events that may require a risk assessment:

- *Outbreaks of infectious diseases: e.g. diseases of unknown origin, new emerging or re-emerging diseases, epidemic-prone diseases, or zoonoses.*
- *Events resulting from exposure to toxic or hazardous materials: e.g. falsified and counterfeit drugs or vaccines; unusual reaction to medications or vaccines; food or water contamination; environmental contamination/exposure; accidental release or deliberate use of biological and chemical agents or radio-nuclear material.*
- *Other unusual or unexpected events representing a risk for public health.*

B. Emergencies that may require a situation analysis

- *Emergencies due to natural hazards: e.g. earthquakes, tsunamis, floods, landslides or avalanches, extreme temperatures, progressive drought, and wildfires.*
- *Emergencies due to human-induced hazards: e.g. armed conflict, civil unrest, terrorism, transportation crashes, structural fires, industrial explosions.*

8.4 Standard guidelines for WASH in HFs during emergencies

8.4.1 Priority Response Actions

During emergencies, all HFs should prioritize addressing the critical and priority needs resulting from the emergency. This is done, first, by itemizing the common priority needs depending on the nature of the emergency. The priority response actions aim to prevent or reduce the following:

- *Chances of infections to Health workers providing services at the HFs or designated emergency centres.*
- *Chances of infections amongst the affected communities being attended at the HC or in designated emergency centres.*
- *Chances of infections spreading to non-affected communities and environments*

8.4.2 Water supply

A). Emergency water supply:

To determine the quantity and quality of water supply required during an emergency, the HFs should first carry out a water use audit as follows:

i). ***Estimating the amount of water required to continue essential functions*** *during an emergency. This includes calculating the amount of water needed for drinking, hygiene, and cooking.*

ii). ***Identifying essential functions that are critical to protect patients' safety*** *and should remain operational during an emergency. These functions may include medical gas and ventilators if compressors are water-cooled.*

iii). ***Identifying functions that can be temporarily restricted or eliminated*** *in the event of an interruption of the facility's water supply. This may include elective surgery, routine outpatient clinic visits, and other non-essential functions.*

iv). ***Determining the steps*** *required to* ***restrict or eliminate some functions temporarily****. This could include transferring new acute patients to unaffected facilities.*

v). *Finding out any other available* ***alternative water supplies****.*

vi). *Identifying other* ***emergency water storage*** *measures.*

B). Water quantity:

- HFs should ensure that they have enough water to meet their minimum daily requirements, including infection control and medical activities, drinking, laundry, bathing, hand washing, and cleaning. This may require repairing the water supply or power supply if the water system requires power to function. It may also involve installing temporary water storage facilities, such as demountable steel water tanks, bladder tanks, or polyethylene tanks. Table 8.1 provides the recommended minimum water quantities during emergencies.

C). Water quality:

- To maintain microbial safety, all water supplies, except those for specific medical purposes, should be treated with recommended chlorine levels. During diarrheal epidemics, increase residual chlorine to 1 mg/L. For other emergencies, maintain free chlorine residual between 0.5 and 1.0 mg/L. Effective disinfection requires low turbidity, aiming for a median below 1 NTU, and in emergencies, not exceeding 5 NTU, necessitating pre-treatment to remove suspended matter.

Table 8.1: Recommended minimum water quantities for HFs in emergencies**

Users/ Area	Quantity of Water Required (Litres-L)
Staff	5 L/consultation
Outpatients	5 L/consultation
Inpatient	40 – 60 L/patient /day
	15 L/carer /day
Operating Theatre or Maternity Unit	100 L /intervention
Dry / Supplementary Feeding Centre	0.5–5 L /consultation (depending on waiting time)
Wet Supplementary Feeding Centre	15 L /consultation
Inpatient Therapeutic Feeding Centre	30 L /patient/day
	15 L /carer/day
Cholera Treatment Centre	60 L /patient/day
	15 L /carer/day
Acute Respiratory or Isolation Ward	100 L /patient/day
	15 L /carer/day
Viral Hemorrhagic Fever Isolation Ward	300 – 400 L /patient/day
	15 L /carer/day

