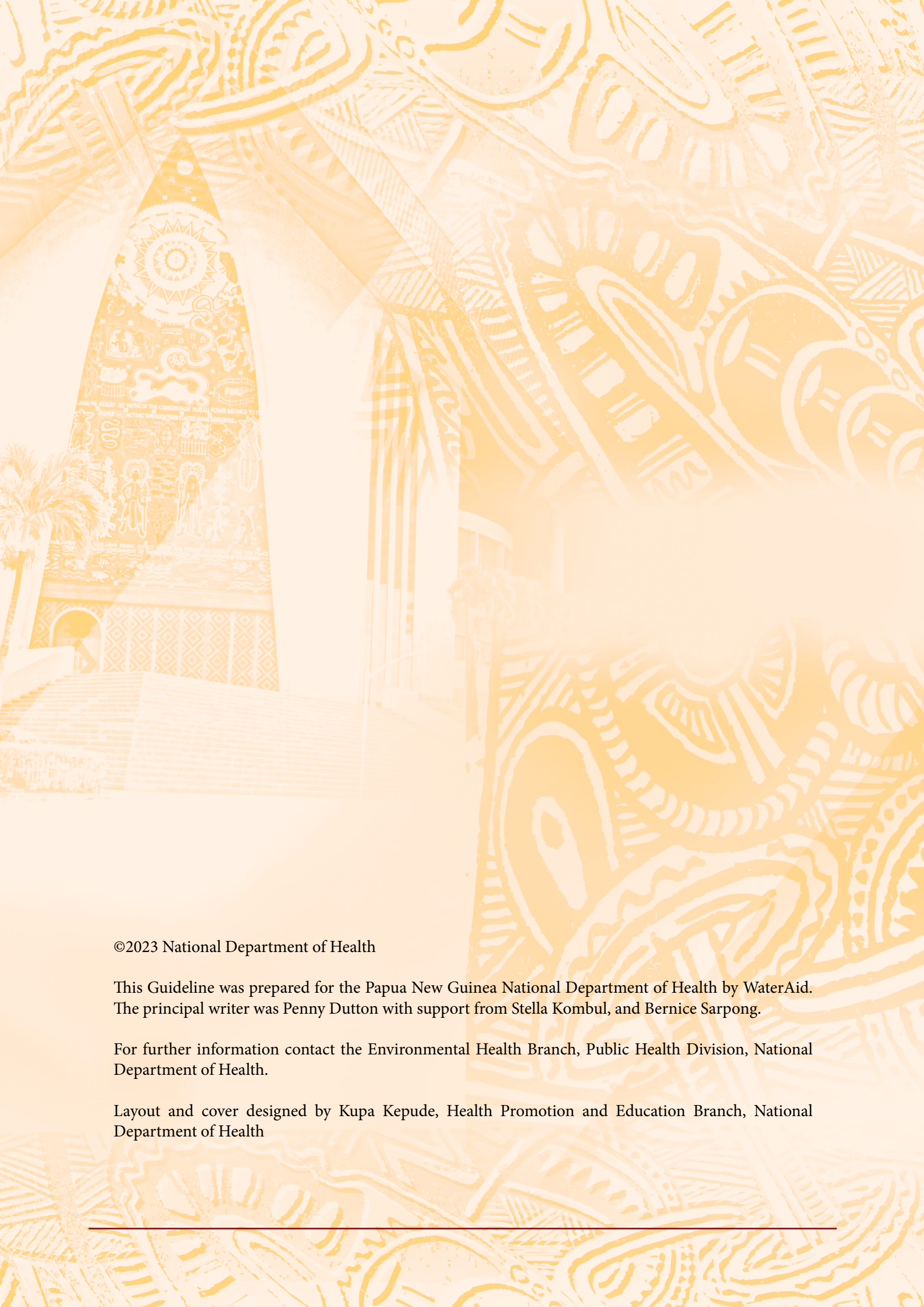
NATIONAL DEPARTMENT OF HEALTH

National Guidelines for Water, Sanitation and Hygiene in Healthcare Facilities

Papua New Guinea

PREPARED BY
National Department of Health
May 2023



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FOREWORD

Adequate water, sanitation, hygiene, waste management, and environmental cleaning (WASH) services are an essential part of healthcare: to prevent infections, protect staff and patients, and uphold the dignity of vulnerable populations, including women and people with disabilities. Yet often basic WASH services are missing or are inadequate in our healthcare facilities. I believe that improving WASH is essential to help meet our health objectives, ensure safety of patients and staff, and improve quality of care.

These National Guidelines for WASH in Healthcare Facilities provide the recommended minimum requirements and best practices for water supply, sanitation, hygiene, healthcare waste management, and environmental cleaning in public and private healthcare settings including Health Posts (Aid posts), Community Health Posts (CHP), Health Sub-Centres (HSC), Health Centres (HC), District Hospitals, Provincial Hospitals and the national referral hospital.

The Guidelines provide a much-needed common set of standards that clearly and comprehensively set out acceptable levels of WASH in healthcare facilities. They uphold the Government of Papua New Guinea's commitment to providing accessible quality primary health care services and to achieving an internationally acceptable standard of health services for all Papua New Guineans as clearly set out in the MTDP III 2018-2022 and PNGDSP 2010-2030 respectively. The Guidelines are aligned with and elaborate the WASH in healthcare objectives in the National Health Service Standards and the National WASH Policy 2015-2030.

I urge all health care facility managers, health staff, policymakers, planners, and development partners in the Health and WASH sectors in Papua New Guinea to adopt these Guidelines and take responsibility for their implementation.

We must speed up the critical work of improving WASH in healthcare facilities through better planning, design, construction, training, behavioural practices, budgeting, maintenance, monitoring, and better management of WASH in healthcare facilities.

Hon. Dr Lino Tom, MP
Minister for Health

PREAMBLE

In Papua New Guinea, the water, sanitation, hygiene, waste management and environmental cleaning (WASH) situation in healthcare facilities needs to be improved to ensure safety and quality of care.

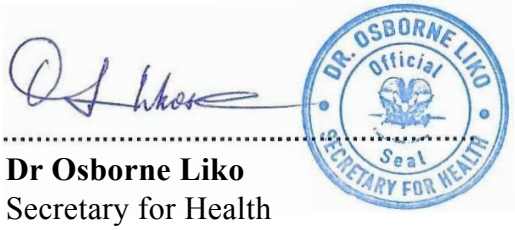
There are many consequences of poor WASH services in healthcare facilities, including an increased risk of healthcare-associated infections. This infection burden is especially high in newborns, who are susceptible to fatal cases of sepsis and severe infections. As well as causing unnecessary pain and suffering for patients and their families, a healthcare-associated infection can prolong a patient's hospital stay and add to the cost of delivering healthcare. Furthermore, lack of access to water and sanitation in healthcare facilities may discourage women from giving birth in these facilities or cause patients to delay seeking care.

Recognizing the negative effect that poor WASH services can have on human health and the lack of comprehensive guidelines, the National Department of Health (NDoH) has formulated National Guidelines for Water, Sanitation and Hygiene in Healthcare Facilities. These guidelines provide recommended minimum requirements for WASH infrastructure, facilities, services, and practices. NDoH strongly believes that adherence to these guidelines will result in a safer work environment for healthcare staff and a higher quality of care for patients.

Healthcare facilities with high quality WASH conditions can help establish trust in health services, which encourages patients to seek preventative care and mothers to give birth in healthcare facilities, rather than at home. Addressing the inadequate provision of WASH services in HCFs will improve the quality of care and contribute to the prevention of healthcare-associated infections.

As the Head of the National Department of Health, I congratulate the WASH in Healthcare Facilities Technical Working Group for their collective efforts to guide the development of these National Guidelines to be suitable to our country's development context and pathway. Much appreciation and gratitude is bestowed to our valued stakeholders (Development Partners, Private Sector, Civil Society Organizations, Non Government Organizations and expertise from professional individuals) for your contributions in the consultation process and development of these Guidelines.

Moreover, I appeal for continued support to fully implement and realise at least the minimum requirements for WASH in all healthcare facilities by 2030.



Dr Osborne Liko
Secretary for Health

ACKNOWLEDGEMENTS

These Guidelines were developed under the leadership of the National Department of Health. The National WASH in Healthcare Facilities Technical Working Group supported the process and provided critical feedback and direction. Additional feedback from site visits and consultations with provinces - Central, East Sepik, Jiwaka, Morobe, New Ireland and Western Highlands - helped to further refine the Guidelines and ensure their relevance for the whole of Papua New Guinea.

The Guidelines were also presented at a National Validation workshop in April 2023, attended by 18 of the 22 Provincial Health Authorities in Papua New Guinea. Feedback from this validation process has been invaluable in finalising the Guidelines.

Deep gratitude goes to the Australian Government's Department of Foreign Affairs and Trade (DFAT) for funding the development of these Guidelines through the Water for Women fund, and to the World Health Organisation (WHO) for supporting the National Validation Workshop.

The National Department of Health would like to thank the following organisations that contributed to the development of these guidelines:

- DFAT
- WHO
- WaterAid
- UNICEF
- World Vision
- Plan International
- Live and Learn
- ADB
- Department of National Planning and Monitoring
- Water PNG

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ACRONYMS

AMR	Antimicrobial Resistance
CHW	Community Health Worker
DFAT	Department of Foreign Affairs and Trade (Australia)
DNPM	Department of National Planning and Monitoring
EHO	Environmental Health Officer
EPHS	Essential Package of Health Services
GESI	Gender equality and social Inclusion
GLAAS	Global Analysis and Assessment of Sanitation and Drinking-Water (UN-Water)
HCAI	Healthcare acquired infection
HCF	Healthcare Facilities
HCWM	Healthcare Waste Management
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
IPC	Infection, Prevention and Control
IV	Intravenous
JMP	Joint Monitoring Programme of the WHO and UNICEF
MRSA	Methicillin Resistant Staphylococcus Aureus
NDoH	National Department of Health
OPD	Out patient department
PHA	Provincial Health Authority
PPE	Personal Protective Equipment
SDG	Sustainable Development Goal
SOP	Standard Operating Procedure
UHC	Universal Health Coverage
UNICEF	United Nations Childrens' Fund
VHA	Village Health Assistant
VIP	Ventilated Improved Pit latrine
WASH	Water, sanitation, hygiene (waste management, environmental cleaning)
WASH-FIT	Water and Sanitation for Health – Facility Improvement Tool
WHO	World Health Organisation

GLOSSARY

Accessible WASH facilities	WASH facilities which can be easily located and used by all people regardless of disability
Adequate water supply	Sufficient quantity of suitable quality water that is physically, legally, and continuously available to satisfy the water demands of healthcare facilities (HCFs) for all users (healthcare staff and health facility patients, guardians, visitors)
Alcohol-based hand rub	An alcohol-based preparation (liquid, gel or foam) designed for application to the hands to inactivate microorganisms and/or temporarily suppress their growth.
Anti-microbial medicated soap	Soap (detergent) containing an antiseptic agent at a concentration sufficient to inactivate microorganisms and/or temporarily suppress their growth.
Guardian	Family, friends, or voluntary workers who accompany patients to an HCF and provide basic, non-professional care. Guardian (s) usually stays continuously to support the patient's daily routine activities including preparing food, bathing, attending to basic medical needs, and providing psychological support to patients in an HCF
Black water	Wastewater from toilets that contains human excreta (faeces, urine), flush water, and anal cleansing material
Child friendly	Welcoming towards or suitable for children; designed with the needs, interests, or safety of children in mind.
Clean water	Drinking water obtained from improved water sources, such as protected deep pump well, protected shallow pump well, protected well and protected rainwater, which is of a quality in compliance with the National Guidelines on Rural Water Quality.
Climate change	Long-term change to average temperature and typical weather patterns in a place or region
Delivery room	The room where delivery is intended to take place and the umbilical cord is cut
Disability inclusion or accessibility	Effecting policies and practices to Include people with disabilities in everyday activities and encouraging them to have roles similar to their peers who do not have a disability
Disinfection	A process of removing or inactivating microorganisms
Drinking water	Water with acceptable quality complying with national standards used specifically for drinking

Environmental cleaning	Cleaning and disinfection (when indicated) of environmental surfaces and surfaces of noncritical patient care equipment
Environmental marking	Environmental marking is a method for monitoring that cleaning has occurred. Fluorescent markers (e.g., UV visible) mark predetermined items and environmental surfaces prior to cleaning. Post-cleaning, a trained observer can assess the marked surfaces using an ultraviolet light, to determine whether they were cleaned.
Environmental surfaces	The surfaces of every fixed item in the patient care environment (eg. tables, chairs, floors, walls, bedrails, handles, light switches, privacy curtains, etc); the surfaces of noncritical patient care equipment (eg. IV poles, stethoscopes, surfaces of incubators).
Faecal sludge	Sludge of variable consistency collected from on-site sanitation systems such as toilets, non-sewered public toilets and septic tanks that contain solids from human excreta
Female friendly	Amenable to or suitable for women or girls; designed with the needs or interests of women and girls in mind.
Gender neutral (toilets)	Not allocated to males or females, can be used by any gender
Grey water	Wastewater from the kitchen, bath and/or laundry, which generally does not contain significant concentration of excreta
Guidelines	Guidelines are the recommended practices to achieve desirable minimum environmental health standards in health-care settings. They are not law, but should be used as guidance.
Hand washing facility	A facility characterized with running water and soap and mainly used for hand washing
Healthcare associated infections (HAI)	An infection occurring in a patient during the process of care in a healthcare facility, which was not present or incubating at the time of admission. Healthcare-associated infections can also appear after discharge
Healthcare waste	A by-product of heath care services that include all waste, hazardous or not, generated in the process of performing medical activities
Hygiene	Conditions or practices conducive to maintaining health and preventing disease, especially through cleanliness and disinfection
Improved sanitation	Sanitation facility where the faecal-oral chain and water contamination has been blocked - flies cannot access the faecal waste and ground and surface water is not

	contaminated by the sanitation facility. Examples are a flush or pour flush latrine connected to a sewer, a septic tank or a covered pit, or a pit latrine with a slab or a ventilated improved pit (VIP) latrine.
Operation and maintenance	Refers to all post-construction activities needed to operate and maintain and manage a water supply and sanitation system, which goes beyond the technical definition but includes also managerial aspects to run Water, Sanitation and Hygiene (WASH) infrastructures on a sustainable basis
Patient care areas	Any area where patient care is directly (e.g., examination room) and indirectly (e.g., medication preparation area) provided and the surrounding healthcare environment (e.g., patient toilets) within general and specialized patient areas
Person with limited mobility	A person with limited mobility has physical difficulties moving around and carrying out daily tasks. A person with limited mobility can include someone with a physical disability, who is in pain, heavily pregnant, or elderly.
Point of care	The place where three elements come together: the patient, healthcare workers, and care or treatment involving contact with the patient or his/her surroundings (within the patient zone).
Post Natal Ward	A ward, unit, or room within a healthcare facility where mothers and their newborns receive care after the delivery, before being discharged from the facility. In-patient antepartum care may also be provided here.
Run off water	The flow of water occurring on the ground surface when excess rainwater, stormwater, or other sources does not rapidly infiltrate into the ground
Running water	Water delivered by a pipe with a tap, or a storage container with a tap
Sanitation	Management and disposal of human urine and faeces, black water, grey water, and runoff water
Soak away pit or soak away	A simple excavation in the ground either lined or filled with stones, which allows water to percolate into the surrounding soil
Standards	Standards are the requirements that must be met to achieve minimum essential environmental health conditions in health-care settings. They must be clear, essential and verifiable statements.
Standardized Incinerator	Two-chambered incinerators with temperature of at least of 850'C to ensure minimal emission of toxic gases at the primary chamber, and high chimney (higher than nearby roofs), located at least of 500 meters away from populated

	areas, and with ash disposal facilities.
Staff responsible for cleaning	Non healthcare providers such as cleaners or auxiliary staff, as well as healthcare providers who, in addition to their clinical and patient care duties, perform cleaning tasks as part of their role
Sterilisation	The use of a physical or chemical procedure to destroy all microbial life
Terminal cleaning	Cleaning of inpatient areas, which occurs after the patient is discharged/transferred, includes the patient zone and the wider patient care area and aims to remove organic material and significantly reduce and eliminate microbial contamination to ensure that there is no transfer of microorganisms to the next patient
Training	Structured teaching and instruction led by a trainer or appropriately qualified supervisor and can refer to training given during core nursing training or in-service/post qualification
User friendly	A device design/feature/interface that is easy to use, not difficult for the user to learn or understand.
Ventilated Improved Pit	A ventilated improved pit latrine (VIP) is similar to a single pit latrine with addition of a vertical vent pipe. Through the aeration in VIPs, odour and fly nuisances are reduced. Excreta, along with anal cleansing materials (water or solids) are deposited into a pit.
Visitor	Family, friend or other person who visits a patient in an HCF, for a short period of time
Wastewater	Liquid waste discharged from homes and other residential premises, commercial and industrial premises and similar sources, to individual disposal systems or to municipal sewer pipes. It contains mainly human excreta and used water
Water source	The point at which water can be abstracted, such as a spring or well. An 'improved' water source is one that is more likely to provide 'safe' water, such as a piped connection or borehole

1. BACKGROUND

1.1 THE IMPORTANCE OF WASH IN HEALTH CARE FACILITIES

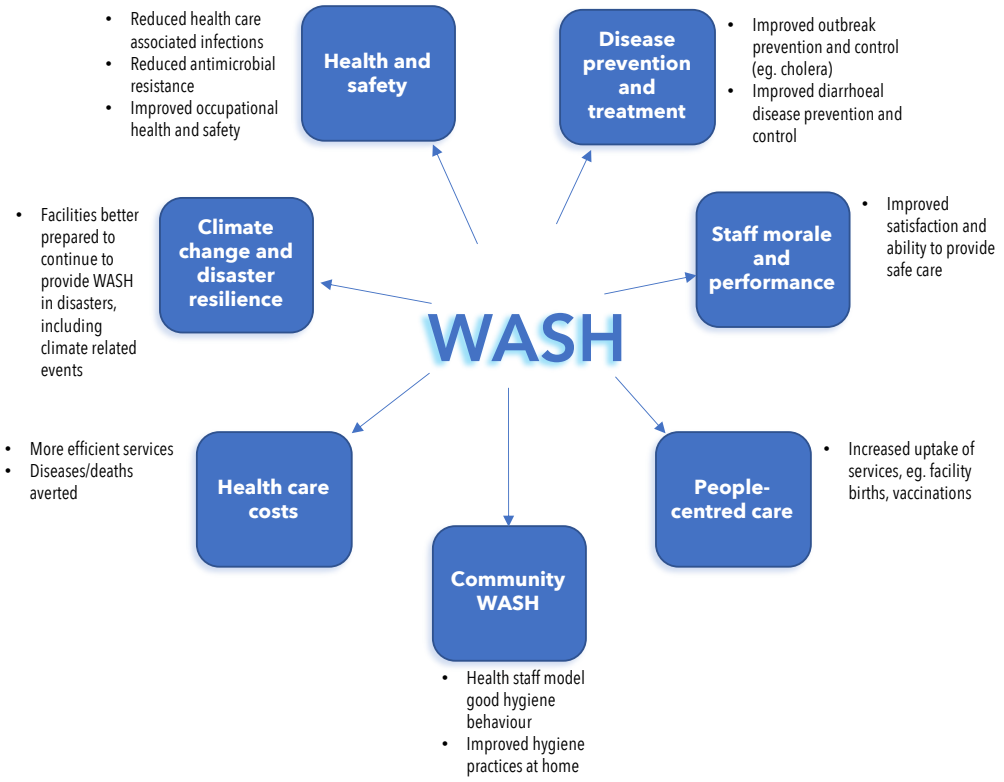
Improved WASH services in healthcare facilities – available, safe and functional water supply, sanitation, hygiene, waste management, cleaning and infection prevention and control – are essential for the proper functioning of healthcare facilities and for delivering quality healthcare.

WASH infrastructure and services must meet the needs of all users, including those who are experiencing illness, pain, limited mobility, are heavily pregnant or have just given birth. Everyone, including vulnerable groups, has an equal right to WASH services and resources.

> Everyone experiencing healthcare – patients, their families, staff and others – deserve to be cared for and work in a clean, safe environment.

Within healthcare facilities, WASH: prevents disease outbreaks, supports core universal healthcare aspects of quality, equity, and dignity for all people, makes childbirth and primary care safer, keeps communities safe from harm, reduces healthcare costs, boosts staff morale and increases staff retention, builds resilience against climate change and disasters, and stops the spread of anti-microbial resistance. The range of benefits from WASH is shown in Figure 1.

Figure 1. Benefits of Improved WASH in healthcare facilities



Source: WHO, 2017. Water and Sanitation for Health Facility Improvement Tool (WASH FIT). Geneva: World Health Organization.

Improved WASH in healthcare facilities helps to achieve the Sustainable Development Goals (SDGs), including SDG 3 — *ensure healthy lives and promote well-being for all at all ages — and SDG 6— ensure availability and sustainable management of water and sanitation for all.*

1.2 SITUATION IN PAPUA NEW GUINEA

1.2.1 Healthcare Facilities and WASH

Papua New Guinea has a total of 3,756 functioning healthcare facilities across six levels (Table 1). Most of these are rural facilities providing primary healthcare for 80-85% of PNG's 10 million population.

Table 1. Type and Number of HCF

Level	Facility	Number of HCFs
1	Health Post (Aid Post)	2,971
2	Community Health Post (Health Sub Centre)	475
3	Health Centre-Rural Urban Clinic	198 78
4	District hospital	11
5	Provincial hospital	22
6	National Tertiary Specialist Referral and Teaching Hospital	1

Source: World Health Organization and National Department of Health, 2012; National Health Plan 2021-2030

There is limited data available on the status of WASH in healthcare facilities in PNG, however the data that is available and anecdotal information suggest that many healthcare facilities do not have adequate water, sanitation, hygiene, waste management and environmental cleaning infrastructure and services. Specifically:

- ❒ Water is either not available at the healthcare facility, or is from an unimproved source
- ❒ Water shortages occur regularly during the dry season, due to inadequate storage, broken infrastructure, or lack of electricity
- ❒ Toilets either do not exist or are insufficient in number for patients and staff, and are not accessible for people with a disability, pregnant women, or elderly
- ❒ Handwashing facilities do not function or lack water, and there is no soap
- ❒ Healthcare waste is not properly segregated or safely disposed
- ❒ Cleaning is not prioritised, as many facilities lack dedicated and trained staff.

PNG does not have minimum requirements or guidelines for WASH in healthcare facilities (HCF). This creates a situation where there are no agreed basic levels of WASH in healthcare facilities, and there are gaps in what is covered by the National Health Service Standards.[1]

Gender and Social Inclusion mainstreaming is largely overlooked in WASH in HCF in PNG. Accessible facilities are not a high priority and the planning, design and management of WASH services in healthcare facilities does not consider the variety of users which include women during childbirth; menstruating women; infants and children; older people; people with disabilities; people experiencing injury, illness or incontinence; and female staff.

[1] National Department of Health. *National Health Service Standards 2nd Edition - National Quality Standards for Health Services in Papua New Guinea*

1.2.2 Government Commitment to improving WASH in HCF

PNG has committed to achieving the Sustainable Development Goals (SDG), including SDG 3 (health) and SDG 6 (water and sanitation). WASH in HCF contributes towards achieving these SDGs.

The **PNG Development Strategic Plan 2010-2030** goal for health is to achieve an efficient health system that can deliver an internationally acceptable standard of health services. The outcomes are to reduce infant, child and maternal mortality and extend life expectancy, as well as minimise diseases such as malaria, TB and malnutrition. Health actions include increasing the number of functioning aid posts to 7,500 by 2030, and upgrading and modernising HCFs.

The **National Health Plan 2021-2030** aims to strengthen primary healthcare through a minimum set of Essential Health Intervention Packages (EHIP) for Levels 1-4 (primary healthcare level). For WASH in HCF, this means that every healthcare facility has readily available clean and safe water, sanitation and hygiene facilities by 2030; and hygiene and sanitation are promoted and practiced in institutions such as hospitals.

The National **WASH Policy 2015-2030** sets a target for 100% of medical centres across the country to have access to a safe, convenient and sustainable water supply and sustainable sanitation facilities, and 100% of medical centres have handwashing facilities with running water and soap. Medical centres include hospitals as well as health centres and aid posts. All institutions, including health centres, should expect to pay the full cost of their water and sanitation schemes.

WASH has also been reflected in other strategies such as the **National Action Plan on Antimicrobial Resistance 2019-2023.** Better water, sanitation and hygiene and infection prevention and control represent important aspects of this AMR national action plan to cut down on the spread of infections in ambulatory human and animal care facilities, in the community in general, in public spaces and transport.

In 2019, the 72nd World Health Assembly's 196 member states (including Papua New Guinea), agreed to **Resolution WHA72.7** which stressed the role of improving safe drinking water, sanitation facilities, healthcare waste management and hygiene practices in primary healthcare around the world. The Resolution recognizes that improved WASH services are critical for reducing maternal and newborn deaths, preventing the spread of infections and achieving universal healthcare. The World Health Assembly Resolution commits Papua New Guinea to develop and implement national standards for WASH in HCF.

[2] World Health Organization and the United Nations Children's Fund, 2019 *Water, sanitation and hygiene in healthcare facilities: practical steps to achieve universal access. Geneva: World Health Organization.*

1.3 GUIDELINES FOR WASH IN HCF

1.3.1 Why are they needed in PNG?

National standards and accountability mechanisms - to define and monitor improvements to WASH in healthcare facilities - is one of the eight practical steps to improving WASH in HCFs recommended by the WHO and UNICEF Joint Monitoring Program (JMP).[2]

Establishing guidelines and minimum requirements for Papua New Guinea is important because:

- Current policies only touch on the specific issue of 'WASH in healthcare facilities'. For example, the National WASH Policy does not provide minimum standards for water and sanitation for HCFs or define sustainable standards. The basic requirements for WASH in healthcare facilities in Papua New Guinea need to be further defined.

- The National Health Service Standards for PNG 2021-2030 provide a quality improvement program with a set of National Quality Standards and an Accreditation process for health services. The National Quality Standards include: Infection Prevention and Control (Mandatory Standards); Waste Management (Mandatory Standards). The WASH in HCF Guidelines can help define the minimum requirements or standards across all WASH domains (water, sanitation, hygiene, waste management, environmental cleaning).

- WASH in HCF guidelines can support existing policy frameworks and provide a benchmark for consistency in the delivery of WASH services in healthcare facilities. All stakeholders will have the same frame of reference for what is needed.

- The guidelines will support the National WASH MIS indicators and tools and will allow for improved reporting, analysis and benchmarking of progress towards universal coverage of WASH.

- The alignment of PNG WASH in Healthcare Facilities Guidelines with global SDG indicators will support the Government of Papua New Guinea to report on SDG and UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) progress.

1.3.2 Purpose and Scope of PNG WASH in HCF Guidelines

This document provides comprehensive guidance on basic WASH services in healthcare facilities in Papua New Guinea. These Guidelines are a reference for policymakers, planners, HCF managers, HCF staff, and service providers in the health and WASH sectors to:

- provide minimum requirements for WASH services that are appropriate in healthcare settings (new and existing);

- guide the assessment of WASH infrastructure in existing healthcare facilities;
- guide necessary WASH improvements in healthcare facilities, including infrastructure, operation and maintenance and behaviour practices; and
- give minimum requirements for accreditation and regulation of healthcare services.

The National Guidelines for WASH in HCF have been developed with a focus on healthcare facilities at the primary healthcare levels 1-4 (District Hospitals, Health Centres, Urban Clinics, Community Health Posts, and Health Posts). However, the minimum requirements for WASH apply to all public and private healthcare facilities in all provinces of Papua New Guinea. Other hospitals above level 4 are larger and more complex, and specific Standard Operating Procedures (SOPs) are needed for these facilities.

These Guidelines cover the five WASH domains of: water, sanitation, hygiene, healthcare waste management, and environmental cleaning, as well as management, and monitoring arrangements. The Guidelines for WASH in HCFs are aligned with existing Papua New Guinea policies and guidelines such as the National Infection Prevention and Control Policy 2021-2031, and the Guidelines for Health-Care Waste Management 2008, Design Standards for Health Facilities in PNG 2021-2030, (Draft) Guidance for Climate Resilient and Environmentally Sustainable Health-care Facilities 2022.

The Guidelines are developed within international frameworks of WHO and UNICEF specifically related to WASH in HCFs and SDG monitoring tools, and WHO guidance on infection prevention and control, and quality of maternal and newborn care in health facilities. Recent guidelines and best practice notes developed for WASH in delivery rooms, environmental cleaning, and waste management, are also referenced in the guidelines. Key references are listed in Annex A.

All new and existing public, church-run, and private healthcare facilities in Papua New Guinea are expected to follow these guidelines for minimum WASH services.

1.3.3 Updating the Guidelines

The Guidelines for WASH in Healthcare Facilities should be updated periodically (approximately every three years) to reflect any changes in policies, SOPs or minimum requirements and to improve understanding and use of the Guidelines.

2. WASH IN HEALTHCARE FACILITIES PRINCIPLES

The Guidelines address key principles related to WASH in healthcare facilities of: universal access, incremental improvement, collective efforts, climate change, gender and social inclusion, and culture and community.

UNIVERSAL ACCESS TO WASH IN HEALTHCARE FACILITIES

Universal health coverage (UHC) is at the centre of current Government of Papua New Guinea efforts to strengthen PNG's health systems and improve the level and distribution of health programs and health services. These Guidelines support the translation of the essential principles and values of UHC into a model of care and recognise that WASH is an essential component of UHC.

INCREMENTAL IMPROVEMENT

These Guidelines are one step in a process of improving WASH in healthcare facilities.[3] For individual healthcare facilities, improving WASH services is a progressive process. Improvements should be prioritised by infrastructure and behaviours that need to change. Improvements can be made by remediating, rehabilitating, modifying and adapting existing infrastructure, in addition to building new WASH facilities where needed. Achieving desirable levels of WASH in all healthcare facilities will take time and can only be achieved in a stepped approach.

COLLECTIVE EFFORTS

A collective effort is needed to improve WASH in healthcare facilities. While the National Department of Health has a large responsibility, so do Provincial Health Authorities, and District Governments, as well as staff at healthcare facilities, and public and church managers of HCFs. Also important are Water PNG, donors/ partners, private sector, and other parties. These are listed in section 4.2 Roles and Responsibilities.

CLIMATE CHANGE

HCFs are vulnerable to climate change, natural disasters and other environmental stresses. HCFs can also have a negative impact on the environment, and consequently on health through poor waste disposal practices.

HCFs can respond to the growing climate emergency by not only building resilience to extreme weather events and long-term stresses so as to continue protecting the health of their population, but also through reduction and eventual elimination of all environmental contaminants released by their operations.[4]

[3] WHO/UNICEF, 2019. W*ater, sanitation, and hygiene in healthcare facilities: Practical steps for universal access to quality care.*
[4] WHO. 2020. G*uidance for climate-resilient and environmentally sustainable health care facilities.* Geneva: World Health Organization

GENDER AND SOCIAL INCLUSION

These Guidelines operationalise the gender and social inclusion objectives of the National WASH Policy including:

- mainstreaming gender during development and provision of services, and their management, monitoring and evaluation. This includes:
- ensuring that men and women benefit equally from WASH;
- recognising that women and girls have WASH-specific needs different to men and boys, such as menstrual hygiene management and safe birthing;
- equally engaging women and men in decision-making, governance, and capacity building;
- mainstreaming disability during development and provision of services; conforming to national laws and policies on disability rights (eg. PNG Disability Policy 2015-25); and involving women and men with disabilities in service planning and considering the needs of people with disabilities in WASH; and
- being inclusive of all people irrespective of age, sex, disability, race, clan, tribe, origin, religion or economic or other status.

CULTURE AND COMMUNITY

These Guidelines consider the health staff of the HCF, and communities that live around the HCF and are served by the HCF.

WASH infrastructure and services in healthcare facilities should take into consideration local cultural values and preferences where appropriate and where they do not affect the minimum requirements eg. pedestal or squat toilets, unisex toilets.

Healthcare facility staff are members of the community and community members may be on HCF committees. Where health staff are provided with housing at the HCF, that housing must be provided with adequate water supply, sanitation, and hygiene facilities.

3. MINIMUM REQUIREMENTS FOR WASH

The following Guidelines outline the minimum requirements for WASH in healthcare facilities in Papua New Guinea which would meet JMP basic service level monitoring requirements, and improve the quality of care in healthcare facilities in line with international best practices.

All new healthcare facilities should be built to conform with these minimum requirements, while existing healthcare facilities should be progressively upgraded and improved to at least meet the minimum requirements.

3.1 Climate Change

WASH provision in healthcare facilities must be resilient to climate change. Planning of WASH infrastructure and services must take into consideration the existing and projected climate patterns in different areas of Papua New Guinea. This can include the threat of increased rainfall and flooding potential in some areas, and declining rainfall and increased drought in other areas.

Failure to ensure that services are resilient will have significant impact on public health and healthcare services as water quality deteriorates, water quantity becomes less certain and sanitation systems cause environmental contamination, as well as WASH infrastructure becoming damaged. Without taking climate change into account, improvements in water supplies and sanitation in healthcare facilities will be undermined.

Strategies in the Guidelines include:[5]

- ensuring enough water storage to deal with climate variability;
- providing safe water and adequate water treatment;
- proving safe sanitation and appropriate wastewater disposal which protects the environment;
- using sanitation technology which is appropriate for the location eg. flood proof toilets in flooding areas, toilets that use no/little water in dry areas;
- employing healthcare waste disposal practices and technology which minimises impact on the environment and climate;
- reducing the use of chemicals, disinfectants and detergents in environmental cleaning;
- climate resilient water and sanitation safety planning to identify risks and location specific resilience strategies at each healthcare facility.

Additional guidance on climate change and healthcare facilities is available:

- Guidance for climate resilient and environmentally sustainable health care facilities *(https://www.who.int/publications/i/item/9789240012226)*
- Checklists to Assess vulnerabilities in Health Care Facilities in the Context of Climate Change *(https://www.who.int/publications/i/item/9789240022904*
- National Department of Health. 2022. Draft PNG Guidance for Climate Resilient and Environmentally Sustainable Health-Care Facilities

[5] National Department of Health. 2022. *Draft PNG Guidance for Climate Resilient and Environmentally Sustainable Health-Care Facilities*

3.2 GUIDELINES FOR WASH IN HCF

3.2.1 Water sources

Healthcare facilities must have an improved source on the premises (within the healthcare facility grounds) that supplies water at all times (i.e. water is available throughout the year and not affected by seasonality, electricity outages, etc.).

WATER SUPPLY Basic Service (JMP)
Water is available from an improved source located on premises

Improved water sources are defined by the WHO/UNICEF Joint Monitoring Program as water supplies that by nature of their design and construction have the potential to deliver safe water.

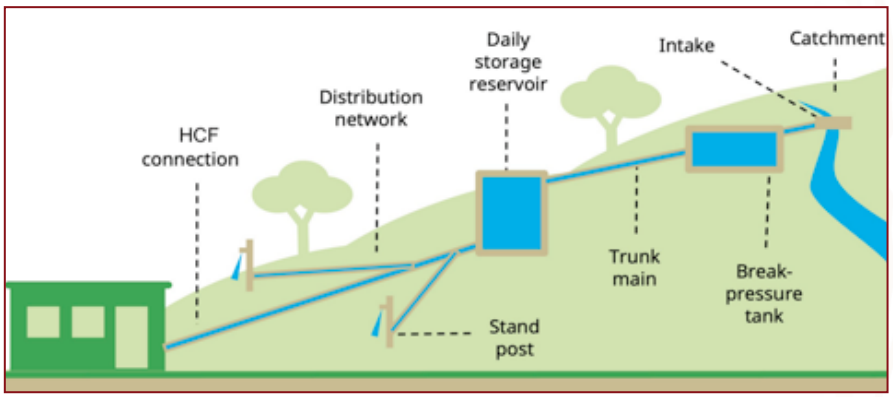
These include:

1. piped water (supplied by Water PNG or town utility), public taps or standpipes
2. borehole or tubewell
3. protected dug well
4. protected spring
5. rainwater, and
6. packaged or delivered water from a licensed supplier.

Means of delivery of water from these sources may include piped gravity-fed schemes (eg. from a protected spring), connection to town piped water supply, or extension of a community borehole piped scheme or community gravity-fed piped scheme to the healthcare facility.

Where new water supply projects are developed by Water PNG, District Development Authorities, or NGOs, these should include all healthcare facilities within the project area, unless these healthcare facilities already have a suitable water supply. In some cases, such as where there are disputes about the water supply, the healthcare facility will need to develop its standalone water sources within the grounds of the HCF. These can include: drilled borehole, protected well, protected spring, or rainwater harvesting.

Reliability and availability of spare parts. India Mark II hand pumps are robust with available spare parts in PNG.
(source: *Wikipedia)*



Gravity flow system. Gravity water systems use gravity to transport water from the source to the user through a pipe network. The intake for a gravity flow system can be a protected spring or clean stream. The pipe system protects water from becoming contaminated.
(source: *WaterAid)*

3.2.2 Water availability

A functional water collection point should be available at all points of care (e.g. consulting rooms, delivery rooms, etc.). The delivery room and post-natal room should have clean running water (piped with a tap, or storage container with a tap) which is available 24 hours a day. Sufficient storage may be required to ensure water is continuously available.

A functional water collection point should also be available to allow convenient access to water to use for drinking, handwashing, toilets, personal hygiene, food preparation, laundry, cleaning, and gardening.

A healthcare facility may need a secondary improved water source that can be used in case of interruptions to the primary water source or during an emergency.

Back up bores in Jiwaka Province

In Jiwaka province about 15 healthcare facilities have access to a deep borehole which provides backup water supply in the dry season when rainwater storage has been used up. The bore then recharges during the wet season while rainwater is used as the main source of water in the healthcare facility. Most of the boreholes are located at nearby schools.

3.2.3 Water quantity

Sufficient quantities of water should be available to meet the minimum daily requirements in the healthcare facility for patients, guardians, visitors and staff. Sufficient water should be available at all times for drinking, food preparation, hand hygiene, bathing, toilet flushing, medical activities, cleaning, and laundry.

Table 2 lists recommended minimum quantities of water required for hand hygiene, cleaning, laundry, drinking and cooking in healthcare facilities, based on WHO Guidelines.[6]

Table 2: Minimum water quantities required in the healthcare settinga

Critical areas	Minimum water quantities
Staff	5 litres/person/day
Outpatients	5 litres/consultation
Inpatients[b]	40-60 litres/patient/day 15 litres/guardian/day
Operating Theatre or Maternity Unit	100 litres/intervention
Dry or Supplementary Feeding Centre	0.5-5 litres/consultation (depending upon waiting time)
Wet supplementary feeding centre	15 litres/consultation
Inpatient Therapeutic feeding centre	30 litres/patient/day 15 litres/guardian/day
Cholera treatment centre[c]	60 litres/patient/day 15 litres/guardian/day
Acute respiratory or isolation ward[c]	100 litres/patient/day 15 litres/guardian/day
Viral haemorrhagic fever isolation ward[c]	300-400 litres/patient/day 15 litres/guardian/day

Notes:
a To calculate total water requirements for individual healthcare facilities, the above standard quantity for each department should be added up.
b Additional quantities included for guardians in inpatient settings.
c Global Task Force on Cholera Control, 2019. *Technical Note: Water, Sanitation and Hygiene and Infection Prevention and Control in Cholera Treatment Structures*. https://www.who.int/cholera/task_force/en/

[6] Adams, J., Bartram, J., & Chartier, Y., 2008. *Essential environmental health standards in healthcare.* Geneva, Switzerland: WHO Press, World Health Organization, and WHO, 2012. *Water, sanitation and hygiene in Healthcare facilities in emergencies.*

Although figures are provided for the isolation and treatment of patients with cholera, severe acute respiratory syndrome and viral haemorrhagic fever, these account for few hospitalizations.

The actual quantities of water required at each healthcare facility will depend on several factors such as climate, water availability, type of water use (including type of toilet –waterless pit latrines or water flushing toilets with a septic tank), number of patients and guardians that use the HCF, level of care and services provided, and local water use practices such as anal cleansing with water, or using large quantities of water for bathing, or the habit of leaving taps running.

The quantity of water required in HCFs - in terms of litres per person or bed per day - will vary depending on the level of the facility. For example, a health post's water consumption per day will be lowest compared to health centers, district, provincial and national referral hospitals. The higher the level of the facility, the more the quantity of water required because of the number of users and types of uses.

Examples for calculating the minimum quantity of water for different healthcare facilities are included in Annex B.

Water must be available

Regardless of the level of the facility, water must be available at all times with adequate quantity and quality for different uses as per facility needs to maintain effective functioning of the facility.

Water conservation should be practiced by HCF staff, patients, guardians, and visitors, particularly in water scarce areas, by not wasting water, turning taps off, fixing leaks, avoiding contamination of water sources, safe handling of water supplies. A water audit - to determine water usage for the various functions, services, and departments within the facility – can be useful to identify where water is wasted.

The quantity of water should be adequate for the current and future demand of the HCF. Healthcare facilities in Papua New Guinea will need to take into consideration climate change when calculating water needs. On the supply side, rainfall variability or changes to groundwater aquifers need to be considered against the demands for water in providing healthcare or for use in water-borne sanitation such as flush toilets, and for maintaining water quality. A water safety plan, which identifies risks and location-specific resilience strategies, should be developed for each healthcare facility.

3.2.4 Water storage

Healthcare facilities should have safe, secure water storage on their premises. The storage tank should have the reserve capacity to supply the healthcare facility with two full days of backup water in case of interruptions to the main water supply. In dry areas additional storage may be needed to overcome severe seasonal variations so that water is available for day-to-day use. There should be enough water storage capacity to deal with climate variability.

Water may be stored in overhead and/or underground tanks. Tank materials and construction should be according to the Papua New Guinea Building Code such as Tuffa tanks and Southern Cross tanks.

Water storage should be covered to prevent contamination and tanks cleaned 1-3 times per year using chlorine and brushes. Water should be periodically checked for bacteria contamination.

3.2.5 Pumping water into buildings

Depending on the type of water supply available to a healthcare facility and its geographic location, water pumps may be needed to ensure that water gets into health buildings to provide running water. A choice of pumps exists - solar, hydraulic ram, electrical, etc. - however, the types of pumps recommended are those that are relatively low maintenance, and have spare parts that are accessible and affordable. This is important especially for remote rural applications.

The choice of pumps should also be determined by predominant energy sources available, eg. on-grid electricity, or off-grid energy. The type of material the pump is made of should be suitable for that environment, especially for maritime application where corrosion can easily occur.

For sustainability, healthcare facility personnel should be trained on how to operate, maintain and troubleshoot pumps, in addition to having an operation manual passed on by the contractor who installed pump. To protect against theft, pumps should be secured in a lockable box or cage.

3.2.6 Drinking water accessibility

Safe drinking water should be made available and accessible to staff, patients, guardians and visitors, including children and people with limited mobility, at all times. Signs (with words/pictures/braille) indicating safe drinking water, should be provided, pathways to drinking water should be clear and unobstructed. The drinking water station should be 75 cm from the floor to be accessible to children and people with limited mobility or alternative measures in place to allow access (refer to 'Modifications for accessibility' photo below).