Source**: Water, sanitation and hygiene in Health facilities in emergencies (WHO, 2012)

D). Sanitation measures and services during emergencies:

During emergencies, the increased number of clients in HFs can make the existing toilets unsanitary, leading some users to resort to open defecation (OD). To remedy this situation, the HFs should:

i). *Maintain general cleanliness in and around toilets. This will be effective if the HC increases the number of cleaners and constant surveillance on the use of toilets.*
ii). *Construct additional toilets when required,*
iii). *Conduct hygiene sensitization/educational awareness to clients on the importance of using toilets, maintaining free from human excreta and proper hand washing after toilet use and patient care,*
iv). *Temporary emergency facilities should be provided with temporary toilets such as trench/pit latrines at the beginning of an emergency or disease outbreak,*
v). *Construct improved toilets if the outbreak persists for more than 21 days*.

E). The ratio of users per Stance:

During emergencies, it is inevitable that the number of toilet units per user will be affected due to the influx of people. The recommended ratio of one unit per 20 users in normal situations may not be feasible in such cases. In such cases, action outlined under (D) sanitation measures and services must be considered.

F). Inpatient settings:

In case of a rapid increase in the number of patients or other temporary facilities being installed as a response to an emergency, the initial planning should target one stance per every 20 to 25 users. However, if a large number of patients are using bedpans, the number of stances can be adjusted accordingly. It is recommended that the number of female-to-male stances should be 2:1.

Table 8.2: Essential emergency control measures in health care facilities

Effect suspected	Control measures
Excreta disposal	▪ Provide sufficient numbers of clean, accessible, appropriate and safe staff toilets for both males and females that do not contaminate the health-care setting or water supplies. ▪ Provide sufficient numbers of clean, accessible, appropriate and safe toilets for patients and carers for both males and females. ▪ Provide toilets for people with special needs for both males and females. ▪ Avoid contamination of water sources. ▪ Provide Adequate water for anal cleansing and handwashing and a sound drainage system.
Wastewater disposal	▪ Dispose properly of wastewater from hand washing facilities, bathing, cleaning and laundering. ▪ Provide a sound drainage system. ▪ Provide properly functioning septic tanks and soakage pits or public sewer.
Stormwater management	▪ Design stormwater drainage to prevent carrying potentially infectious material away from the health care facility into the community. ▪ Frequently clean storm water drainage to avoid blockage.
Cleaning and disinfecting	▪ Provide sufficient materials (detergent, mops, buckets, chlorine) and staff. ▪ Provide additional cleaning materials. ▪ Training cleaning staff in infection control measures. ▪ Establish a cleaning schedule.
Health-care waste management	▪ Safely segregate, store, collect, transport, treat and dispose of Health waste. ▪ Provide adequate coloured coded containers with liners and covers for health care waste segregation. ▪ Provide HCWs with appropriate personal protective equipment. ▪ Construct a fence around the HC collection point. ▪ Empty collection bins whenever necessary. ▪ Orient/ re-orient HCWs on Health waste management.

G). Outpatient settings: The number of toilets required in HFs will vary depending on the size of the facility. Larger outpatient settings will have more toilets than smaller ones. The recommended ratio of toilets to users should be as follows:

i. Two separate toilets for staff (two for 6-25 female users and two for 6-25 male users),
ii. One toilet and one washbasin for 1-5 female patients,
iii. One toilet and one washbasin for 1-5 male patients,
iv. Two toilets for children (one for 20 females and one for 20 male children).

Toilets for people with special needs: Toilets for people with special needs include toilet users who are very sick, under-five children, pregnant women, the elderly, or physically handicapped. At least one emergency toilet should be reserved for each of these special needs people. All toilets should have a signpost to help users find them more easily and to avoid interference.