Accessible water point. Water stored in a bucket accessed via a tap near the bottom is suitable for children, people with limited strength, difficulty bending or lifting, poor balance. (Source: Compendium of accessible WASH technologies 2014)

Modifications for accessibility. Adding steps to an existing water fountain to make it accessible to children (photo by Penny Dutton)

3.2.7 Water quality

Drinking water
The National Department of Health has the responsibility of setting Drinking Water Quality Standards through the adoption of international guidelines and standards. The NDoH adopted and set as PNG Drinking Water Quality Standards the World Health Organisation Drinking Water Quality Guidelines.

Any drinking water should meet the PNG Public Health (Drinking Water) Regulation 1984 for drinking-water quality. Treatment may be required.

- ❒ Drinking water should have appropriate free residual chlorine (FRC, 0.2 mg/L or 0.5 mg/L at emergency) or be free of Escherichia coli or thermo-tolerant coliform bacteria in any 100 mL sample. Simple portable field tests are available for detecting the presence of E. coli in water eg. Aquagenx.
- ❒ Drinking water should meet other physical/chemical parameters as per PNG Public Health (Drinking Water) Regulation and WHO Guideline (refer to Annex D).
- ❒ Drinking water should not have any tastes, odours or colours that discourage consumption of the water.
- ❒ Water that is not of drinking water quality should be used only for cleaning, laundry and sanitation.

Water for cleaning
Water used for laundry and for cleaning floors and other surfaces that is not of drinking water quality must be used with a disinfectant or a detergent.[7] (refer section 0)

Water for medical purposes
Water of appropriate quality must be supplied for medical activities as well as for vulnerable patients according to NDoH guidelines.

- ❒ Sterilised water should, at a minimum, meet all the criteria for "clean water" and be sterilised on-site by boiling or disinfecting in batches before use. Sterilised water should be clearly labelled to inform users of its designated uses.

Water used for some medical activities may need to be of higher quality. For example, distilled water for the operating theatre or water used for haemodialysis should meet strict criteria concerning microbial contamination and chemical contaminants, including chlorine and aluminium, which are used in drinking-water treatment.

3.2.8 Staff Housing

Housing provided to HCF staff should be supplied with adequate quantities and quality of water, including sufficient storage facilities. Access to reliable water supply is considered essential for staff morale and motivation.

[7] Adams, J., Bartram, J., & Chartier, Y., 2008.

3.2.9 Water PNG Technical support

Water PNG should be consulted on connecting HCFs (and staff housing) to town water supply. Technical advice may be sought from Water PNG on water source identification, water storage options, water quality and treatment of a particular source and location.

3.3 SANITATION

Sanitation in healthcare facilities refers to safely managed sanitation systems for human excreta from toilets, wastewater (grey water and black water), and uncontaminated runoff water. Improved sanitation facilities prevent diseases by breaking pathogen transmission pathways, or disease-causing organisms found in human excreta and wastewater from entering the environment and posing a threat to people's health.

SANITATION Basic service (JMP)
Improved sanitation facilities are usable 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 people with limited mobility.

Adequate, safe and appropriate sanitation facilities/services serve to prevent infections and minimize the spread of diseases within the HCFs, by protecting staff and patients, and maintaining the dignity of vulnerable people including pregnant women, seriously sick patients and people with physical disabilities.

The minimum sanitation systems in healthcare settings are described in this section.

3.3.1 Toilet type

Healthcare facilities must have improved toilet facilities located on the premises[8]. Improved sanitation toilet types that are suitable for healthcare settings are:

- ❒ Ventilated Improved Pit (VIP) latrine,
- ❒ pour flush or flush toilet to a soak pit or septic tank, and
- ❒ flush toilet to a sewer.

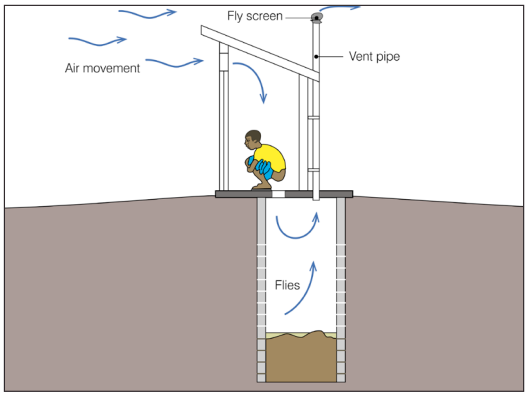
Examples of improved toilets are shown in Figure 2.

Providing adequate sanitation infrastructure and services requires careful planning and selection of appropriate designs for a facility. For new HCFs, sanitation facilities must be part of the initial HCF planning. For existing HCFs where sanitation infrastructure and services are inadequate, new facilities or upgrading existing facilities should be planned.

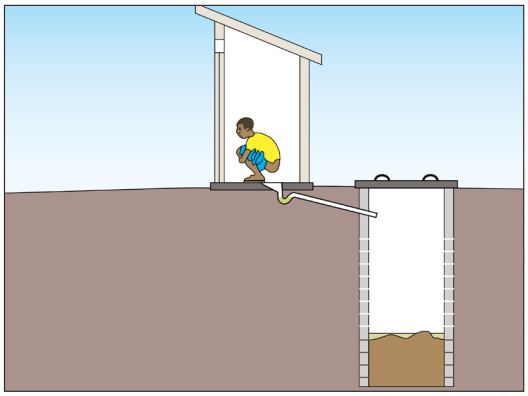
The selection of toilet type will depend on a number of local factors:

- ❒ Facility size and catchment population (with future population projections)
- ❒ Type of services being offered at a facility
- ❒ Availability of reliable water supply (for flushing)
- ❒ Level of groundwater table
- ❒ Climate change risks and trends eg. longer drier periods, or increased rainfall and flooding
- ❒ Soil permeability to determine the depth of the pit to be excavated and the possibility of contamination of any groundwater source used for drinking water
- ❒ Presence of supporting sanitation infrastructure such as a public sewer or pit emptying services
- ❒ Socio-cultural norms of users (use of water or paper for anal cleansing; preference for pedestal sitting toilet or squat pan)
- ❒ Cost and availability of the sanitation infrastructure
- ❒ Any other environmental, technical and social considerations that might apply such as available land at the healthcare facility, remoteness and access to the facility.

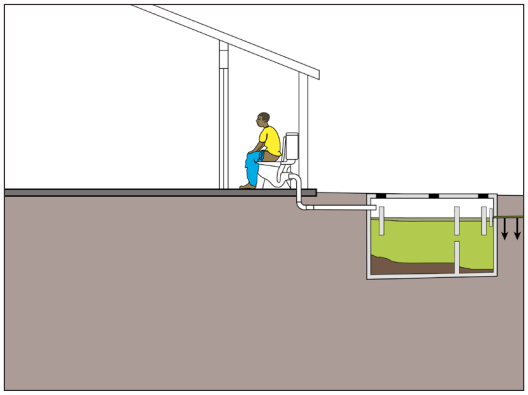
Figure 2. Examples of improved toilets



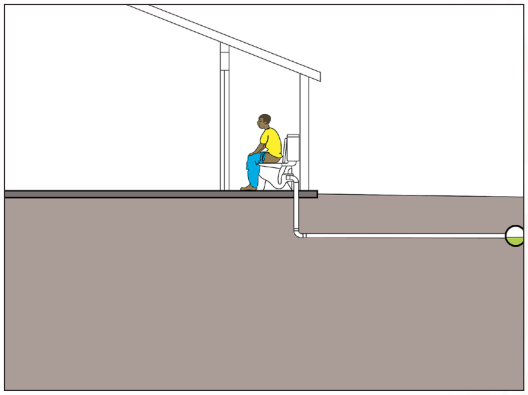
Ventilated Improved Pit (VIP) Latrine



Pour flush toilet to soak pit



Flush toilet to septic tank and leach field



Flush toilet to sewer

https://repository.lboro.ac.uk/

VIP latrines

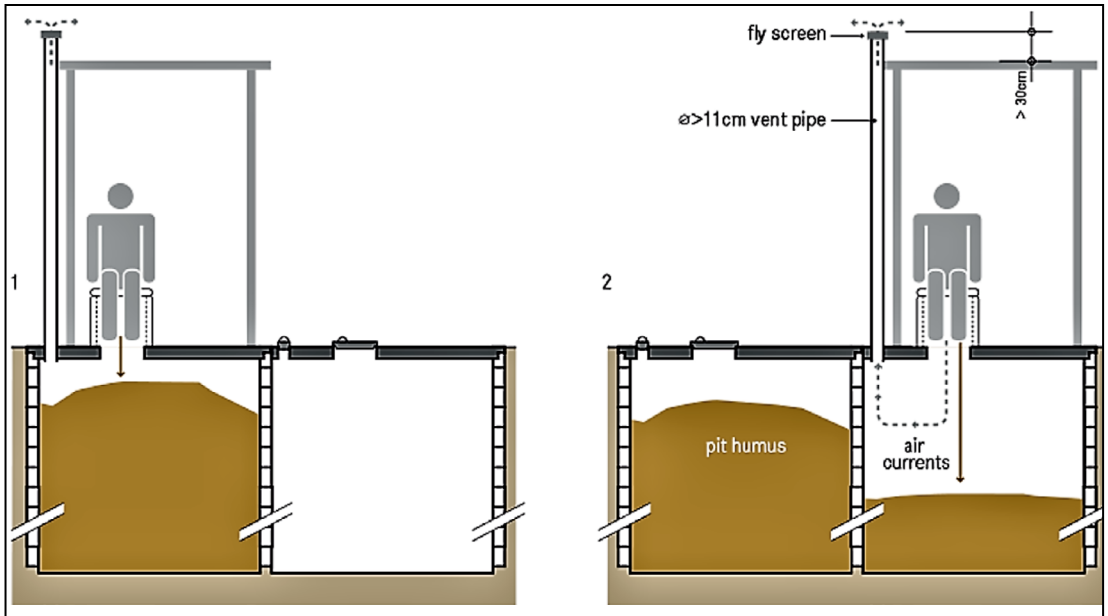
Traditional pit latrines in healthcare facilities should be upgraded to VIP latrines as a minimum. VIP latrines provide a low cost, low maintenance, easy to clean, low water use alternative to septic tank toilets which need adequate water for flushing and need regular desludging. VIP latrines are suitable for rural areas where there are water shortages and where frequent electricity outages prevent the pumping of water supply to septic tank toilets. VIP latrines provide odour and fly control. Deep pits can last up to 20 years or more.

Exterior of VIP toilets. VIP toilets buiolt by students at Lemikot Nursing School, New Ireland Province (photo by Penny Dutton)

Interior of VIP toilets, Lemikot Nursing School, New Ireland Province (photo by Penny Dutton)

Twin pit VIP latrines should be considered to reduce the need for emptying or decommissioning single VIP latrines (Figure 3). The pits can be alternated.

Figure 3. Twin Pit VIP latrine



A twin pit VIP latrine has a longer life than a single VIP (indefinite if maintained properly). Faecal waste in the unused pit breaks down to humus over time (about 1-1.5 years). Excavation of humus is easier than faecal sludge and there is potential for use of stored faecal material as a soil conditioner, where this is culturally acceptable to do so. Although the capital costs are more than a single VIP latrine, the twin pit VIP latrine can be used continually and there is no need to close off and relocate the latrine.

Source: Tilley, E., Ulrich, L., Lüthi, C., Reymond, Ph., Schertenleib, R. and Zurbrügg, C., 2014. *Compendium of Sanitation Systems and Technologies.* 2nd Revised Edition. Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland.

3.3.2 Toilet quantity

There should be enough improved toilets to meet the needs of all healthcare workers, support staff, patients, guardians and visitors.

There must be at least one toilet designated for men and one for women that has menstrual hygiene facilities. There must also be at least one toilet that meets the needs of people with limited mobility (e.g. pregnant women, people experiencing illness and pain, elderly persons, and/or persons with a physical disability).

- ❒ For outpatient settings: at least three toilets (one for staff, and two for patients and guardians: one for females that has menstrual hygiene facilities, one for males). Both male and female toilets should be accessible for people of limited mobility. For basic healthcare facilities such as Health Posts, and where it is culturally acceptable, two toilets may be suitable – one for staff, and one accessible unisex toilet for both males and females.
- ❒ For inpatient settings and larger facilities: improved toilets in sufficient number to meet the needs of the facility. The actual number of toilets/latrines required will depend on the average number of people at the facility per day. There should be a minimum of:
  - one toilet per 20 staff, and
  - one toilet per 20 patients, guardians, visitors.
- ❒ For healthcare facilities with a delivery room: at least one toilet is available to women in labour. Toilets at the delivery room must be flush toilets with a water seal.
- ❒ In healthcare facilities with a mortuary: at least one toilet that is useable (available functional, and private)
- ❒ In healthcare facilities with a kitchen: at least one dedicated toilet for use by kitchen staff.

Examples for calculating the number of toilets needed at a healthcare facility are included in Annex C.

3.3.3 Toilet location

- ❒ For VIP toilets, and pour flush toilets to soakpits a minimum horizontal distance of 30 metres between the pit and a groundwater sources of drinking water such as wells and boreholes, and 2 metres between the bottom of the pit and the groundwater table is normally recommended to limit exposure to microbial contamination. The actual distance will depend on local hydrogeological conditions, such as soil characteristics, and groundwater depth and flow.[9]
- ❒ Septic tanks should be located at least 15 meters and downhill from any ground water sources of drinking water such as wells, and boreholes. It is

[9] Brikké F, and Bredero M. 2003. *Linking technology choice with operation and maintenance in the context of community water supply and sanitation: a reference document for planners and project staff.* WHO: Geneva

not recommended to construct them in areas with high groundwater tables or where there is frequent flooding.

- ❒ If the healthcare facility is in a flood-prone area, sanitation facilities should be designed to ensure they are always flood-proof and functioning.
- ❒ A site investigation should be conducted to determine the optimal location for toilets within health facility grounds.

3.3.4 Toilet accessibility

- ❒ At least one toilet must meet the needs of people with limited mobility.
- ❒ Toilets should be conveniently located; preferably not more than 30 metres from all users
- ❒ Toilets must be open for use when needed, i.e. not locked.
- ❒ Toilets should have a clear access pathway, free from obstacles, usually lit during the night.
- ❒ Toilets are child, gender and disabled friendly (refer Table 3)

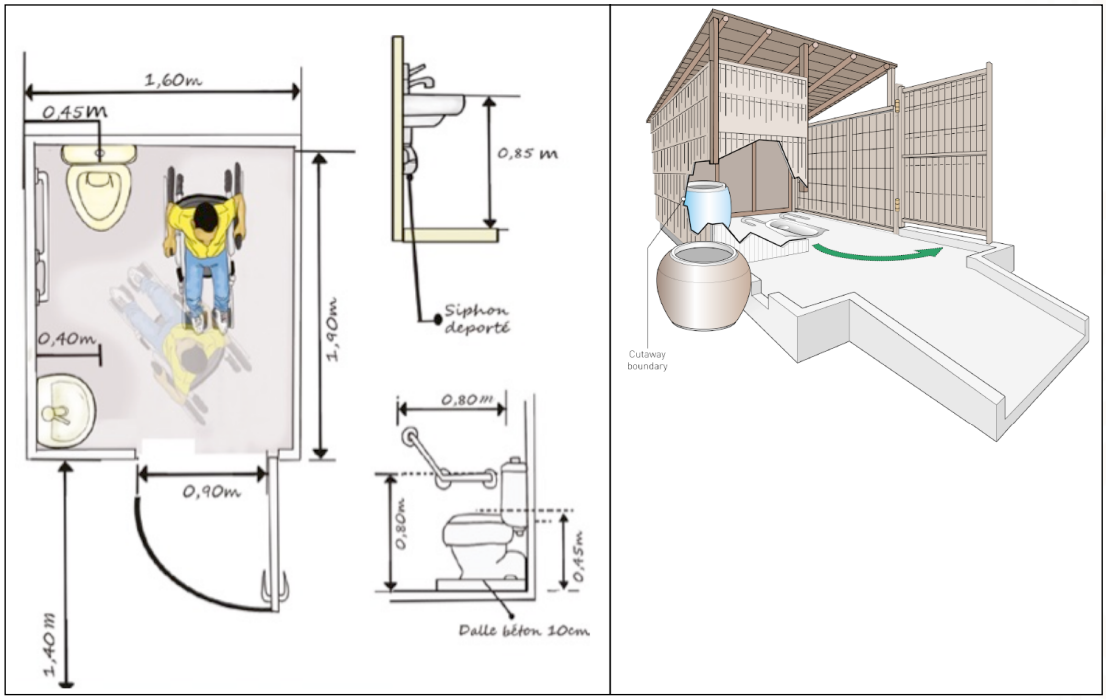
Table 3: Child, Gender, Disabled Friendly Infrastructure

Child Friendly	Door handle and seat are at heights which can be reached by children, child is able to use the toilet
Gender Friendly	Segregated male and female toilets Lockable doors (from the inside) All female toilets should have facilities to manage menstruation and postpartum bleeding, including water and soap to cleanse, a covered lined bin to dispose of waste, and space to change sanitary pads in private.
Disabled Friendly	ALL of following accessibility standards: □ Accessible without stairs or steps, and includes an unobstructed pathway from the healthcare facility (if outside the building) (maximum gradient of 1:20); □ Pathway has landmarks or guide rails (eg. stone edging, rope, metal rails) for a person with vision impairment to follow the path □ Ramp entry to toilet is 120 cm wide with grab rails both sides (one at 70 cm and one at 90 cm); □ Toilet door opens outwards; □ Toilet door width is minimum 90 cm; □ Built with enough room within the cubicle/stall for a wheelchair to turn around; □ There are grab handrails on each side of the toilet; □ Floor is made from non-slip material; □ Hand hygiene facilities outside of the toilet are accessible, and the top of the sink is 75 cm from the floor.

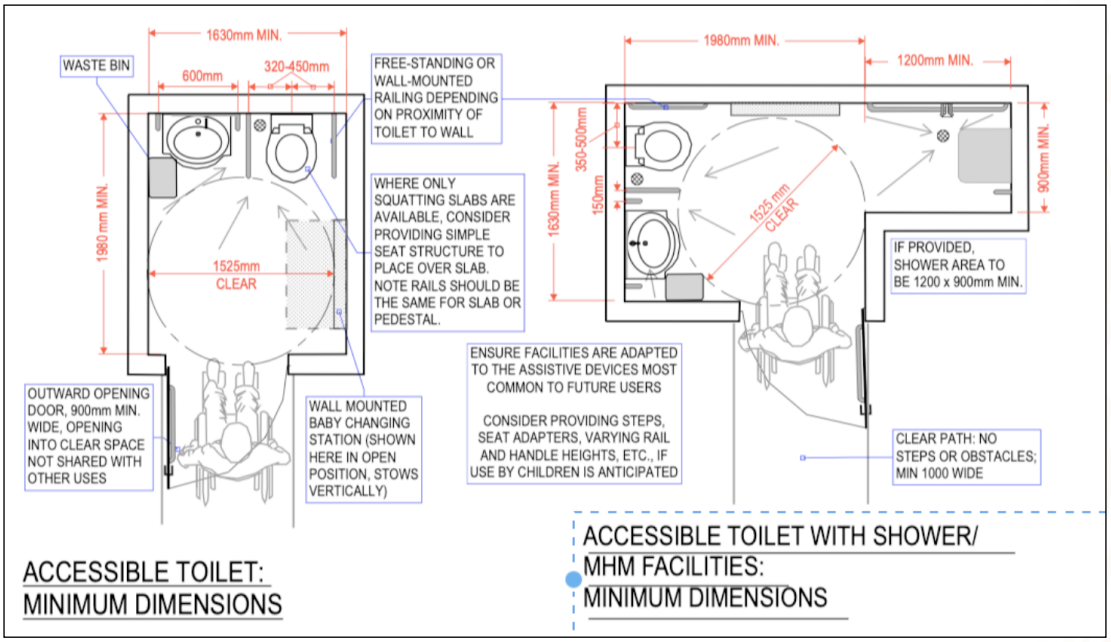
Specifications for accessible toilets are shown in Figure 4. An example of a recent accessible toilet design from Boikin Health Centre in East Sepik Province is provided in Annex E as indicative of what is possible.

Toilets can be checked for accessibility using the Accessibility Audit Checklist in Annex F. It is recommended that a person in a wheelchair participates in the audit.

Figure 3. Twin Pit VIP latrine



Source: CBM hhot.cbm.org; WaterAid https://washmatters.wateraid.org/publications; Loughborough University https://repository.lboro.ac.uk/

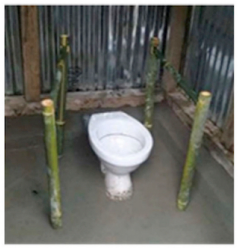


Source: Shaw N, Fewster E, Cavill S. 2019. *Technical guidelines for construction of institutional and public toilets.* WaterAid. https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/technical-guidelines-for-construction-of-institutional-and-public-toilets.pdf

Getting there.
Ramp to an accessible toilet, Cambodia. (photo by Remissa Mak, WaterAid Cambodia)

Accessible toilet. Accessible shower and toilet Community Health Post, Western Highlands (photo by Penny Dutton)

All toilet sizes. Child sized toilets and urinals are especially relevant for facilities with many child patients or visitors and for paediatric wards (photo by Facilities Net)



Modifications make it easier. Existing toilets can be modified to be accessible to get on the toilet. Install grab bars and rails on the floor/wall. Grab bar height should not be more than 75 cm.

Source: UNICEF, Ministry of Health, SNV, (n.d.) Guidance for making toilets and handwashing easier to access for all in rural Bhutan

3.3.5 Toilet user acceptability

Toilets that should be designed and equipped to support the comfort and desirable hygiene practices of the end user.

- Toilets must always be available (open, unlocked), functional and clean.
- Toilets should be designed and equipped to respond to social and cultural norms such as sitting or squatting.
- Toilets should have water and/or toilet paper for anal cleansing.
- All toilets should have functioning hand hygiene stations within 5 metres of toilets with water and soap always present.
- Improved sanitation facilities should ensure privacy; toilets should have a door and should be lockable from the inside and no gaps in door/walls which compromises privacy.
- Toilets should be clean and functional, and have lined waste bins.
- All toilets should have sign posts indicating toilets for male and female users, or people with limited mobility.
- All toilets should have enough light to ensure safety and accessibility for night time use.

3.3.6 Toilet quality, cleaning and maintenance

Toilets should always be in a good state of repair, clean, free from unpleasant odour, and functional.

Toilets should be cleaned and maintained so that they remain hygienic and do not become a site for disease transmission. Toilets in healthcare facilities should meet the following standards for cleaning and maintenance:

- A regular cleaning and maintenance schedule should be in place for sanitation facilities to ensure that clean and functioning toilets are always available.
- Cleaners should understand their vital role and be trained on cleaning practices, including making disinfectant solution. They should be provided with adequate cleaning supplies and personal protective equipment. (See Section 0)
- Cleaning materials specifically for toilet cleaning purposes (i.e. water, soap, disinfectant, mops, scrub brushes, etc.) should be made available for regular cleaning.
- Toilets should be cleaned a minimum of two times per day. Toilets should be cleaned so they are absent of waste, visible dirt, excreta, insects and stagnant water.
- Handwashing facilities near toilets should be cleaned a minimum of two times per day.

- Bins in toilets should be emptied a minimum of two times per day. All waste should be disposed of hygienically.
- The environment and area around the toilet facility should be free from human faeces, with attention especially paid to the disposal of baby and infant faeces.
- Anal cleansing materials (water, paper) should be supplied inside toilets and be restocked as needed.
- Sanitary pads for post partum bleeding and menstruation should be provided, together with lined bins for disposal.
- Soap (liquid or bar) should be supplied continuously to hand hygiene stations at toilets.
- Toilets should be checked for and repaired for major holes, cracks or leaks in the toilet structure, or blockages to ensure functionality always.

3.3.7 Wastewater management

Healthcare wastewater is any water that has been adversely affected in quality during the provision of healthcare services. It is mainly liquid waste, containing some solids produced by humans (staff, patients, guardians, visitors) or during healthcare-related processes, including cleaning, bathing, laundry, and cooking. Healthcare wastewater can be divided into categories:

- Black water (sewage): heavily polluted wastewater containing high concentrations of human excreta (urine, faeces), food residues, toxic chemicals.
- Grey water (sullage): low polluted wastewater with more dilute residues from washing, bathing, laboratory processes, laundry and technical processes.

Health risks associated with contaminated wastewater as well as the presence of standing water include: the spread and multiplication of pathogens and drug resistant pathogens, pollution of surrounding ground water and surface water, and breeding of insect vectors. Untreated wastewater poses serious risks to human health, including transmission of Anti Microbial Resistance through wastewater and faecal sludge.

The quantity of wastewater produced in a health-care facility depends on the amount of water used and is best measured by water consumption. The water consumption depends heavily on factors such as the kind of healthcare services provided, treatment services, number of beds, accessibility to water, climatic situation, level of care and local water-use practices.

All wastewater from healthcare facilities should be safely collected, treated, managed and disposed of.

Wastewater collection and treatment systems should be appropriate to the type of facility and quantity of wastewater produced, and disposal method (see Table 4). Disposal of wastewater should be according to guidance on safe management of waste from healthcare activities developed by WHO.[10]

[10] WHO, 2014. *Safe management of wastes from health-care activities, 2nd edition*

Table 4: Wastewater Treatment and Disposal Options

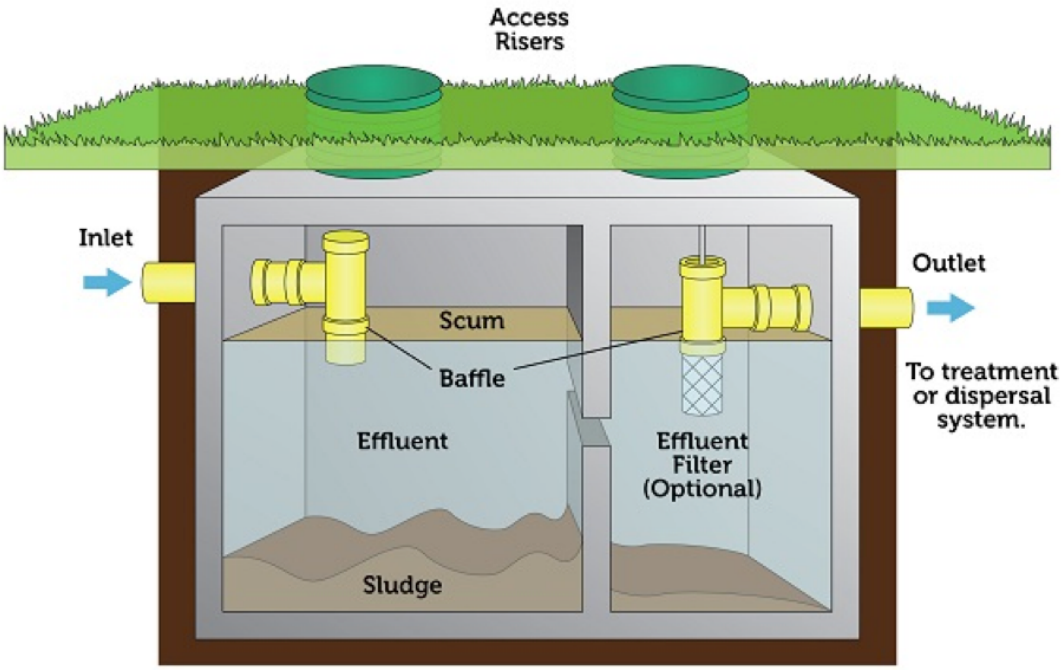
	Facility type	
	Large health centre or hospital	**Small health centre, rural health post**
Faecal sludge waste (VIP latrine)	Seal in situ, use alternating latrine, mechanical removal when pit is full	Seal in situ, use alternating latrine, mechanical removal when pit is full
Flush toilet and other black water	Piped collection and disposal to: - Septic tank partial treatment, with effluent to soakpit and leachfield - on-site wastewater treatment facility - off-site to municipal sewerage system	Septic tank partial treatment, with effluent to soakpit and leachfield
Grey water	Large quantities of wastewater collected through pipe system to: - septic tank - on-site wastewater treatment facility - off-site to municipal sewerage system	Small quantities to soakpit or to septic tank (existing or new)

The minimum treatment method for blackwater wastewater is a septic tank. A septic tank is a buried, watertight tank designated and constructed to receive and partially treat raw wastewater. Heavy solids settle to the bottom of the tank while greases and lighter solids float to the top. The solids stay in the tank while the wastewater flows to the outflow for further treatment or discharge eg. via a soakaway pit or leachfield. The disposal of disinfectants in to septic tanks should be avoided.

Soakaway pits and leachfields[12] should be used for disposal of effluent from septic tanks and on site treatment plants. Soakaway pits and leachfields should be kept as far as practical from shallow water wells, and if possible, installed downstream of water abstraction sources.

[11] Leachfields consist of gravel-filled underground trenches, called leachlines, which allow the liquid effluent from the wastewater treatment to permeate into the ground.

Figure 5: Septic Tank



Source: United States Environmental Protection Agency, *Types of Septic Systems*. https://www.epa.gov/septic/types-septic-systems Viewed 30/1/2023

Minimum requirements of a septic tank for wastewater:

- capacity equivalent to a total of two days' wastewater flow
- two-chamber system, the first chamber should be two thirds of the total capacity
- 48 hours retention time
- access holes, inspection ports and ventilation installed in every chamber.
- solid matter (sludge, scum) from septic tanks removed when the chambers are 3/4 filled with sludge.
- Faecal sludge should not be used for agricultural purposes but taken to treatment plant or buried
- Personal protective equipment worn at time of emptying

VIP Toilet Feacal Sludge Management

VIP latrine pits should not be situated close to water sources, including ground water sources. The minimum requirements for managing faceal sludge from a VIP latrine are:

VIP latrine pits	Lateral distance to groundwater well minimum 30 metres, distance between bottom of pit and groundwater minimum 2 metres
	Emptied when pits ¾ full or new pit made when full.
	Sludge taken to treatment plant or buried in situ
	Personal protective equipment worn at time of emptying.

Avoid contaminants

Chemical waste, including pharmaceuticals, should not be discharged into wastewater but should be collected separately and treated as a chemical healthcare waste. (see section 3.4 on healthcare waste). Pretreatment is recommended for wastewater streams from departments such as medical laboratories. Pretreatment can include acid-base neutralisation, filtering to remove sediments, or autoclaving.

Wastewater maintenance

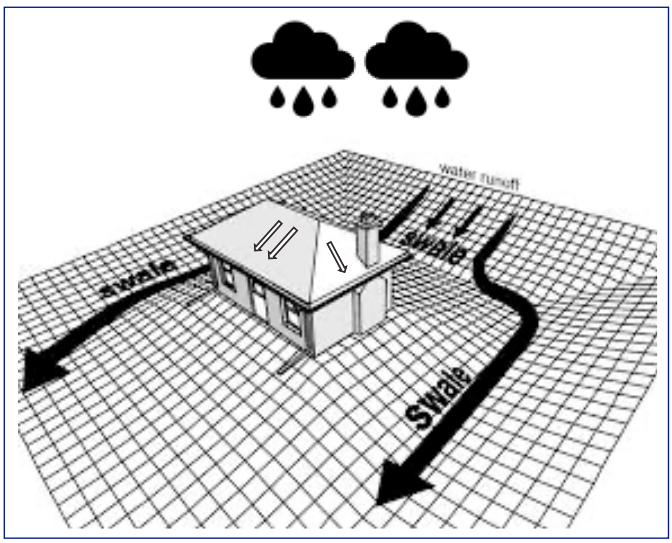
Attention should be given to the functionality of grey water plumbing systems to avoid possible in-facility reservoirs of infectious bacteria and AMR in showers, sinks, and on surfaces.

Annual budgets for healthcare facilities should include a budget line for the costs of wastewater treatment and disposal, in particular, septic tank emptying and sludge removal, and plumbing maintenance.

3.3.8 Stormwater management

Stormwater refers to water from rainfall collected on healthcare facility roofs, grounds, yards and paved surfaces. This may be lost to drains and watercourses, redirected as groundwater recharge, or captured and used for irrigating health facility grounds and gardens, toilet flushing and other general washing purposes.

Figure 6: Stormwater run off



Roof runoff. Rainwater can be captured for storage or diverted to drains (photo by Penny Dutton)

Stormwater can cause flooding, erosion around structures, roads, pits and other critical facilities, pollution to surface and ground water, and vector breeding. Poorly managed stormwater runoff can cause health impacts to humans. Climate change will increase the likelihood of flooding or increased run-off that inundates sanitation, leading to damage or destruction of infrastructure and gross contamination.

The grounds of healthcare facilities should be kept free of flood water and have adequate run off water management, such as drainage, to minimise any standing water.

For proper management of stormwater, it is important to consider:

- All buildings should be provided with appropriate stormwater drainage to convey water away from the facility (i.e. no standing water) and safely dispose of the water and protect nearby households
- Stormwater should generally be directed to open earth drains and discharged away from buildings to prevent ponding and minimise erosion. Water in drains should be absorbed in the ground (depending on absorption qualities of soil) or alternatively directed away from the building to a lower point on site. Alternative collection and direction methods will be required if the water is to be recycled.
- All storm water drainage/open channels should be cleaned regularly of leaf litter and rubbish to avoid blockage.

Design and construction of storm water drainage should be in accordance with PNG building code or DOW Architectural Technical Specification 1989.

3.3.9 Staff Housing

Every HCF staff house should be provided with one toilet for the use of the occupants. The toilet should be to an improved standard and must have handwashing facilities at the toilet and adequate fecal waste management. Access to a functional toilet is considered essential for staff morale and motivation.

3.4 GUIDELINES FOR WASH IN HCF

Hygiene in healthcare facilities focuses on hand hygiene and bathing facilities. Hygiene is important to prevent and minimise the spread of infection within healthcare facility environments.

HYGIENE Basic service (JMP)
Functional hand hygiene facilities (with water and soap and/or alcohol-based hand rub) are available at points of care, and within 5 meters of toilets

3.4.1 Hand hygiene

Hand hygiene includes:

- handwashing with soap and water
- using alcohol-based hand rub (ABHR).

Hand washing is the simplest and most cost- effective way of preventing the transmission of infection and thus reducing the incidence of health-care-associated infections.

Appropriate hand washing can minimize micro-organisms acquired on the hands by contact with body fluids and contaminated surfaces. Hand washing breaks the chain of infection transmission and reduces person-to-person transmission. By regularly washing hands or performing hand hygiene, healthcare facility staff, patients, guardians and visitors decrease the risk of getting infections and/or spreading pathogens to others.

Hand hygiene procedures and steps for the wearing and removing of gloves must be in accordance with the Papua New Guinea Infection Prevention Policy Guidelines for Health Facilities and the National Infection Prevention and Control Policy 2021-2031, WHO 2019 Minimum requirements for infection prevention and control programmes. Geneva: World Health Organisation.

Handwashing stations

Healthcare facilities must have functioning handwashing stations available within the compound which are accessible to staff, patients, guardians and visitors.

A handwashing station is defined as a dedicated hand hygiene facility (sink, bucket with lid, tap and with drainage facilities), in an easy-to-access location, where both soap (bar, powder, liquid form) and water are available for handwashing at all times.

Demonstrating hand hygiene. Hand hygiene is essential to prevent infections between patients or to staff (photo by Lake Media)

All healthcare personnel, patients, guardians and visitors must practise effective hand washing. Patients and guardians need to be instructed in proper techniques and situations for hand washing and monitored by health staff. Staff hand hygiene compliance should be monitored regularly, and training should be routinely provided on hand hygiene and infection control.

Hand hygiene should be practiced by staff, patients, guardians and visitors at key times:

- Before and after touching patients
- Before attending to a newborn baby
- Before preparing food
- Before eating
- After using the toilet.

All handwashing stations must meet the following requirements:

- Handwashing stations must have a tap and proper drainage to avoid stagnant water. It is preferable to have running water and large washbasins with hand-free controls, which require little maintenance and have anti-splash devices. When no piped water is available use either a bucket with a tap, which can be turned on and off, or a bucket and pitcher.

- Water used at all handwashing stations must be from an improved water source. (see section 3.2.1)

- Handwashing stations must always have the following materials available: water, soap, and clean, single use paper or material towel. Multi-use towels must not be used, as they are potential sources of infection. Paper towels should be used once and discarded into hands-free non-risk waste bin.

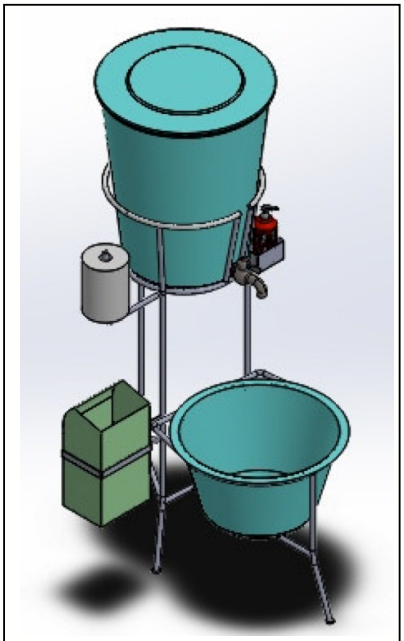
- Hand hygiene promotion/instruction materials must be clearly visible and understandable at all handwashing stations.

- Handwashing stations should be cleaned at least once a day. Handwashing stations near toilets should be cleaned at least two times per day.

- Handwashing stations should have a drainage system for the collection and treatment of grey water.

- Handwashing station drains should be checked daily to avoid blockages and pooling of water.

Figure 7:
Simple handwashing station



This simple handwashing station is low cost, and effective. Running water is available from a tap, and wastewater is captured by the basin. The station includes soap and single use drying materials and rubbish bin for used drying materials.

Quantity of handwashing stations

The minimum number of handwashing stations is:

- At least one in the waiting area for visitors.
- At least one in each delivery room.
- At least two in a ward with more than 20 beds.
- At least one anywhere there will be physical contact with patients (i.e. consultation area, operating theatre, blood collection point).
- At least one within 5 metres of all toilet facilities.
- At least one handwashing station accessible for patients with limited mobility and children, with the top of the sink 75 cm from the floor with knee clearance underneath.

Additional recommendations for handwashing facilities include:

- At least one in the mortuary.
- At least one near any waste disposal area.
- At least one in an area where ultrasound and/or X-ray facilities are provided.
- At least one in the canteen facility/kitchen/food preparation area.

Alcohol-based hand rub (ABHR)

Healthcare staff may use an alcohol-based hand rub for routinely decontaminating hands between points of care if hands are not visibly soiled. (See Figure 8 for procedure).

When hands are visibly dirty or contaminated or are visibly soiled with blood or other body fluids, hands should be washed with either a nonantimicrobial soap and water or an antimicrobial soap and water. ABHR cannot be substituted for hand washing with soap and water if hands are soiled with dirt or body fluids, and after using the toilet.

ABHR should be made available:[12]

- in public areas such as waiting rooms, reception areas, hospital foyers, and other high traffic areas;
- at the entrance of each inpatient unit, outpatient clinic and other departments;
- in high staff traffic areas (e.g. staff station, utility rooms and at the entrance to patient rooms); other multi-use patient care areas such as consultation rooms;
- affixed to mobile work trolleys (e.g. intravenous, drug and dressing trolleys);
- at the foot of every patient bed or adjacent wall.

Dispenser systems should minimise the possibility of 'dripping' to avoid potential damage to wall and floor coverings.

[12] Australasian Health Facility Guidelines 2016. Part D Infection Prevention and Control, D.0002 Building Elements. Revision 7.0

Figure 8: Hand hygiene technique with ABHR

Source: WHO Guidelines on Hand Hygiene in Health Care, 2009. WHO, Geneva

Gloves

Gloves should be used when there is potential exposure to blood, body fluid, excretions or secretions.

Clean, nonsterile, disposable, single use gloves are recommended for routine care of patients with highly transmissible infections.

Disposable gloves should be used that are:

- Clean/non-sterile for routine care of the infectious patients;
- Sterile for invasive procedures.

The following procedures for use of gloves should be adopted:

- Change gloves between patients, between tasks and procedures on the same patient, and when they become soiled.
- Remove gloves promptly after touching contaminated items and environmental surfaces and before moving to another patient.
- Remove gloves before leaving the patient's bedside and decontaminate hands immediately.
- After glove removal and hand washing, ensure that hands do not touch potentially contaminated environmental surfaces or items in the patient's room.
- Discard gloves after attending to each patient.

Heavy-duty rubber gloves should be used for cleaning instruments, handling soiled linen or dealing with spills of blood and body fluids. They can be washed and reused.

3.4.2 Bathing facilities

Bathing is important for personal hygiene, patient recovery and cleanliness of staff and guardians.

For in-patient settings, bathing facilities should be made available for staff, patients, and guardians to address personal hygiene needs. Bathing facilities should meet the following requirements:

- At least one shower/bathing facility should be available for every 40 users in inpatient settings (users include staff, patients and guardians).
- Separate bathing facilities should be available for staff and patients/guardians.
- Bathing facilities should be separate for males and females.
- At least one bathing facility is designed for people with limited mobility and meets ALL of the following accessibility standards:
  - Bathing area /shower room door opens outwards;
  - Bathing area /shower room door width is minimum 90 cm
  - Bathing area is minimum 150 cm x 150 cm
  - Shower/bathing area has grabrails at a height of 70 cm–80 cm attached to floor or wall
  - Shower/bathing area has an optional seat/chair.
- At least one bathing facility should be available in the delivery area
- Water in bathing facilities should be sufficient in quantity and from an improved water source.

- Bathing facilities should be private and lockable from the inside.
- Bathing areas should have signs to indicate male/female, staff/patient facilities.
- Bathing areas should be adequately lit, including at night.

3.4.3 Hygiene materials

Materials eg. disposable sanitary pads, should be supplied to support management of menstruation, and port partum bleeding. Toilet paper and soap or ABHR should be supplied continuously.

3.5 HEALTHCARE WASTE MANAGEMENT

All healthcare waste management in healthcare facilities should be in accordance with the *National Health Service Standards 2nd Edition - National Quality Standards for Health Services in Papua New Guinea, Technical Guidelines for Health-care waste Management in Papua New Guinea and Guidelines for Health-Care Waste Management in Papua New Guinea (draft).*

HEALTHCARE WASTE MANAGEMENT Basic service (JMP)
Waste is safely segregated into at least three bins and sharps and infectious waste are treated and disposed of safely.

The term Healthcare Waste includes all the waste generated within healthcare facilities, related to medical procedures and healthcare, and including general waste. Healthcare waste should be segregated, collected, transported, treated and disposed of safely.

Health staff including waste managers and cleaners should be trained in proper handling and disposal of waste. All those who handle healthcare waste should wear appropriate PPE (boots, long-sleeved gown, heavy-duty gloves, mask, and goggles or a face shield) and perform hand hygiene after removing it.

Patients, guardians and visitors will need guidance on waste disposal, including signage and posters as necessary. Waste disposal facilities should be accessible for people with limited mobility and children. Sharps containers should be impermeable and inaccessible to children.

Healthcare facility waste collection, segregation, and disposal should be safe during climate-related emergencies or disasters.

3.5.1 Waste generation and segregation

The quantity of healthcare waste generated should be minimized through reduction, reuse and recycling wherever possible. Reuse should only be done where permitted, for example some programmes such as immunization strictly prohibit the reuse of used equipment and provide auto disable syringes.