8.4.3 Personal Protective Equipment

Personal protective equipment (PPE) is vital for health workers during emergencies, ensuring their safety. It empowers HCWs, enabling them to save lives and the environment. Depending on the emergency, various PPE, including gloves, gowns, boots, masks, goggles, and incident-specific materials, are essential for effective protection in restoring WASH services.

8.5 Establishing of operational monitoring system

- Establish operational monitoring procedures for control measures for effective response plans.
- Regular monitoring assesses the performance of these measures, ensuring they function as intended. Comparing monitoring frequencies with targets in the response plan enables prompt corrective actions. Both quantitative and qualitative monitoring, including simulations, after-action reviews, and assessments, are essential.
- During the response, coordinating bodies should request frequent reports on key WASH indicators to track progress, with reporting frequencies varying based on the response's nature.

NOTE: *Further details can be obtained from WHO (2021) Guidance On Preparing for National Response to Health Emergencies and Disasters.*

8.6 Climate-Resilient WASH Infrastructures

8.6.1 Climate resilient and WASH

Climate resilient WASH refers to WASH services and behaviors that continue to deliver benefits, or that are appropriately restored, within a changing climate context and despite climate-induced hazards. Climate resiliency entails facility designs that are risk-informed to ensure HFs deliver Health services with minimal disruption, despite acute or protracted climate events (i.e., floods, drought, etc). On the other hand, Environmental Sustainability ("Greening"): HF operations do not exacerbate climate change (i.e., burning of waste).

Water supply services increase the amount of clean water people have in times of scarcity. Increased water storage provides a critical buffer, delivering water when and where it is needed. WASH should therefore form a central part of any climate change adaptation strategy. Generally, climate change results in the following hazards: a) Rising global temperatures, b) Increased frequency and intensity of extreme weather (e.g. floods and cyclones), c) Greater rainfall uncertainty and drought, and d) Sea level rise. Consequently, the following changes and impacts are possible:

a) Reduced water availability and increased concentration of contaminants in shrinking surface and groundwater bodies. Droughts affect hygiene behaviours and the functioning of sanitation systems as water is less available for handwashing and flushing.
b) Increased rainfall, flooding and cyclones damage water supply and sanitation infrastructure. Flooded sanitation or sewerage systems contaminate water bodies and the environment posing a serious challenge to public health and placing greater pressure on Health systems.
c) Climate change-induced sea level rise contributes towards increasing the salinity of coastal water resources, rendering groundwater and surface water unusable. Salinity can also destroy sanitation systems such as septic tanks and treatment plants.

8.6.2 General Climate Resiliency WASH Infrastructures and Systems in HFs

a) Adopt hybrid powered water supply scheme (e.g. wind or Solar Powered Water Systems
b) Ensure water availability at the health care facilities at all times and in climate scenarios. Every HF must build backup sources of water supply, water storage water systems and infrastructures.

c) *Each HF must have sufficient water storage at the health facility to buffer drought periods.*
d) *Infrastructure needs to be ready to withstand potential climate hazards (e.g. heavy rain, wind, floods, etc.)*
e) *Ensure that WASH infrastructure and services are sustainable, safe and resilient to climate-related risks*
f) *Need to consider source recharging structures (managed aquifer recharge – MAR) upstream of water supply systems especially in drought-affected areas*
g) *Safely managed sanitation and improved hygiene reduce the risk of water supply and environmental contamination in times of flooding and further mitigate risks of knock-on health crises thus reducing pressure on Health systems.*
h) *Ensure Integrated Water Resource Management (IWRM) and WASH initiatives and interventions are coordinated*
i) *Stakeholder engagement can provide valuable input to strengthen understanding of climate hazards, vulnerabilities and exposure, particularly at the local/community level.*
j) *It is vital that climate hazards, vulnerabilities and exposure are understood and that climate resilience becomes integral to strategic planning for WASH.*
k) *The nation and each HF must Consider climate resiliency is recognized in its policies, guidelines, monitoring systems, and accountability mechanisms.*
l) *Health workers have a key role in building climate resilience and environmental sustainability of health facilities. Because building climate resilience and environmental sustainability are relatively new approaches for health workers, building awareness, training and empowering health workers are key requirements for the successful implementation of interventions.*