All healthcare waste should be segregated as soon as it is generated. Segregation reduces risk of infection, reduces the cost of handling and disposal of waste. Each type of waste should be contained in designated colour-coded bags and containers:

- **Sharps waste** (eg. needles, scalpels) should be segregated into puncture proof sharps containers.
- **Infectious waste** (including PPE), **pathological waste, anatomical waste** should be segregated into separate yellow colour bags/containers with appropriate labels and logos. Double bags should be used for high risk infectious waste.
- **Chemical and pharmaceutical waste** should be segregated into yellow colour bags or containers and marked "Chemical and pharmaceutical waste".
- **General waste** (eg. paper, packaging) should be segregated into black colour bags or containers. Food or kitchen waste may be separated from general waste, depending on the quantity and end use.

Bins for sharps waste and infectious waste should have lids. All waste should be labelled appropriately (source and type of waste).

Infectious wastes and general wastes produced in healthcare facilities should not be mixed but, where this has occurred, a mixture must be treated as infectious waste.

All bins should be not more than three quarters (75%) full before emptying.

Hard to follow: Segregation of waste, with appropriately coloured bins and bags with signs, needs to be consistent throughout the waste management process. (photo by Penny Dutton)

Sharps containers. Only dedicated sharps containers should be used for used syringes, needles and sharps. (photo by Penny Dutton)

3.5.2 Transportation and storage

Transport of waste within the healthcare facility should meet the following requirements:

- Dedicated wheeled containers, trolleys or carts should be used to transport the waste containers to the central waste storage area. These vehicles should be reserved for the transportation of healthcare facility waste only.
- Transport of waste should follow a pre-determined collection route and collection time.
- Healthcare waste and general waste should be collected at least daily from the source of generation (eg. wards and departments) and transported to the central storage area.
- Collection areas and trolleys should be disinfected regularly (at least once per week). Spills and leaks should be cleaned immediately.

On site storage of waste should meet the following requirements:

- Dedicated storage areas should be provided for the storage of waste, separate from the main HCF. The waste storage area should be covered, fenced and protected from access by the public and pests.
- Storage of any waste should not exceed 48 hours before disposal.
- Storage areas should be disinfected regularly (at least once per week). Spills and leaks should be cleaned immediately.

3.5.3 Treatment

- Infectious waste should be autoclaved wherever possible before disposal.
- Non-autoclaved infectious waste should be disinfected chemically by using bleaching powder, lime solution, calcium oxide or other chemical disinfectants (Aseptol/Dettol).
- Needle cutter should be used to displace needles from syringes.
- Disinfect defanged syringes by 2% chlorine solution in preparation for recycling (not reuse)

3.5.4 Disposal

Different disposal methods exist for healthcare waste.

- Non-treated infectious waste, placenta and small anatomical waste should be incinerated wherever possible in a standardised incinerator.
- Where there is no effective incinerator, placenta and small anatomical waste should be disposed to a placenta pit. Placenta pits need to be located at specific sites to avoid contamination of groundwater, locked and fenced for security.
- Pharmaceutical waste should be encapsulated or inertized. Antimicrobial waste should be encapsulated and buried, incinerated or returned to the manufacturer. Rural healthcare facilities in hard-to-reach areas may store pharmaceutical waste then periodically return them, when practical, to a district hospital for disposal.

- Advice should be sought from the responsible health authority for the disposal of hazardous waste such as mercury, asbestos, and radioactive waste.
- General waste, sharp waste and treated waste should be disposed to a municipal waste collection system. Where there is no municipal waste collection system, sharps waste should be disposed to a sharp pit; general waste and treated waste should be disposed to a sanitary landfill.
- Large anatomical waste should be buried in an appropriate site.

Site issues

All disposal areas must be located away from the HCF. All disposal areas should be fenced securely to protect from entry by unauthorised persons and animals.

Fuels such as kerosene, diesel, gas and other combustible fuels must be stored safely in a protected area.

Standardised Incinerators

High temperature incineration reduces organic and combustible waste to inorganic, incombustible matter and results in a very significant reduction of waste volume and weight. Two-chambered incinerators with proper temperature, required chimney heights should be used. One chamber is to combust solids and one to combust gases. The temperature must be at least 850°C to ensure minimal emission of toxic gases at the primary chamber with 1100-1200°C in the second chamber. High chimney (higher than nearby roofs) is required. Appropriate location (at least of 500 meters away from populated areas) is required. Ash disposal facilities are also required. Pressured gas containers, radioactive wastes, radiographic wastes, halogenated plastics like PVC, mercury, cadmium and ampoules of heavy metals should never be incinerated.

Single Chamber Incinerator

Single chamber incinerators are suitable for HCFs where there is a low volume of waste (<50kg per day) and there is no other choice for waste disposal. Only nonplastic waste (e.g. contaminated paper, cloth) can be safely incinerated by a single chamber incinerator.

A single chamber incinerator may be a mechanical "oven-type" incinerator, drum, or a "bricktype" incinerator. Combustion in a single chamber incinerator is initiated by the addition of fuel oil or kerosene, and is then allowed to continue to burn on its own. Air flow is usually based on natural ventilation from the air intake opening to the chimney, although some incinerators may have mechanical ventilation.

[13] World Health Organization (WHO), Food and Agriculture Organization of the United Nations (FAO) and World Organisation for Animal Health (OIE), 2020. *Technical brief on water, sanitation, hygiene and wastewater management to prevent infections and reduce the spread of antimicrobial resistance*

[14] UNICEF/WHO Joint Monitoring Program indicates the highest standard of incinerator is a two chamber, 850-1000 °C incinerator. In accordance with the Stockholm Convention, the Best Available Technology (BAT) should be used. This combines primary measures of a high temperature twin chamber incinerator (850 °C/1100 °C), with secondary measures of flue gas treatment.

[15] *Overview of technologies for the treatment of infectious and sharp waste from health care facilities. Geneva: World Health Organization; 2019.*

Emissions

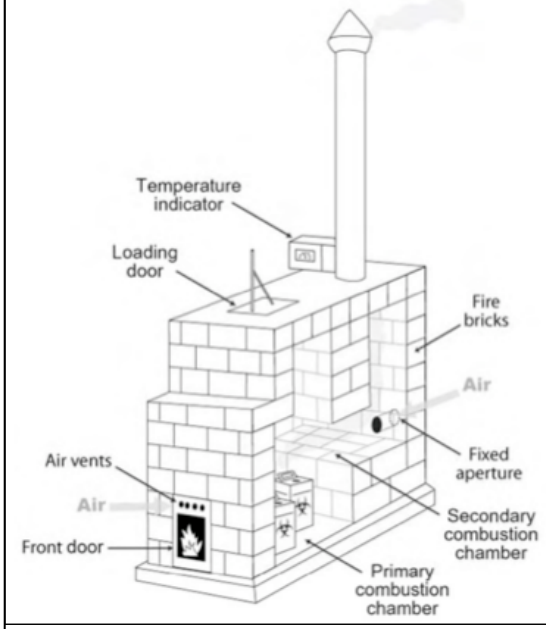
Emissions from medical waste incinerators must conform to all the standards and requirements stipulated by the Department of the Environment. Where a high temperature medical waste incinerator is not available, cytotoxic waste and halogenated plastics such as PVC should be segregated and should not be incinerated.

Sanitary Landfill

Sanitary landfills are easy access to the site and working areas for waste delivery. Landfill site should be at least 50 meters away from the water sources. The landfill site must be protected with fences to prevent entry from unauthorized persons and animals. Lining of the base and sides of the sites must be adequately sealed to minimize the movement of wastewater. Final cover must be constructed to prevent or minimize rainwater infiltration.

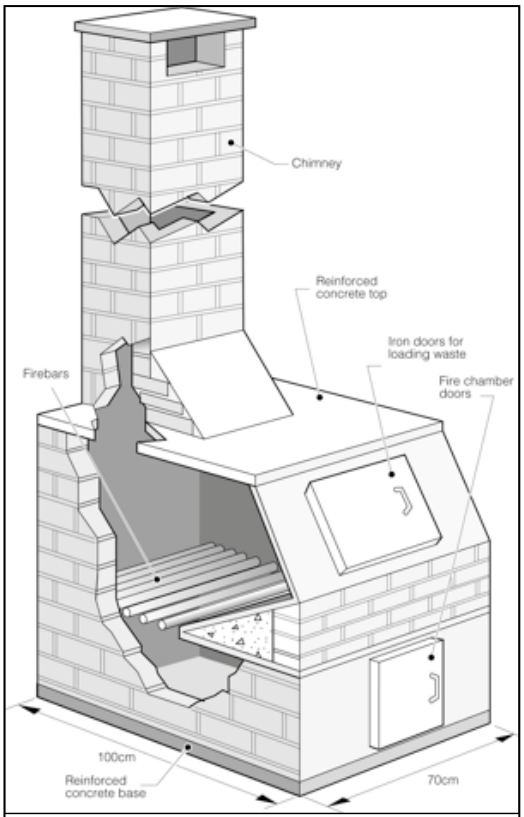
Examples of incinerators are shown in Figure 9.

Figure 9: Incinerator types



Components of a small scale standardised incinerator. Source: MMIS, Incinerator Guidebook, 2010

Single chamber incinerator.
Basic incinerator at Maipani Aid Post, South Fly, Western Province (Photo by World Vision)



A permanent incinerator of this chamber size (approximately 1.0m x 0.5m base) will be able to combust about 100kg of waste per hour.

Advantages:

Highly effective at disposing of sharps, and infectious and pathological waste.

Constraints:

Expensive and time-consuming to construct; and difficult to operate at the appropriate temperature. Source: WEDC, Emergency Sanitation - Assessment and Program Design, Permanent Incinerator, Loughborogh University, 2002

New Incinerator. Built by World Vision, Mutzing, Markham District, Morobe Province (photo by Bernice Sarpong)

Placenta pit

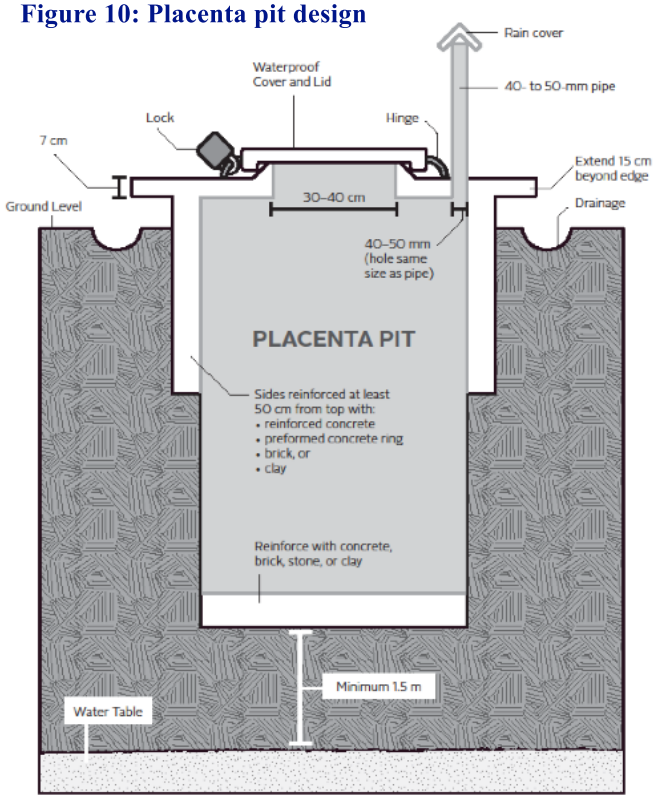
Where appropriate, covered pits can be provided for the disposal of placentas and other pathological wastes. Placenta pits allow pathological waste to degrade naturally. Around 90% of the waste is liquid, which will soak away in to the ground.

Cultural practices vary in PNG on the disposal of placentas although healthcare staff believe that if there is a safe place at the healthcare facility to dispose of placentas that many families will use this option. A designated area for burial should be provided where access by animals and contamination of groundwater is prevented. In all cases the mother and her family should be consulted and their wishes respected.

At least the top 50 cm of the pit should be reinforced with concrete to prevent surface water infiltration, and its base should be made of concrete to stabilize the structure and to slow the downward movement of liquid towards the water table (Figure 10).

The top slab should be above ground level and made of water-tight concrete to prevent surface water infiltration. The top should be closed by a lockable hatch and a vent pipe installed to ensure that the generated gases can escape and air can get in. Where soil is particularly sandy, extra precautions may need to be taken to protect the water table and to prevent the pit from collapsing: the sides may be reinforced with bricks, laid with gaps between them so that the liquids can still escape.

Figure 10: Placenta pit design



Source: Health Care Without Harm and FHI360 (n.d.) Technical Specifications: Placenta Pit Document Number: 575

The pit should be closed off with a concrete slab to reduce the risks of attracting vectors such as flies, mosquitoes and rodents. It is essential that the organic waste be covered with the lid immediately after disposal to avoid attracting insects and rodents.

The waste should not be treated with chemical disinfectants like chlorine before being disposed of because these chemicals destroy the microorganisms that are important for biological decomposition. Only placenta waste should be disposed into the pit. Ash, charcoal and lime may be added to the pit to reduce odours.

When the level of waste reaches 50 cm from the surface, the pit should be closed down. The location and date of closure should be recorded.

It should be possible to reuse the pit after enough time has elapsed. Decomposition will depend on factors such as the microbial and chemical conditions, temperature and humidity.

If it is necessary to remove material from an old pit, leave it for two years after the closure of the pit to maximise the elimination of pathogens.

A secondary placenta pit may be used while the contents of the first pit degrade.

3.6 ENVIRONMENTAL CLEANING

Environmental contamination plays a role in the transmission of healthcare acquired infections (HAIs) in healthcare settings. Environmental cleaning is a fundamental intervention for infection prevention and control (IPC). It is a multifaceted intervention that involves cleaning and disinfection (when indicated) of the environment alongside other key program elements to support successful implementation (e.g., leadership support, training, monitoring, and feedback mechanisms). To be effective, environmental cleaning activities must be implemented within the framework of the facility IPC program, and not as a standalone intervention.

ENVIRONMENTAL CLEANING Basic service (JMP)
Basic protocols for cleaning available, and staff with cleaning responsibilities have all received training.

Cleaning procedures should be according to the PNG Infection Prevention Policy Guidelines for Health Facilities. Other guidelines for environmental cleaning include: CDC and ICAN, 2019. Best Practices for environmental cleaning in healthcare facilities in resource limited settings, and WHO, 2008. *Essential environmental health standards in healthcare.*

3.6.1 Staffing

There should be staff appointed with clear responsibility for cleaning (i.e. dedicated to cleaning). Cleaners may be part-time in small healthcare facilities with limited inpatient facilities, but most large health centres and hospitals will require full time, dedicated cleaning staff.

The importance of cleaners. Effective environmental cleaning programs need adequate and trained staff (photo by Penny

Cleaning staff should always be paid positions that have:

- written job descriptions (which are explained to them, including duties)
- structured, targeted training/adult learning (e.g., in-service, annual refresher, when new equipment is introduced) which is accessible (including for people with low literacy), empowering and motivating
- defined performance standards or competencies
- access to an on-site supervisor to ensure theycan safely perform their work (e.g. address supply shortage, safety concerns)
- access at all times to safety equipment including PPE, and safe cleaning products to perform their work.

The required number of cleaning staff will vary based on several of factors, including:

- number of patient beds
- occupancy level
- type of cleaning (e.g., routine or terminal)
- types of patient care areas.

Figure 11: Training and education of cleaning staff

Training for cleaning staff should be based on the environmental cleaning policy of the healthcare facility and PNG national guidelines. It should be structured, targeted, delivered in the right style, e.g., participatory, as well as mandatory prior to staff working independently within the healthcare facility.

1. Training content should include, at a minimum:

2. general introduction to the principles of IPC, including transmission of pathogens, the key role cleaning staff play in keeping patients, staff and visitors safe and how cleaning staff can protect themselves from pathogens
3. detailed review of the specific environmental cleaning tasks for which they are responsible, including review of SOPs, checklists and other job aids
4. when and how to safely prepare and use different detergents, disinfectants, and cleaning solutions
5. how to prepare, use, reprocess, and store cleaning supplies and equipment (including PPE)
6. participatory methods, hands-on component with demonstration and practice
7. visual reminders that show the cleaning procedures (i.e., without the need for a lot of reading)
8. orientation to the facility layout and key areas for the cleaning program (e.g., environmental cleaning services areas)
9. other health and safety aspects, as appropriate.

10. Develop the training program according to the intended audience, in terms of education and literacy level.

11. Develop training content specifically for cleaning staff who may be responsible for cleaning procedures in specialized patient areas—particularly high-risk areas, such as ICUs, operating rooms and maternity units.

12. Maintain training records, including dates, training content, and names of trainers and trainees.

13. Select appropriate qualified trainers at a facility or district level—generally, staff with IPC training who have been involved in the development of environmental cleaning policy are best qualified. They could be members of existing IPC or hygiene committees, the cleaning program manager, and/or local or district-level Health staff.

14. Conduct periodic competency assessments and refresher trainings as needed (e.g., at least annually, before introduction of new environmental cleaning supplies or equipment).

15. Focus refresher trainings on gaps identified during competency assessments and routine monitoring activities.

Source: CDC and ICAN. 2019. *Best Practices for Environmental Cleaning in Healthcare Facilities in Resource-Limited Settings*

3.6.2 Cleaning schedule and monitoring

- The healthcare facility should have a written cleaning schedule for every patient care area and noncritical patient care equipment, specifying the frequency, method, and staff(s) responsible.
- Standard Operating Procedures should be available for environmental cleaning including step-by-step instructions on the cleaning process.
- The healthcare facility should have cleaning job aids including posters, pictorial guides, and other visual reminders for key cleaning tasks.
- The healthcare facility should have cleaning record sheets (logs) which specify the location (i.e., room, ward), cleaning session (e.g., routine cleaning, terminal cleaning), date, and name/signature of cleaning staff.
- Routine (weekly) monitoring of cleaning should be carried out by supervisors in a friendly way with cleaning staff. Feedback should be given to cleaning staff on performance in a manner which is positive and uses motivation and empowering approaches.

3.6.3 Cleaning process

- Routine programmed cleaning of surfaces and fittings is carried out to ensure that the health-care environment is visibly clean, and free from dust and soil. All horizontal surfaces are cleaned at least daily and whenever they are soiled.
- The intensity of cleanliness maintained is appropriate to the likelihood of contamination and the degree of asepsis required (refer to table 4).

Table 5: Cleaning types and areas

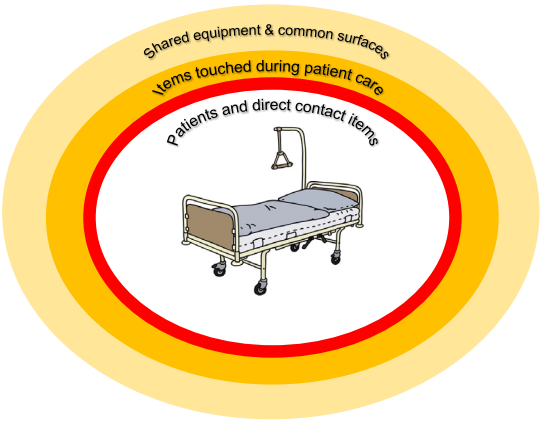
Type of cleaning	Where	How often
Sweeping	Offices and other non-patient areas	*normal daily domestic cleaning*
Wet mopping	Waiting areas, consulting rooms, non-infectious disease wards, pharmacy	*daily*
Cleaning with a detergent or disinfectant solution, with separate cleaning equipment for each room	Infectious disease or isolation wards, protective isolation wards for highly susceptible patients and protected areas, such as operating suites, delivery rooms, intensive care units, premature baby units, casualty departments, haemodialysis units, laboratory, laundry, kitchen, sterilization services.	*daily, whenever soiled*
Cleaning with a detergent or disinfectant solution, with separate cleaning equipment for each room	Operating suites and delivery rooms	*daily, and after each intervention*

- In cholera treatment settings, a 0.2 % chlorine solution or other disinfectant should be used for cleaning floors, walls and beds daily and whenever soiled. Soiled clothing and bedding should be disinfected in 0.2 % chlorine solution for 10 minutes and then rinsed, before being washed and dried as usual.
- Any areas contaminated with blood or body fluids are cleaned and disinfected immediately.
- In mortuaries, mortuary equipment should be cleaned after each post mortem, and general cleaning should be done regularly (daily).

The cleaning process should:

1. Proceed from **cleaner to dirtier areas** to avoid spreading dirt and microorganisms.
2. Proceed from **high to low** (top to bottom) to prevent dirt and microorganisms from dripping/falling down and contaminating already cleaned areas.
3. Proceed in a **methodical, systematic manner** to avoid missing areas—for example, left to right or clockwise.
4. Clean spills of blood or body fluids immediately.

Figure 12: Example of a cleaning strategy inwards from cleaner to dirtier areas



Source: CDC and ICAN. 2019.

3.6.4 Cleaning stations, environmental cleaning supplies and equipment

Cleaning station

There should be at least one designated environmental cleaning services area (cleaning station) within the healthcare facility for preparation, storage, and reprocessing of reusable cleaning equipment and supplies. This area should be a dedicated space that is not used for any other purposes.

Environmental cleaning products should be stored in a manner that:

- eliminates contamination risk and degradation
- minimizes contact with personnel (e.g., inhalation, skin contact)

The cleaning station should have a utility sink or floor drain for safe disposal of used solutions.

Supplies

Adequate supply of water must be available for cleaning. Wastewater must be disposed of safely and appropriately to prevent contamination of the environment and surrounding community.

The healthcare facility is responsible for ensuring a continuous supply of cleaning products and equipment.

Essential supplies and equipment for environmental cleaning include:

- detergent – neutral (pH between 6 and 8) that is easily soluble (in warm and cold water)
- disinfectant - sodium hypochlorite 1-2% or 70% alcohol (for disinfecting after cleaning)
- surface cleaning supplies: portable containers (e.g., bottles, small buckets) for storing environmental cleaning products (or solutions) and surface cleaning cloths
- floor cleaning supplies: mops or cleaning squeegee with floor cloths, buckets, and wet floor/caution signs
- PPE for cleaning staff.

PPE

- At a minimum, personal protective equipment for cleaners should include rubber gloves, rubber boots and an impermeable apron. When there is a risk of splash in the face, cleaners must wear eye protection and surgical masks.
- Reusable PPE should be cleaned and disinfected.

Mops

- Reusable mops must be washed separately from other clothes and linen. Mops should not be left wet. Mops should be stored dry.
- Mops should be changed daily and immediately following the cleaning of blood, body fluids secretions and excretions, after cleaning a contaminated area, operation rooms or isolation rooms.

Mops should be laundered daily and placed with the mop head up to allow them to fully dry (photo by Penny Dutton)

Adequate disposal of wastewater from cleaning is required such as this deep sink for bucket slops (photo by Rhonda Clement, WaterAid PNG)

3.6.5 Kitchen/Food preparation area

- Separate mops, buckets and cleaning chemical supplies should be used for the kitchen.
- All floors should be cleaned twice per day.
- Cleaning of equipment for food preparation should be done at least twice per day.

3.6.6 Laundry and linen

Laundry facilities, with soap or detergent, hot water and a disinfectant (such as chlorine solution) should be available for inpatient settings.

- Soiled linen is placed in appropriate bags at the point of generation and predisinfected, washed in hot water (70º-80ºC if possible) OR soaked in clean water with bleaching powder 0.5% for 30 minutes, rinsed and dried.
- Clean and soiled linen are transported and stored separately, in different (marked) bags.
- Beds, mattresses and pillows are cleaned between patients and whenever soiled with body fluids.

Large deep sinks must be provided to facilitate hand washing of bed linen eg. several sheets. Small sinks are not practical and must be avoided. Liquid wastes from the laundry operations shall be neutralized to prevent any cross-contamination before disposal in the facility's drainage/wastewater system.

3.6.7 Cleaning management

The healthcare facility should have a designated cleaning program manager or focal point. Specific responsibilities include:

- Developing the facility-specific environmental cleaning policy
- Developing and/or maintaining a manual of standard operating procedures for all required cleaning tasks at the facility
- Ensuring that training activities are carried out for all new staff and for existing staff on a recurring basis
- Ensuring that routine monitoring is implemented and results are utilized for program improvement
- Ensuring that cleaning supplies and equipment are available in required quantities and in good condition
- Addressing staff concerns and patient questions about the cleaning program.
- Communicating with cleaners, while:
    - Understanding the barriers or challenges to cleaning and helping
    - cleaners to overcome those
    - Recognising that cleaners may experience discrimination and harassment and have less power in a healthcare facility
    - Recognising that cleaners may have a disability, low literacy, or experience discrimination and therefore need support to do their job.

For monitoring of environmental cleaning, both direct (e.g., performance observation) and indirect methods (e.g., environmental marking with UV pen) should be used. Monitoring methods should be objective.

Mechanisms should be available that give staff, patients, guardians, visitors and the general community a way to provide feedback on the cleanliness of the healthcare facility. This could include direct consultations, surveys, and suggestion/feedback boxes where comments can be left anonymously.

The healthcare facility should have an annual budget allocated which includes:

- personnel (salary and benefits for cleaning staff, supervisors)
- staff training (at least in-service and annual refresher)
- environmental cleaning supplies and equipment, including PPE for cleaning staff
- equipment for program monitoring (e.g., fluorescent markers, UV-lights)
- production and printing costs for checklists, logs and other job aids
- infrastructure/services costs such as water supply and wastewater services (as applicable)
- Other administrative costs.

3.7 DELIVERY ROOMS AND POST NATAL WARDS

3.7.1 Quality Maternal and Newborn care

The WHO (2016) *Standards for improving quality of maternal and newborn care in health facilities* identify the period around childbirth and immediate postnatal care as the most critical for saving the maximum number of maternal and newborn lives, and preventing stillbirths.

The JMP has developed a specific set of questions and indicators which focus on WASH and IPC in the delivery room to support improving quality maternal and new born care under WHO Standard 8 – essential physical resources. The delivery room is defined as the "the room where delivery is intended to take place and the umbilical cord is cut".

To meet the needs of women and newborn babies and enable a clean and safe birth, healthcare facilities with delivery services need to be adequately equipped with WASH and IPC services, which must be available at every stage during labour, delivery, and postnatal care for the woman and her baby.[16]

3.7.2 Minimum requirements

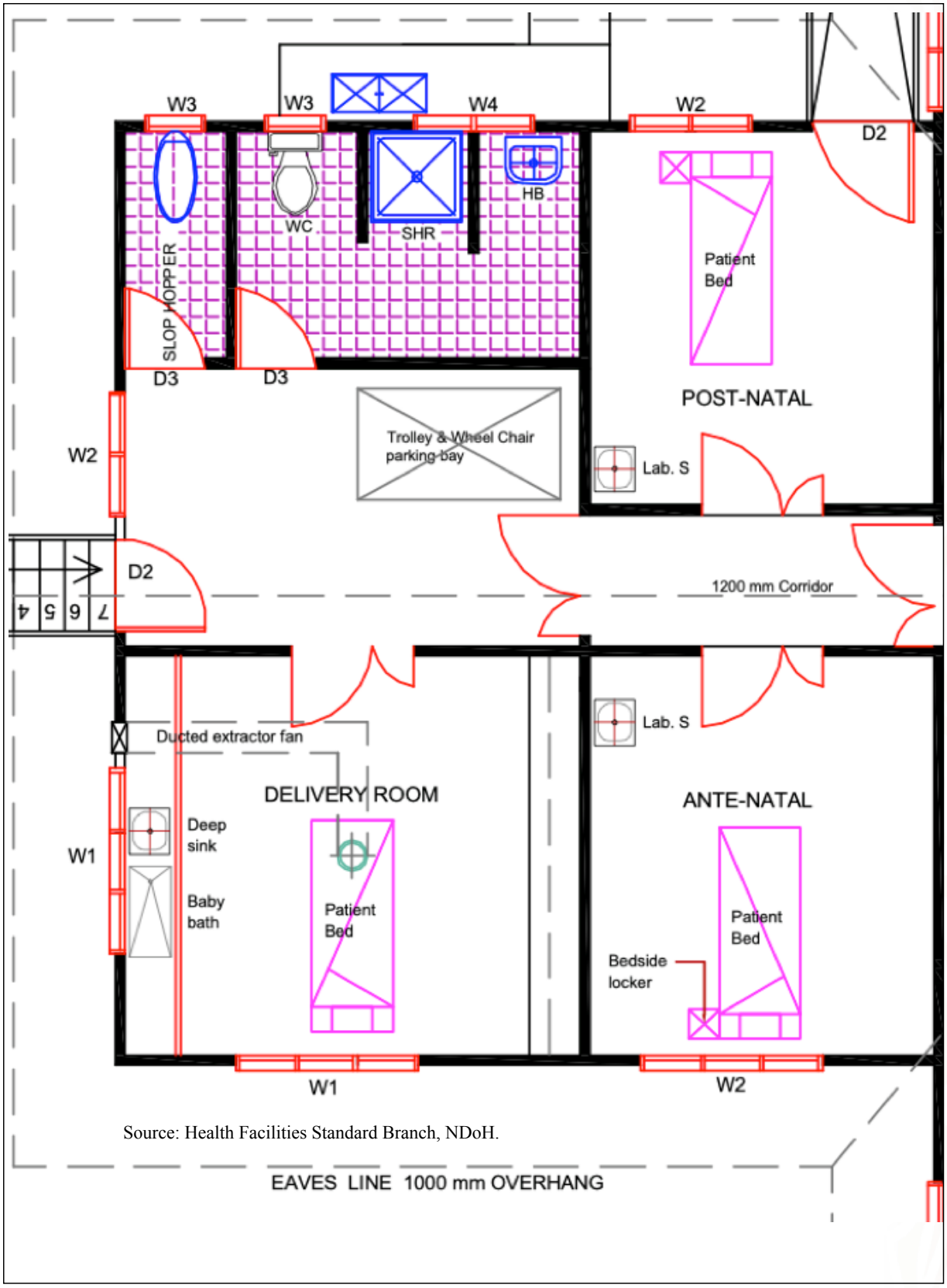
The minimum requirements for WASH and IPC in delivery rooms and post natal wards in Papua New Guinea are:

- The delivery room and post natal area have clean running water (piped with tap, or storage container with tap)
- Water is available 24 hours a day

- ☐ At least one single sex/gender neutral toilet is available to women in labour and following birth (Figure 13)
- ☐ The toilet is usable (available, functional, private)
- ☐ The toilet is accessible to women in labour and to women who have recently delivered (no steps, with handrails and space for assistance)
- ☐ The delivery room and post natal area have a functional handwashing facility (with water and soap)
- ☐ A poster for hand hygiene showing 7 steps of hand hygiene according to WHO guidelines is displayed at the hand washing facility
- ☐ Disposable/single use hand drying materials are available at hand hygiene points
- ☐ The delivery room has sterile materials and equipment for clean births, including:
  - Sterile blade to cut the umbilical cord
  - Sterile cord tie
  - Clean surface for women to deliver on (or clean material to put underneath the woman)
  - Disposable gloves
- ☐ Women have access to a bathing area which:
  - Has water available
  - Is free from obstacles
  - Is large enough to allow someone to assist the woman
  - Has drainage of wastewater
  - Has screens or doors for privacy
- ☐ Waste should be segregated into at least three labelled bins for sharps, infectious, and other waste
- ☐ Placentas should be disposed of safely (by incineration or waste pit)
- ☐ Basic protocols should exist for the cleaning the delivery room including:
  - Cleaning a delivery bed
  - Cleaning a floor
  - Cleaning a sink
  - Cleaning a spillage of blood or bodily fluids
- ☐ A cleaning roster or schedule for cleaning the delivery room and post natal ward is available
- ☐ There is an outline of roles and responsibilities for cleaning the delivery room and post natal ward
- ☐ Staff responsible for cleaning the delivery room and post natal ward should all have received training.
- ☐ Cleaning should be carried out as per IPC guidelines.

[16] WHO/UNICEF, 2019. *Monitoring WASH and related IPC in delivery rooms – draft module*

Figure 13: Floor Plan of Toilet and Bathing Facilities in CHP Delivery Area



Source: Health Facilities Standard Branch, NDoH.

3.8 WASH IN HEALTHCARE FACILITIES AFFECTED BY EMERGENCIES

Emergency situations are any incident affecting the healthcare facility through a loss of infrastructure, loss of electrical power, loss of equipment, loss of staff, interruption to supply chains, or patient surge due to sudden communicable disease epidemics (Ebola, SARS, Cholera, anthrax, Avian Influenza, COVID-19 etc.), natural disasters (eg. floods, earthquakes, landslides, droughts, volcanic activity), or conflict. These incidents disrupt routine functioning of healthcare facilities, and may lead to a total or partial suspension of WASH services.

These incidents may cause an overwhelming surge in the number of patients at the healthcare facility. If there is inadequate and insufficient water supply, sanitation facilities and hygiene to cope with the influx of patients, the risks of infection transmission may increase significantly. Healthcare facilities may also find that staff are personally affected by the emergency and there may not be enough staff to deal with infection control, cleaning, disinfection and waste collection requirements.

3.8.1 Preparedness and response planning

Prior to any emergency, a response plan, which details the roles and responsibilities of various stakeholders, should be prepared by the healthcare facility management committee.

WASH disaster preparedness and risk reduction should consider the following:

Back up arrangements for water and electricity

- Protection of critical WASH equipment and supplies from natural disasters and conflict
- Stockpiling WASH supplies for use during a disaster eg. soap, buckets
- Maintenance of WASH infrastructure and equipment to ensure working order
- Training of staff on emergency WASH response
- Identifying potential sources of staff surge capacity during an emergency
- Identifying potential sources of patient overflow capacity during an emergency, eg. sites that can be converted to patient care areas.
- Ensuring infection control and waste management protocols are followed during normal operation
- Ensuring staff vaccinations are up to date
- Establishing coordination, including identifying an emergency focal point.

3.8.2 Conducting rapid assessment of WASH

When the emergency incident occurs, a WASH and IPC needs assessment should be carried out by HCF management committee. This needs assessment should identify the size of the problem/impacts as well as the needs requiring external support. The needs assessment is crucial for informing authorities at national, state/regional, district, township, and HCF levels of the priorities.

The WHO *Comprehensive Assessment Tool (CAT) for WASH in HCFs in emergencies* will guide the HCF management committee on the WASH needs during emergencies.

Priority needs and key interventions

Responses to the emergency should be aimed at addressing the critical and priority needs identified by the HCF.

Priority response actions should aim at reducing:[17]

- Infections to health care workers who are providing services at the HCFs.
- Infections amongst the affected communities attending the HCFs.

Key interventions may include:

- Ensure that water for all uses is treated and safe. All water supplies in the HCF, regardless of use, should be chlorinated so there is at least 0.5mg/l free chlorine residual at the tap. During diarrheal disease epidemics this should be increased to 1.0mg/l at the tap.
- Ensure that sufficient quantities of water are available to meet the normal minimum daily requirements. Interventions may be needed to repair the water supply (or power supply), assure adequate quantities of fuel, install basic emergency water treatment units, carry out bulk chlorination, or organise water tanking. Installation of temporary water storage facilities such as demountable steel water tanks, bladder tanks or polyethylene tanks may be needed.
- Ensure that there are functional handwashing facilities with water, soap and safe wastewater disposal at every point of care and essential area. Simple equipment may be used, such as a jug of water, a basin and soap.
- Ensure there are enough numbers of adequate, accessible, appropriate and safe toilets for staff, patients and attendants that do not contaminate the health care setting or water supply. Extra pit latrines with reasonable privacy may need to be provided.
- Ensure the rapid and safe disposal of wastewater. Simple soak-aways equipped with grease traps may be needed.
- Ensure that stormwater drainage is functioning. This may require ensuring that drainage ditches and canals exist, and they are unblocked, properly sized, levelled, and functional.
- Ensure that the health-care facility has enough materials and staff to routinely clean and disinfect environmental surfaces. This may require more materials, installing plastic sheeting to facilitate cleaning in temporary facilities, and training cleaning staff in infection control measures.
- Ensure safe segregation, collection, transport, treatment and disposal of health-care waste.
- Ensure that there are enough stocks of personal protective equipment.
- Patients and attendants should be repeatedly informed of essential hygiene behaviours, starting within 30 minutes of arrival.

3.8.3 Isolation areas

Where isolation areas are set up for the management of patients during outbreaks of highly infectious diseases, these areas should have their own dedicated toilets, bathing areas, laundry and health care waste disposal facilities, with disinfection of waste and wastewater. Refer to WHO, 2011. WASH in health care facilities in emergencies.

[17] Guidance is provided by WHO, 2011, *WASH in Health Care Facilities in emergencies, Technical Note*

4. MANAGEMENT

4.1 IMPLEMENTING CHANGE

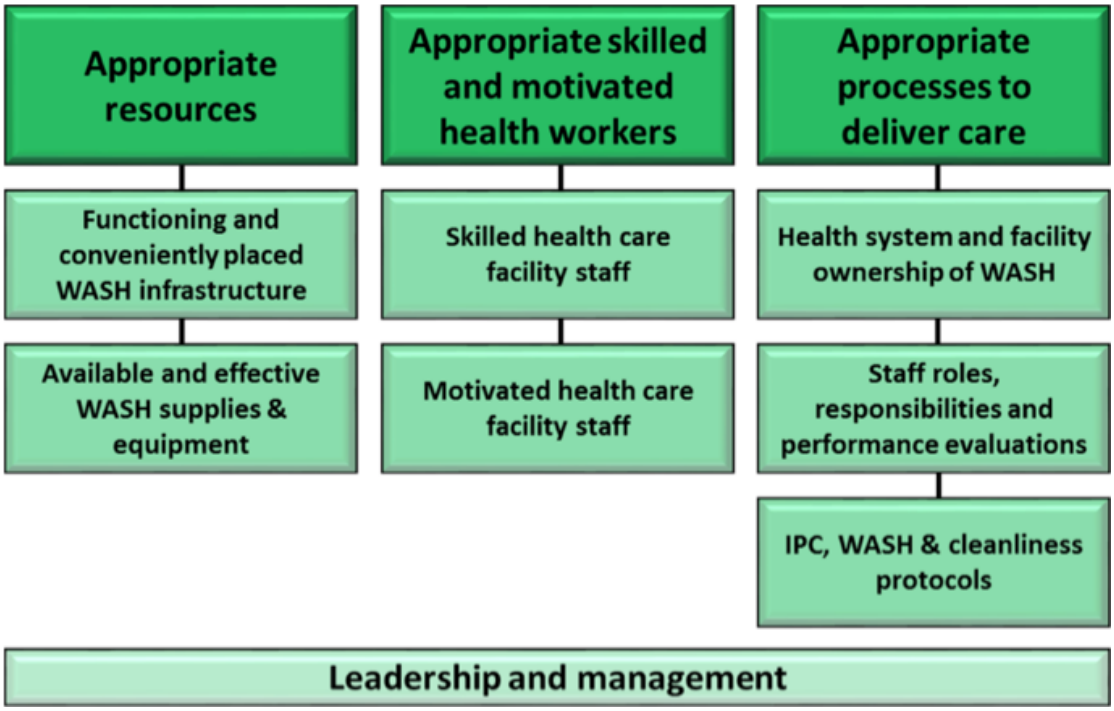
The National Government, through NDoH, donors and development partners in the WASH and health sectors can empower HCFs to make incremental WASH improvements and provide better quality of care for patients, especially mothers, newborns and children.

Quality of care improvements center on providing standardized care and improving the interaction between providers and patients. These improvements can be organized along three axes: resources, staff and processes.

The framework below, adapted from the WHO's Quality of Care framework (http://www.who.int/maternal_child_adolescent/documents/improvingmaternal-newborn-care-quality/en/) and the USAID ASSIST Project (http://www.who.int/maternal_child_adolescent/topics/qualityofcare/N_Livesley_ppt_webinar2903.pdf?ua=1), aligns WASH in HCF within the broader frame of quality improvement.

Stakeholders at all levels of the healthcare system should be able to effectively plan, fund, manage, operate and maintain, essential WASH services based on these guidelines.

Figure 14: A Framework for providing high quality health care via WASH



Source: Adapted from the WHO's Quality of Care framework

4.2 ROLES AND RESPONSIBILITIES

The provision of WASH services in healthcare facilities lies primarily within the health sector. However, other actors responsible for water supply, sanitation, hygiene, waste management, and environmental cleaning play a critical role in ensuring that WASH services and standards in healthcare facilities are met and sustained. Table 6 gives an overview of the roles and responsibilities of primary stakeholders involved in WASH in healthcare facilities.

Table 6: Roles and Responsibilities for WASH in HCF

Stakeholder	Roles and responsibilities
National Department of Health	☐ Formulate national policy and strategy. ☐ Set standards and guidelines. ☐ Lead national coordination on WASH in HCF ☐ Ensure all relevant national health priorities and activities include targets and plans related to WASH. ☐ Regulate activities of medical professionals and facility managers to ensure compliance with WASH and infection prevention and control guidelines and policies. ☐ Ensure pre-service in and in-service training of all cadres of healthcare workers includes WASH-relevant training.
WASH PMU/ DNPM	☐ Coordinate and collaborate with international development agencies and countries to support the improvement of WASH in healthcare facilities. ☐ Monitor progress on improving WASH in HCFs including through the WASH MIS ☐ Ensure WASH implementation meets National WASH policy, standards, and targets.
Provincial WASH Committee	☐ Mobilise political, financial and technical support for WASH improvements. ☐ Support and coordinate all improvements to WASH in HCFs ☐ Oversee all WASH implementation in the province
Provincial Health Authority	*Senior Executive Management (SEM)* ☐ Provide human and financial resources and direction for setting, achieving and maintaining WASH targets. ☐ Advocate for WASH in healthcare facilities to Provincial and District levels. ☐ Form partnerships with other organisations through Memoranda of Understanding or service level agreements and coordinate with partners. ☐ Ensure that EHOs and other Program Officers have planned activities aligning to the WASH in HCF Minimum Requirements. ☐ Provide staff development plans. ☐ Advocate for healthy HCFs through the introduction of Healthy Islands Approach. ☐ Establish WASH reporting systems. ☐ Ensure EHOs are actively engaged in the construction of new HCFs. ☐ Provide incentives for HCFs to meet minimum requirements. *Program managers, coordinators at the Provincial Levels* *District Health Officers at District Levels* ☐ Champion clean and safe facilities across the province and ensure compliance with infection prevention and control and WASH guidelines and standards.