Table 8.0: Climate-Resilient WASH Interventions in HFs

Item	Climate-Resilient WASH Interventions
Water	a) ***Access****: HFs should have sufficient water quantities throughout the year and identify alternative water sources.* b) ***Storage****: HFs should increase water storage capacity and disinfect existing tanks* c) ***Distribution****: HFs must connect new water sources to wards within the health care facility and repair leaking pipes and broken taps with more robust materials* d) ***Treatment****: HFs must test water quality and procure water treatment supplies or technologies* e) ***Disposal****: HFs must offer solutions for wastewater that are safe and sustainable*
Sanitation	a) ***Access****: Each HF should be flood-prone by ensuring toilets are raised to prevent overflowing* b) ***Technologies****: HFs must use pit toilets or low-flush on-site systems that do not require large quantities of water to maintain* c) ***Fecal sludge management****: HFs should ensure fecal waste from toilets is protected and not in danger of contaminating the environment during a flood or climate event*
Hand Hygiene	a) ***Access****: Each HF should ensure that hand hygiene facilities do not leak water* b) ***Behavior change****: HF must promote turning off faucets while lathering hands.*

For more details, refer to WHO (2020) WHO guidance for climate-resilient and environmentally sustainable health care facilities. Geneva: World Health Organization; 2020.

CHAPTER 9: ENVIRONMENTAL CLEANLINESS AND SANITATION

9.1 Introduction

This chapter highlights important points, activities, and actions to be taken to promote environmental cleanliness and sanitation. These recommendations will assist the HFs in maintaining an environment that is visually pleasing while reducing the livelihood of contracting vector or vermin-borne diseases. Landscaping, gardening, and outdoor spaces play a crucial role in enhancing the overall environment and well-being of individuals in an HC. They provide a therapeutic and restorative environment for patients, staff, and visitors. Outdoor spaces, such as gardens, courtyards, and patios, are designated areas outside the Health facility buildings that offer opportunities for recreation, relaxation, and social interaction.

9.2 Basic Considerations in Planning For Outdoor Environment For HFs

Proper planning and design are essential to create a supportive and therapeutic atmosphere. HFs should consider the following factors when planning.

9.2.1 Green areas and view out

(i) *Landscape should incorporate elements that promote healing and relaxation, such as healing gardens, outdoor seating areas, and water features. It should also include spaces for physical activity, like walking paths or exercise equipment.*

(ii) *Plant trees and flowers to control dust, purify the air, provide shade, and reduce noise pollution. Take into account wind direction, sun rise and set directions and noise barriers.*

(iii) *Cleaning of gardens including drainage should be done daily.*

(iv) *The outdoor HC areas should be visible from patients' rooms, interior public spaces, and corridors, for both security and medical purposes.*

(v) *View out is also psychologically therapeutic since it reduces feelings of isolation and claustrophobia by providing constant contact with the outside world*

9.2.2 Variety of spaces and their interrelation

(i) *Play areas should offer access to the outdoors, sunshine, and chances for play to assist in improvements in health for children who are healing or who are visiting sick patients.*

(ii) *A part of outdoor spaces should also be designed to encourage suitable types of exercise. This can be achieved by including looped pathways for shorter or longer routes, settings for physical therapy, playgrounds, meandering garden layouts for contemplative walking and jogging trails.*

9.2.3 Planting material

(i) *The HC management team should consult horticulture officers for the selection of appropriate planting of trees and flowers for gardening and other purposes. However, when making a choice, it is also necessary to refer the hospital's infectious diseases control specialist since exposure to certain plants that are high pollen producers may cause severe allergic reactions.*

9.2.4 Accessibility

(i) *Walkways should be suitable for each area of a facility and the expected patient load in that area.*

(ii) *Walkway material should be impermeable where adjacent to buildings or beneath covered verandas and permeable when there is landscape on both sides.*

(iii) *All paths should be well-drained, accessible to handicapped individuals and provided with handrails where needed (Fig 9.1).*

Figure 9.1: Pictures showing walkways and lawns in Health facilities

9.2.5 Familiarity and security

(i) Health Care Facilities should be fenced for security, keeping out stray dogs and cats as well as limit tress passers who could otherwise damage the landscaping and ruin efforts made to improve the outdoor environment and amenity.