	• Lead coordination with other departments and stakeholders, including through the Provincial WASH Coordination Committee. • Monitor adherence to standards. Provide advice and guidance on identifying problems and recommending solutions for WASH in healthcare facilities. • Provide periodic assessment and monitoring of WASH services and behaviour practices. • Undertake reviews and routine compliance checks of WASH and infection prevention and control standards, policies and procedures as specified in these guidelines. • Plan, budget for, and implement programmes to monitor and maintain WASH facilities and practices. • Ensure all standards, protocols and standard operating procedures related to WASH and infection prevention and control are available, up-to-date and accessible to all staff at all times. • Ensure healthcare facility staff are recruited and adequately trained and that their roles and responsibilities are clear. • Integrate WASH in to IPC committee activities *Environmental Health Officers (EHOs)* • Work collaboratively with other stakeholders, development partners, Provincial and District WASHCOM in working towards meeting of HCF minimum standard requirements. • Ensure compliance with standards, policies and procedures relating to water supply, sanitation, hygiene, waste management, and environment cleaning as specified in the Guidelines. • Ensure community participation and empowerment to build strong relationships between the health facility and the community. • Advocate on behavior change for HC WASH facilities in communities • Ensure WASH infrastructure is climate change resilient and culturally relevant. • Identify training needs and provide training for HCF Staff • Ensure water quality tests are done for all HCF water sources, including Urban Centers • Ensure WASH is designed to meet the minimum standard requirements in newly proposed HCFs, inclusive of designs for people with special needs. • Develop WASH in HCF reporting template and ensure timely reporting • Participate actively in the supervision and construction of WASH facilities in HCFs. • Maintain routine visits and advocate for sustainability of WASH facilities. • Provide WASH reports, baseline data and indicate WASH needs.
Officer in Charge of Healthcare facility (public, private and church-run services)	• Ensure compliance with standards, policies and procedures relating to water supply, sanitation, hygiene, waste management, and environment cleaning as specified in these guidelines. • Ensure all standards, protocols and standard operating procedures related to WASH and infection prevention and control are available, up-to-date and accessible to all staff at all times. • Serve as a champion and role model for hygiene and encourage healthcare staff to practice appropriate hygiene behaviours. • Plan and budget for/allocate funds for WASH improvements. • Monitor and report on water quality.

Health staff	Carry out infection prevention duties in compliance with the National Department of Health Guidelines for Infection Prevention including hand hygiene and environmental hygiene. Encourage patients, guardians, and visitors to adopt appropriate hygiene behaviours and act as role models of good behaviour. Participate actively in maintaining WASH facilities, and report when systems are not functioning. Advise patients, guardians, visitors, and new staff on the use of handwashing stations, toilets and bathrooms. Ensure consumable items are available and resupplied to comply with these Guidelines eg. soap and paper towels available at all handwashing stations.
Cleaners and Caretakers	Clean and disinfect all floors and surfaces. Waste collection, treatment and disposal. Care for and maintenance of water and sanitation and hygiene facilities. Practice good hand and personal hygiene.
Health Facility Management Committee	Promote accountability, and good management of facilities (including WASH facilities). Mobilise resources to support the healthcare facility's operation and maintenance. Plan and implement WASH activities for achieving and maintaining the WASH targets. Regularly review plans and achievement and continuously follow up WASH targets. Provide a communication channel between the local community and the health centre.
Patients, visitors and guardians	Use WASH facilities responsibly. Support maintaining cleanliness of facilities Provide essential and honest feedback on the quality of WASH services. Practice good hand and personal hygiene.
Private sector contractors and suppliers	Provide skilled services that comply with national guidelines for construction, operation, maintenance and repair of WASH infrastructure and waste management in healthcare facilities.
District Development Authorities, LLGs	Allocate budget and plan for improvements to healthcare facilities. Provide waste collection and disposal services in urban areas. Liaise with Water PNG on the provision of treated piped water supply in urban areas Coordinate with healthcare facility
Ward and village development committee (rural)	Coordinate with healthcare facility
Water PNG	Provide treated piped water supply to urban HCFs Provide technical support and advice on water in non-urban areas as requested

National and international funding bodies, development partners, technical agencies, NGOs	□ Collaborate and communicate with NDoH and relevant PHA on WASH in HCF activities, including providing data towards national monitoring of WASH in HCF. □ Adhere to the WASH in HCF minimum requirements and Guidelines. □ Provide funding and technical support for new healthcare facilities and WASH infrastructure, upgrades or renovation to existing infrastructure and ongoing maintenance of targets. □ Provide ongoing technical support, training and professional development to WASH and health stakeholders. □ Support National Department of Health to advocate for and promote improved WASH services and increased funding support for healthcare facilities. □ Support strengthening cross-sectorial collaboration and coordination between development partners and all levels of government.

4.3 OPERATIONS AND MANAGEMENT OF WASH IN HEALTHCARE FACILITIES

All aspects of WASH (water supply, sanitation, hygiene, healthcare waste management, and environmental cleaning) should be supported through budget, supplies, staff training and supervision to ensure WASH facilities and services are improved and continue to function.

4.3.1 Health Facility Management Committee

- Each healthcare facility should have a Health Facility Management Committee, with responsibilities for WASH, led by the facility manager. In small healthcare facilities the Committee will be formed with appropriate persons available. For WASH in particular, it is important that the Health Facility Management Committee has a gender balance, and a diversity of members representing all roles in the healthcare facility (from doctors to cleaners).
- The Health Facility Management Committee is responsible for ensuring the healthcare facility adheres to these WASH Guidelines and other standards and guidance on WASH and IPC from the National Department of Health and other ministries.
- Health facility management committees may need assistance from PHAs (Environmental Health Officers) to setup, and provide training on committee duties.

4.3.2 WASH Budget

- Healthcare facilities should have a dedicated budget line for expenses related to WASH including: operations (eg. electricity, waste collection fees), maintenance (eg. septic tank desludging, pipe repairs), equipment (eg. bins, mops, buckets), personal protective equipment (PPE), and availability of consumables eg. rubbish bags, disinfectant, soap, paper towels, disposable gloves, sanitary pads, fuel for incinerator.
- Budget should be allocated for cleaning staff to ensure cleaning is done in accordance with the minimum requirements.
- Extra budget may be needed for remote areas for transport costs of materials
- Extra budget may be needed for WASH in flood prone and dry area eg. due to extra costs of borehole drilling, flood protection for toilets and drainage.

4.3.3 Staff Occupational Health and Training

- All healthcare providers and workers of healthcare facilities should attend any prescribed WASH, HCWM, and IPC training courses.
- For occupational health and safety, all staff dealing with hazardous materials including cleaners and waste handlers should be provided:
    - Personal Protective Equipment (PPE) – caps, masks, heavy duty gloves, goggles, aprons and shoes

- Medical examinations – pre employment medical examinations and periodic medical examinations
- Immunization/ Vaccination – at least ATT and HBV vaccine
- Special allowance wherever possible.

4.3.4 Records and reporting

- Appropriate documentation should be kept on the operation of WASH infrastructure eg. pump servicing, septic tank emptying, drainage cleaning. For healthcare waste, appropriate documentation should be kept on waste generation quantities (including by type,) treatment and disposal (both on site and off site).
- Monitoring of WASH in the healthcare facility should be performed every six months by the Health Facility Management Committee. Monitoring reports should be submitted to the Provincial Health Authority.

4.4 WASH IN HEALTHCARE FACILITY IMPROVEMENTS

Existing healthcare facilities can reach, and exceed, the minimum requirements in WASH infrastructure and practices through incremental improvements. Improvements should follow a continuous cycle of assessment against these minimum requirements, risk prioritisation and targeted actions. These improvement efforts should be integrated into a facility's existing activities, such as infection prevention and control, antimicrobial resistance and other quality of care improvement activities.

In deciding how to approach and prioritise improvements, it is useful to conduct an assessment of WASH status for the healthcare facility. This can be done using the WASH-FIT (facility Improvement Tool).

4.4.1 WASH-FIT

Monitoring the improvement of WASH and IPC in healthcare facilities over time requires regular and detailed monitoring. An expanded set of questions that go beyond the basic WASH services and SDG reporting are needed to assist with monitoring facility improvement, including baseline and progress monitoring.

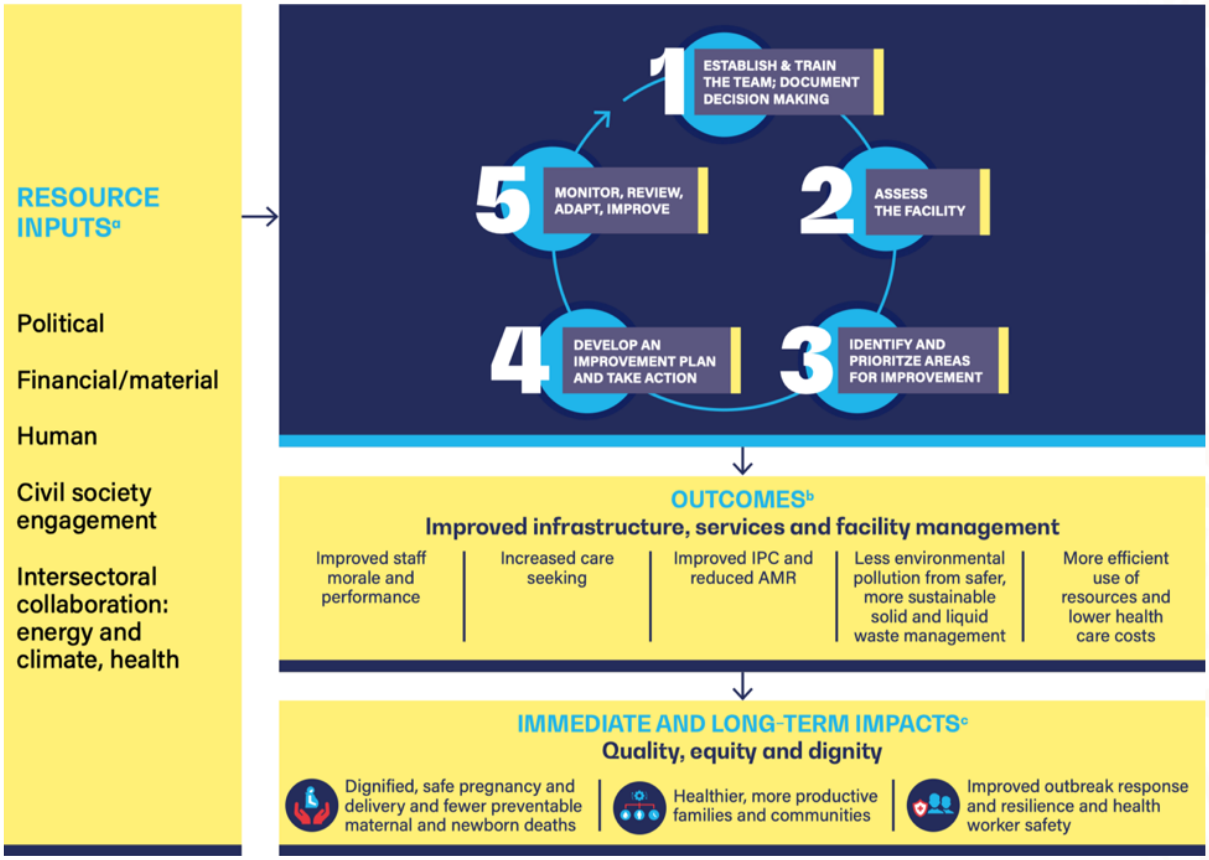
To guide WASH in healthcare facility improvements and sustainable maintenance, WHO and UNICEF have developed WASH FIT (water and sanitation for health facilities improvement tool). WASH FIT is designed for use by healthcare facility managers and sta to make improvements in settings where resources are limited. WASH-FIT is being used by several NGOs and WHO with some modification for the PNG context.

WASH FIT is summarised as:

- An adaptable and systematic tool for healthcare facilities to use internally to prioritise and maintain WASH improvements, focusing on actions.

- Covers seven key domains: water, sanitation, personal hygiene, cleaning/ disinfecting, healthcare waste management, environmental management and facility management.
- Brings together all those who share responsibility for providing services, including legislators/policymakers, district health officers, hospital administrators, water engineers and community WASH and health groups.
- Draws upon WHO's Water Safety Plan and Sanitation Safety Planning, as well as WHO recommendations for infection prevention and control.
- Intended for primary healthcare facilities as part of broader quality improvements in healthcare settings.

Figure 15: Overview of WASH FIT



Source: WHO, 2022. WASH-FIT A practical guide for improving quality of care through water, sanitation and hygiene in health care facilities. Second edition

A comprehensive guide is available: WHO. 2022. WASH FIT: A practical guide for improving quality of care through water, sanitation and hygiene in health care facilities. Second edition, together with manuals for trainers and other resources through the WASH-FIT portal: *https://www.washinhcf.org/wash-fit.*

WASH-FIT in PNG is currently implemented using a standard version, however adaptation for the PNG context may be available in future.

5. MONITORING AND EVALUATION

Improving and managing WASH services requires strong and consistent monitoring mechanisms to measure progress and direct efforts where needs are greatest. Monitoring is required at national, sub-national and facility level. WASH indicators should be built into routine monitoring for health and WASH sectors. Monitoring records should be developed at the national or sub-national level, so that monitoring reports and data can be compared across health facilities and tracked over time..

5.1 ROUTINE MONITORING OF WASH IN HEALTHCARE FACILITIES

5.1.1 WASH MIS

Monitoring of WASH in Papua New Guinea's healthcare facilities against the WHO/UNICEF Joint Monitoring Programme (JMP) basic indicators for WASH in healthcare facilities and WASH and IPC in delivery rooms, can be undertaken through the WASH PMU National WASH MIS.

These basic indicators make up the JMP service ladders which are used for global monitoring and provide internationally comparable statistics across countries and over time. Any indicators used to monitor WASH in healthcare facilities in PNG should reference these global indicators and levels of service. These indicators have been standardized and developed to rapidly assess WASH using simple questions across five domains:

- ❒ Water
- ❒ Sanitation
- ❒ Hygiene
- ❒ Healthcare waste management
- ❒ Environmental cleaning services.

The basic services levels for WASH in healthcare facilities are shown in Table 7. The JMP tool enables the proportion of healthcare facilities with basic water, sanitation, hygiene, healthcare waste management, and environmental cleaning services to be calculated. This would meet PNG's minimum global reporting obligations to the JMP.

Table 7: JMP Basic service levels for monitoring WASH in healthcare facilities

Water	SanitationH	ygiene	Healthcare Waste	Environmental Cleaning
Basic Service	**Basic Service**	**Basic Service**	**Basic Service**	**Basic Service**
Water is available from an improved source located on premises	Improved sanitation facilities are usable 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 people with limited mobility.	Functional hand hygiene facilities (with water and soap and/or alcohol-based hand rub) are available at points of care, and within 5 meters of toilets	Waste is safely segregated into at least three bins and sharps and infectious waste are treated and disposed of safely.	Basic protocols for cleaning available, and staff with cleaning responsibilities have all received training.

The JMP has released a draft guidance in 2019 on monitoring WASH and Infection Prevention and Control in delivery rooms to complement the WASH in healthcare facilities service ladder. The questions for monitoring WASH-IPC in delivery settings serve as a resource for national and sub-national monitoring. Service levels for WASH and related IPC in delivery rooms are shown in Table 6.

Table 8: JMP Basic service levels for monitoring WASH in the delivery room

Water	SanitationH	ygiene	Healthcare Waste	Environmental Cleaning
Basic Service	**Basic Service**	**Basic Service**	**Basic Service**	**Basic Service**
Running water is available in the delivery room	Usable (available, functional, private) and single sex toilets are accessible to women	Hand washing facilities (with soap and water) and equipment for clean births are available in the delivery room and women have access to a bathing area	Waste is segregated into bins for sharps, infectious and other waste are segregated into labelled bins in the delivery room, and placentas are disposed of safely	Basic protocols exist for cleaning the delivery room, and staff with cleaning responsibilities have all received training

Annex G contains the detailed JMP service ladder for WASH in healthcare facilities and WASH and IPC in delivery areas. [18]Sample questionnaires are also included in Annex G.

5.1.2 NDoH MIS

Basic data on water and sanitation is also collected through the NDoH Management Information Systems (HMIS). In future the indicators for WASH will need to be modified to align with JMP indicators.

[18] JMP, 2018. *Core questions and indicators for monitoring WASH in healthcare facilities in the Sustainable Development Goals*. Geneva: World Health Organization and the United Nations Children's Fund (UNICEF)

5.1.3 External accountability

The impacts on and from healthcare facilities extend beyond the healthcare facility grounds. To protect the wider community, healthcare facilities, through the HCF management committee, must be accountable for the safe management of waste off-site including wastewater, and septage that is generated by the healthcare facility. To protect staff, patients, guardians and visitors, healthcare facilities must be accountable for WASH services coming into the healthcare facility including water quality and reliability of municipal water supplies. The HCF management committee should engage with municipal service providers to ensure quality and safety of WASH services entering and exiting the healthcare facility.

5.2 TRAINING AND CAPACITY BUILDING

Staff at the national level of NDoH, health staff at Provincial, District and at the facility level need to be trained to understand the NDoH Guidelines for WASH in Healthcare Facilities and to understand the objectives and indicators for monitoring WASH in HCF. This is needed so that every person has the same understanding of the goal toward quality improvement and how to measure this consistently across different health facilities.

This capacity building for staff will need to be fundamental and ongoing for monitoring (i.e. proper use of checklists, interpretation and implementation of guidelines, rollout of strategies/policies, reporting systems). It is the responsibility of the Provincial Health Authorities and healthcare facility managers to ensure that healthcare facility staff are adequately trained and that their roles and responsibilities regarding WASH in healthcare facilities (including monitoring) are clear.

Annex A. References used in the preparation of the Guideline

Adams, J., Bartram, J., & Chartier, Y., 2008. *Essential environmental health standards in healthcare.* Geneva, Switzerland: WHO Press, World Health Organization. http://www.who.int/water_sanitation_health/publications/ehs_hc/en/.

Australasian Health Facility Guidelines 2016. Revision 7.0

Brikké F, and Bredero M. 2003. *Linking technology choice with operation and maintenance in the context of community water supply and sanitation: a reference document for planners and project staff.* WHO: Geneva

CBM hhot.cbm.org

CDC and ICAN, 2019. *Best Practices for environmental cleaning in healthcare facilities in resource limited settings.* Atlanta, GA: US Department of Health and Human Services, CDC

Global Task Force on Cholera Control, 2019. *Technical Note: Water, Sanitation and Hygiene and Infection Prevention and Control in Cholera Treatment Structures.* https://www.who.int/cholera/task_force/en/

Health Care Without Harm and FHI360 (n.d.) *Technical Specifications: Placenta Pit Document Number: 575*

MMIS, 2010. *Incinerator Guidebook.*

National Department of Health, *National Infection Prevention and Control Policy 2021-2031*

National Department of Health. 2022. *Draft PNG Guidance for Climate Resilient and Environmentally Sustainable Health-Care Facilities*

National Department of Health. *National Health Service Standards 2nd Edition - National Quality Standards for Health Services in Papua New Guinea*

National Department of Health. 2008. *Guidelines for Health-Care Waste Management*

Shaw N, Fewster E, Cavill S. 2019. *Technical guidelines for construction of institutional and public toilets.* WaterAid. https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/technical-guidelines-for-construction-of-institutional-and-public-toilets.pdf

Tilley, E., Ulrich, L., Lüthi, C., Reymond, Ph., Schertenleib, R. and Zurbrügg, C., 2014. *Compendium of Sanitation Systems and Technologies.* 2nd Revised Edition. Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland.

UNICEF, Ministry of Health, SNV, (n.d.) Guidance for making toilets and handwashing easier to access for all in rural Bhutan

United States Environmental Protection Agency, *Types of Septic Systems.* https://www.epa.gov/septic/types-septic-systems

WHO, 2009. *Guidelines on Hand Hygiene in Health Care.* World Health Organization, Geneva

WHO, 2011. *WASH in healthcare facilities in emergencies. Technical notes on water, sanitation and hygiene in emergencies.* World Health Organization, Geneva.

WHO, 2014. *Safe management of wastes from healthcare activities.* Second Edition. World Health Organization, Geneva. http://www.who.int/water_sanitation_health/publications/safe-management-of-wastes-from-healthcare-activities/en/

WHO, 2016. *Standards for improving quality of maternal and newborn care in health facilities.* http://www.who.int/maternal_child_adolescent/documents/improving-maternal-newborn-care-quality/en/

WHO, 2017. *Guidelines for drinking-water quality,* 4th edition. World Health Organization, Geneva. http://www.who.int/water_sanitation_health/publications/dwq-guidelines-4/en/

WHO, 2017. *Safe management of wastes from healthcare activities: a summary.* World Health Organization, Geneva. http://www.who.int/water_sanitation_health/publications/safe-management-of-waste-summary/en/

WHO, 2018, *Improving infection prevention and control at the health facility: Interim practical manual supporting implementation of the WHO Guidelines on Core Components of Infection Prevention and Control Programmes.* World Health Organization, Geneva. https://www.who.int/infection-prevention/tools/core-components/en/

WHO, 2018. *Standards for improving the quality of care for children and young adolescents in health facilities.* World Health Organization, Geneva https://www.who.int/maternal_child_adolescent/documents/quality-standards-child-adolescent/en/

WHO, 2019. *Minimum requirements for infection prevention and control (IPC) programmes.* World Health Organisation: Geneva https://www.who.int/infection-prevention/publications/min-req-IPC-manual/en/

WHO, 2019. *Overview of technologies for the treatment of infectious and sharp waste from health care facilities*. Geneva: World Health Organization.

WHO. 2020. *Guidance for climate-resilient and environmentally sustainable health care facilities.* Geneva: World Health Organization

WHO, FAO and World Organisation for Animal Health (OIE), 2020. T*echnical brief on water, sanitation, hygiene and wastewater management to prevent infections and reduce the spread of antimicrobial resistance*

WHO/UNICEF, 2015. *Water, sanitation and hygiene in healthcare facilities: status in low- and middle-income countries and way forward.* World Health Organization, Geneva. http://www.who.int/water_sanitation_health/publications/wash-health-care-facilities/en/

WHO/UNICEF, 2018. *Core questions and indicators for monitoring WASH in healthcare facilities in the Sustainable Development Goals.* Geneva: World Health Organization and the United Nations Children's Fund (UNICEF). http://www.who.int/water_sanitation_health/publications/core-questions-and-indicators-for-monitoring-wash/en/

WHO/UNICEF, 2018. *Water and Sanitation for Health Facility Improvement Tool (WASH FIT).* http://www.who.int/water_sanitation_health/publications/water-and-sanitation-for-health-facility-improvement-tool/en/

WHO/UNICEF, 2019. *Monitoring WASH and related IPC in delivery rooms – draft module* https://washdata.org/report/jmp-2019-core-questions-delivery-rooms-draft

WHO/UNICEF, 2019. *WASH in healthcare facilities: Global baseline report 2019,* Geneva: World Health Organization and the United Nations Children's Fund. https://www.who.int/water_sanitation_health/publications/wash-in-health-care-facilities-global-report/en/

WHO/UNICEF, 2019. *WASH in healthcare facilities: Practical steps for universal access to quality care.* https://www.who.int/water_sanitation_health/publications/wash-in-health-care-facilities/en/

WEDC, 2002. *Emergency Sanitation - Assessment and Program Design, Permanent Incinerator,* Loughborogh University.