(ii) Every HF needs to set aside a specific space for the storage of broken medical furnishings and equipment.

(iii) HFs must designate and set aside a location for parking transport facilities e.g., bicycles, motorcycles and vehicles

(iv) All boundaries of the HFs should be known and secured by fencing.

9.2.6 Vector and Vermin Control

Vector and vermin control plays a crucial role in maintaining the cleanliness and hygiene of Health facilities (HFs). The presence of these creatures poses serious health risks to both patients and Health workers, as they can transmit various diseases and infections. Therefore, effective vector and vermin control measures are essential to ensure a safe healthy and environment for all individuals within the Health setting. Table 9.1 provides approaches for the control of selected common vectors and vermin in HFs.

9.4 Operational and Maintenance

The following are actions to be taken to maintain the neatness of HF's surroundings;

a) Develop a comprehensive waste management plan to ensure proper disposal of all waste generated in the facility. This should include segregating different types of waste, such as medical waste, recyclables, and general waste, and ensuring they are disposed of by local regulations.

b) The fences should be well maintained to prevent stray animals like dogs and cats or trespassers from entering the HC premises.

c) Maintain the landscaping around the facility by regularly mowing the lawn, trimming trees and bushes, and removing any weeds or debris.

d) Outdated furniture and appliances should be stored properly before being disposed of properly.

Table 9.1: Vector /vermin control measures

Vector /vermin	Control measures
Houseflies	– Proper waste management, regular cleaning and disinfection of surfaces, and regular inspections and repairs of screens and doors to prevent fly infestations. – Use fly traps/baits *by using milk or sweet liquids with 1–2% formaldehyde or use organophosphorus and carbamate compounds that are highly toxic to kill flies*) – Use insecticides to eliminate houseflies *(Dip diluted emulsion of insecticide with some sugar, glycerol, or other attractant and glue or oil and place the emulsion on housefly resting sites*.)
Cockroaches	– Provide regular cleaning, proper waste management, and sealing cracks and crevices to eliminate potential hiding spots and food sources for cockroaches. – Insecticide treatment and baits can also be used as control measures.
Rodents (Rats And Mice)	– Seal all possible entry points, proper waste management and storage, regular cleaning and inspection of areas prone to rodents. – Use rodenticides to kill rats and other similar rodents which harbor fleas.
Mosquitoes	– Cut/remove all long grasses around the HC, and dispose of all stagnant water. – Install screens on windows and doors and use insecticide-treated bed nets. – Conduct social participation by motivating personal and family protection, health education and community involvement and participation. – Conduct daily and weekly environmental cleanliness.
Bed Bug	– Use insect repellents or insecticides (malathion, lindane). – Maintain cleanliness in all health facility settings – Plaster/ re-plaster cracked walls.
Termite	– Use laminated texture-flavoured cellulose or wood, impregnated with a toxicant and/or insect growth regulator. – Ensure proper drainage and repair of plumbing to prevent moisture of HC building foundations – Use GLADIATOR 4 TC to control termite – Conduct monthly termite inspection in the HC premises to determine any presence of infestation. – Don't store firewood, lumber, or other wood debris against the foundation or inside the crawl space.
Bats	– Eliminate any potential roosting sites both inside and outside the facility, such as loose tiles, roof shingles, or piles of debris – Install screens or other types of barriers that prevent bats from entering the facility through windows, vents, or other openings. – Roofing of health facilities should be accompanied by clear polycarbonate roofing sheets or transparent roofing sheets – Identify and seal all potential entry points that bats can use to access the facility. This includes cracks, gaps, and holes in the building structure. – Use a piece of bird netting of 1/16 inch or smaller mesh, at least 2ft wide, fixed above the bat entry extending at least two feet below the exit. – Use light bulbs in areas where bats reside as bats tend to escape from light.

CHAPTER 10: MONITORING OF WASH IN HEALTH FACILITIES

10.1 Introduction

This chapter offers guidance on preparing and conducting monitoring for WASH interventions in Health facilities, covering the rationale, indicators, tools, and data collection at various facility levels. It outlines timelines, responsibilities, steps for data quality management, reporting, and the development of a monitoring plan.

10.2 Why Monitoring WASH Services in Health Facilities

Monitoring WASH services in Health facilities aims to assess adherence to established guidelines and identify areas requiring remedial action. Key stakeholders at community, HF, council, regional, and national levels receive periodic feedback, enabling informed decisions and actions for sustaining improved WASH in Health facilities. In this context, monitoring will involve:

- Measuring the level of adherence by the HFs in maintaining the minimum standards of WASH services as prescribed in these guidelines.
- Identifying any shortfalls in the O&M of WASH facilities.
- Alerting actors at different levels of the needed remedial actions either in the design or construction of the WASH facilities.

10.3 What to Monitor

Monitoring of WASH in HFs is an ongoing function aimed at supplying health management teams and stakeholders with information on minimum WASH standards. Developed indicators focus on key aspects such as water availability, accessibility, sanitation, hygiene facilities, and vector/vermin control systems in HFs, guiding monitors on what to assess during the process.

10.4 Who Monitors and When

a). The health sector, at all levels, holds the responsibility for monitoring WASH services in Health facilities (HFs) nationwide.

b). A participatory, bottom-up approach ensures data access, beginning from HFs to district, regional, and national levels. Monitoring should occur at five levels: HF, ward, district, regional, and national, with structured cascading teams involving various actors, as outlined in Table 10.1.

10.5 Reporting

Reporting of progress in the implementation of WASH in HFs should be done monthly by the different actors at different levels in the following manner:

Ward Level: Ward-level Health Officers should submit reports from all HFs from their catchment areas and submit them to the Health Information Management System where computers and the internet is available.

Council Level: The team should verify the data in the system and against the hard copies submitted by the Hospital or Ward Level Officer. For the case of offline data submitted by the Hospital or Ward Level Officer the Focal Person shall enter the data into the Health Information Management System.

Regional Level: The Hospital Director shall review the councils' reports and send a narrative summary of the regional consolidated report to the Ministry of Health quarterly.

Table 10.1: Actors involved in the monitoring of WASH in HFs

Level	Involved Actors	Specific Monitoring/Follow-up Tasks
Community Level	• In charge of HF • Designated Health staff and estate manager • Health facility management team • Community Health Workers/Health Surveillance Assistants • Health Facility Governing	• Establish in-house routine monitoring and follow-up of WASH services within HF and implementation of remedial actions e.g. repairs and maintenance of WASH facilities • Coordinate monitoring process within HFs • Collect data using the provided tools • Submission of collected data to the Environment Committee for validation • Provision of health education during home visits regarding WASH • Fund approval and allocation of non-professional operations
District Level	• Director of Health and Social Services • District Environmental Health Officer • Assistant Environmental Health Officer • Health Surveillance Assistants	• Coordinate the monitoring process in HFs within the ward • Carry out periodic monitoring of the WASH services in HFs within the ward • Validate and compile/consolidate collected data from HFs and forward to Central Hospital/District Office • Responsible for all operations in the facility
Central Level	• Hospital Director • Quality Improvement Support Team (QIST)	• Establish a team (QIST) overseeing data collection on WASH status in all HFs within the region • Provide oversight on the monitoring process of WASH status in HFs within area of administration • Validate and compile collected data for submission to the Ministry of Health • Oversee health services in the regions

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