Useful Webpages

JMP WASH data: https://washdata.org/data/healthcare#!/

WASH FIT Digital: www.washfit.org

WaterAid: Our work in healthcare facilities around the world: https://washmatters.wateraid.org/water-sanitation-and-hygiene-in-healthcare-facilities

WHO/UNICEF. Global knowledge portal on WASH in HCF: www.washinhcf.org (completely updated April 2019).

WHO UNICEF. Joint Monitoring Programme for Water Supply, Sanitation and Hygiene https://washdata.org/

WHO. Water sanitation hygiene: http://www.who.int/water_sanitation_health/en/

UNICEF. Water, Sanitation and Hygiene: http://www.unicef.org/wash/

Annex B. Examples for calculating water quantities needed at healthcare facilities

Minimum water quantities required in the healthcare setting

Critical areas	Minimum water quantities (Metric)	Minimum water quantities (Imperial)
Outpatients	5 litres/consultation	1.1 gallon /consultation
Inpatients	40-60 litres/patient/day 15 litres/guardian/day	8.8-13.2 gallons/patient/day 3.3 gallons/guardian/day
Operating Theatre/ Maternity Unit	100 litres/intervention	22 gallons/intervention
Dry or Supplementary Feeding Centre	0.5-5 litres/consultation (depending upon waiting time)	0.11-1.1 gallons/consultation (depending upon waiting time)
Wet supplementary feeding centre	15 litres/consultation	3.3 gallons/consultation
Inpatient Therapeutic feeding centre	30 litres/patient/day 15 litres/guardian/day	6.6 gallons/patient/day 3.3 gallons/guardian/day
Cholera treatment centre	60 litres/patient/day 15 litres/guardian/day	13.2 gallons/patient/day 3.3 gallons/guardian/day
Severe acute respiratory diseases isolation centre	100 litres/patient/day 15 litres/guardian/day	22 gallons/patient/day 3.3 gallons/guardian/day
Viral haemorrhagic fever isolation centre	300-400 litres/patient/day 15 litres/guardian/day	66--88 gallons/patient/day 3.3 gallons/guardian/day

The following examples are hypothetical and should only be used as a guide

Example 1. Rural Health Post

Staff: **Run by 1 Community Health Worker**
Services: Provides only outpatient services.
Outpatients: Some days the Health Post is very busy, other days it is quiet and there only a few patients. On average, 20 outpatients come to the Health Post per day.

Step 1: Calculate the average number of consultations per day
= 20 consultations per day

Step 2: Select the Minimum requirement for water for **outpatients** from the table above
= 5 litres per consultation

Step 3: Calculate total daily water needs by multiplying the average number of consultations by the Minimum requirement
= 20 consultations x 5 litres per consultation = 100 litres per day

Step 4: Calculate the storage needs to ensure 2 days supply of water:
= 100 litres per day x 2 days = 200 litres storage needed

Example 2. District Hospital

Staff: **22 staff**

Services: Provides inpatient and outpatient services, including delivery. The District Hospital has 30 beds. The best are at about 50% occupancy most days. Inpatients are allowed one guardian. The hospital delivers an average of 3 births every day. On average there are 63 outpatients treated at the facility every day.

Step 1a: Calculate the average number of **outpatient** consultations per day
= 63 outpatient consultations per day

Step 1b: Calculate the average number of **inpatients** per day
= 15 inpatients per day (note this is the number of actual patients not number of beds)

Step 1c: Calculate the average number of **guardians** per inpatient per day
= 1 guardian for each inpatient = 1 x 15 = 15

Step 2a: Select the Minimum requirement for water for **outpatients, inpatients, and guardians** from the table above
Outpatients: *= 5 litres per consultation*
Inpatients: *= 40 litres per patient per day*
Guardians: *= 15 litres per day*

Step 2b: Calculate **other** water needs from the above table of Minimum requirements.
= 3 deliveries per day x 100 litres per delivery = 300 litres

Step 3: Calculate the total daily minimum water needs by multiplying the average number of patients by the Minimum requirements

Outpatients	– 63 consultations per day		5 litres 63 x 5 = 315 litres
Inpatients	– 15 per day	40 litres	15 x 40 = 600 litres
Guardians	- 15 per day	15 litres	15 x 15 =225 litres
Deliveries	– 3 per day	100 litres	3 x 100 = 300 litres
Total quantity of water every day			***1,440 litres***

Step 4: Calculate the storage needs to ensure 2 days supply of water:
= 1,440 litres per day x 2 days = 2,880 litres storage needed

Annex C. Examples for calculating number of toilets needed at healthcare facilities

The following examples are hypothetical and should only be used as a guide

Example 1. Rural Health Post

Staff: **Run by 1 Community Health Worker**
Services: Provides only outpatient services.
Outpatients: Some days the Health Post is very busy, other days it is quiet and there only a few patients. On average, 20 outpatients come to the Health Post per day.

Step 1: Calculate the number of toilets needed:
= 1 staff toilet
= 1 patient/guardian toilet – male
= 1 patient/guardian toilet – female (with menstrual hygiene facilities)

Total = 3

Both male and female patient/guardian toilets must be accessible for people with limited mobility

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Option:
Where it is culturally appropriate, basic health care facilities such as Health Posts may reduce the number of toilets to two as follows:

= 1 staff toilet
= 1 patient/guardian toilet – unisex (both male and female), disability accessible, with menstrual hygiene facilities

Example 2. Community Health Post (Grade 2)

Staff: **7 Staff**
Services: Provides inpatient services, including delivery, and outpatient services including preventative clinics such as mother and baby. The Community Health Post has 2 post natal beds and 4 general beds. The beds are full every day. Inpatients are allowed one guardian. The hospital delivers an average of 2 births every day.

Step 1: Calculate the minimum number of **outpatient** toilets needed
= 1 staff toilet
= 1 patient/guardian toilet – male, disability accessible
= 1 patient/guardian toilet – female, disability accessible (with menstrual hygiene facilities)

Step 2: Calculate the number of **inpatient** toilets needed
= 1 toilet per 20 ***staff*** *– 7 staff = 1 toilet (unisex) or 1 male and 1 female toilet*
= 1 toilet per 20 ***patients, guardians, visitors*** *– 12 (6 inpatients + 6 guardians), say 1 male and 1 female toilet (each is disability accessible)*

Step 3: Calculate other toilets
= 1 single sex toilet per ***delivery*** *room - 1 toilet*

Total **= 7-8**

Annex D. PNG Public Health (Drinking Water) Regulations, 1984

SCHEDULE 2 – STANDARDS FOR DRINKING WATER.

Reg. Sec. 5.

Note: The standards in this Schedule have been adopted from the WHO International Standards for Drinking Water, 1971, and unless stated otherwise, shall comply with these standards.

1. Micro-biological Standards:

(a) Chlorinated or otherwise disinfected water supplies–

(i) For water entering the distribution system, the coliform count shall be zero in any 100 ml sample;

(ii) For water in the distribution system–

(A) Throughout any year, 90% of the sample shall not contain any coliform organisms in any sample of 100 ml;

(B) There shall be no E. Coli in any sample of 100 ml;

(C) No sample shall contain more than 10 coliform organisms per 100 ml;

(D) Coliform organisms shall not be detectable in both of any of two consecutive 100 ml samples;

(b) Non-disinfected water supplies– (Individual or Small Community Supplies)

(i) There shall be no E. Coli in any sample of 100 ml;

(ii) If E. Coli is absent, no sample shall contain more than three coliform organisms per 100 ml.

2. Toxic Contaminants Standards: No drinking water shall contain the following substances in amounts exceeding the stated upper limit of concentration.

Substances		*Upper Limit of Concentration*
(a)	Arsenic (as As)	0.05 mg L
(b)	Cadmium (as Cd)	0.01 mg/L
(c)	Cyanide (as Cn)	0.05 mg/L
(d)	Lead (as Pb)	0.1 mg/L
(e)	Mercury (as Hg)	0.001 mg/L
(f)	Selenium (as Se)	0.01 mg/L
(g)	Nitrate*	00 mg/L
(h)	Silver*	0.05 mg/L

Note: Standards for substances marked thus * are Papua New Guinea requirements as distinct from WHO.

3. Aesthetic and other Qualities Standards:

Substances or Characteristics		*Highest Desirable Level*	*Maximum Permissible Level*
(a)	Colour	5 units	50 units**
(b)	Odour	Unobjectionable	Unobjectionable
(c)	Taste	Unobjectionable	Unobjectionable
(d)	Suspended matter (turbidity)	5 units	25 units***
(e)	Total solids	500 mg/L	1,500 mg/L
(f)	pH range	0-8.5	5-9.2
(g)	Mineral oil	0.01 mg/L	0.30 mg/L
(h)	Total hardness*	200 mg/L (CaCo3)	600 mg/L (CaCo3)
(i)	Calcium (as Ca)	75 mg/L	200 mg/L
(j)	Chloride*	200 mg/L	1, 000 mg/L
(k)	Copper (as Cu)	0.05 mg/L	5 mg/L
(l)	Iron (Total as Fe)	0.1 mg/L	0 mg/L
(m)	Magnesium (as Mg)	Not more than 30 mg/L if there are more than 250 mg/L of sulphate	150 mg/L
(n)	Manganese (as Mn)	0.05 mg/L	0.5 mg/L
(o)	Sulphate	200 mg/L	400 mg/L
(p)	Zinc (as Zn)	0 mg/L	15 mg/L
(q)	Fluoride	0 mg/L	5 mg/L

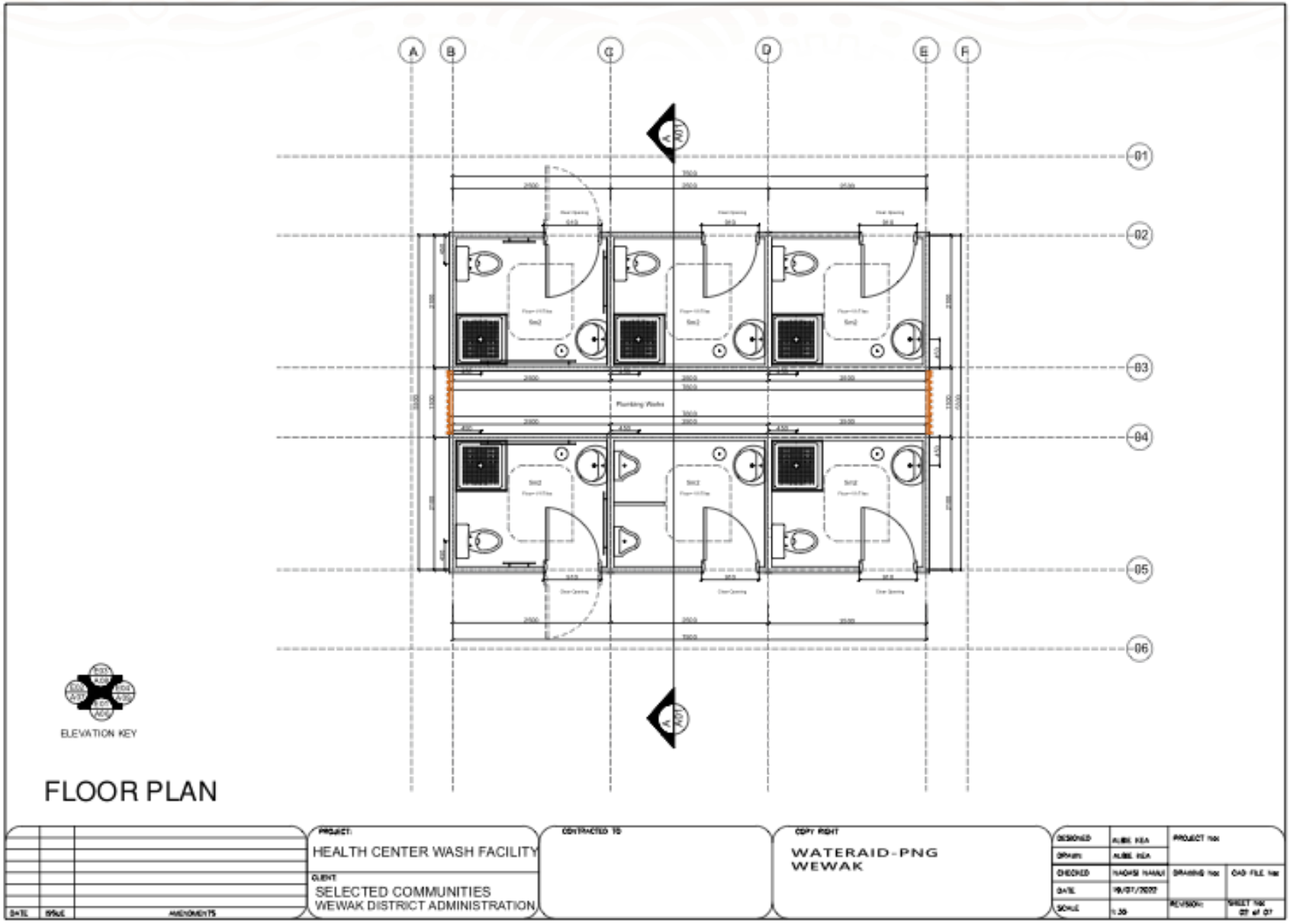
Note: These standards for substances and characteristics affecting the acceptability of water for domestic use, follow the WHO International Standards for Drinking Water, 1971, except for those standards marked thus *, which indicate that these have been modified to allow for the great variation of physical and chemical qualities for the various sources throughout Papua New Guinea:

** On the platinum-cobalt scale
*** Jacksons Turbidity Units (J.T.U.)

Annex E. Boikin Health Centre Toilet Design

Artist impression of proposed toilet at Boikin Health Centre, East Sepik Province

The following designs are indicative for accessible toilets in Papua New Guinea.


A
B
C
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01
02
03
04
05
06
Plumbing Works
ELEVATION KEY
FLOOR PLAN
PROJECT:
HEALTH CENTER WASH FACILITY
CLIENT
SELECTED COMMUNITIES
WEWAK DISTRICT ADMINISTRATION
CONTRACTED TO
COPY RIGHT
WATERAID-PNG
WEWAK
DESIGNED
ALBIE KEA
DRAWN
ALBIE KEA
CHECKED
YAGHSI NAMAI
DATE
19/07/2022
SCALE
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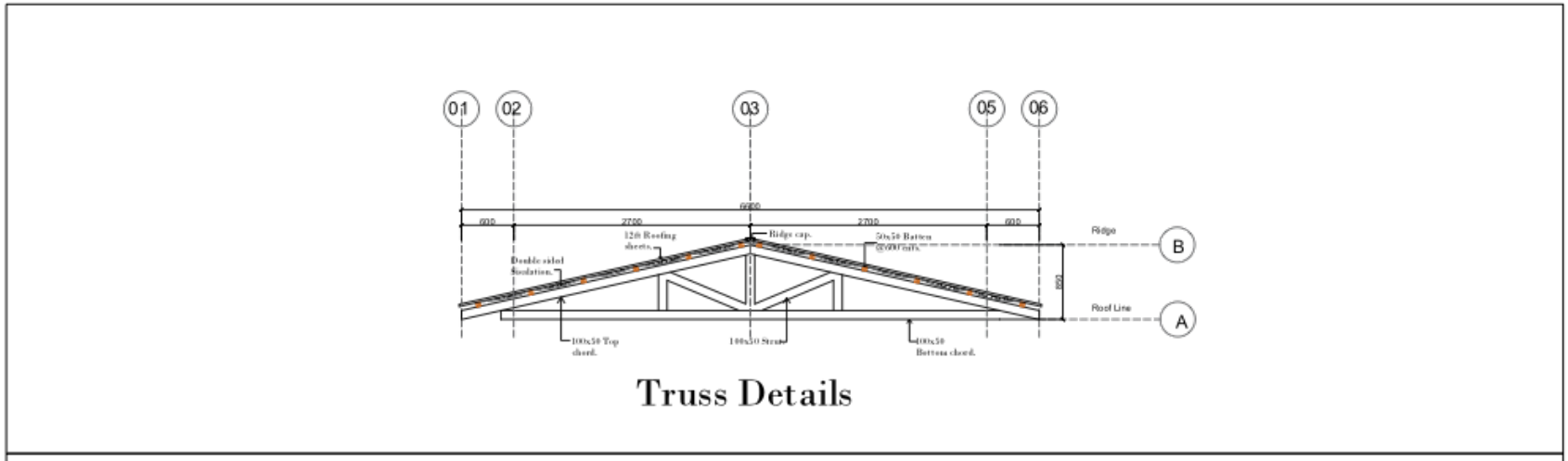
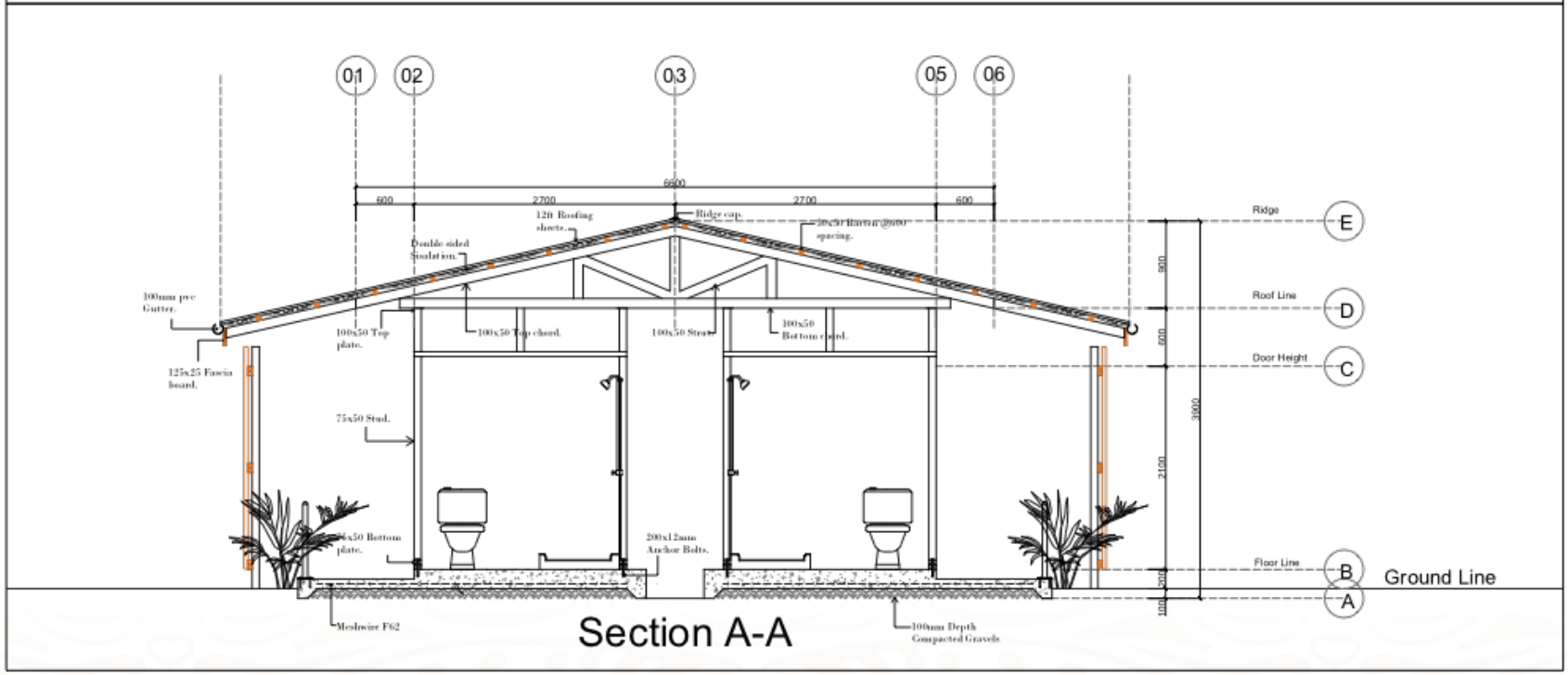
PROJECT No:
DRAWING No:
CAD FILE No:
REVISION:
SHEET No
07 of 07
DATE
ISSUE
AMENDMENTS



Truss Details



Section A-A

Annex F. Accessibility Audit Checklist

Accessibility audit checklist for public latrines

An accessibility audit is a participatory process to evaluate the accessibility and safety of an existing water and/or sanitation facility and its surrounds, and to identify possible changes or improvements that could be made. T**his form is designed to be used when a wheelchair user is part of the accessibility audit team.** For more information see: Annex A – Steps to carry out an accessibility audit.

Part A:
Step 1: Answer checklist questions by ticking the yes or no column:

Address/location of public latrine:				
		Yes	**No**	**If no, write notes**
Getting there	***Path***			
	Is the path to reach the latrine wide enough for a wheelchair user to use safely? *Minimum path width: 90cm (35 inches)			
	Is the path even and firm, with nothing to trip on?			
	Is the path easy to get to from the surrounding area (e.g. no obstacles or very steep terrain)			
	Is the path clear of branches or any overhanging objects?			
	Is there a way for a person with vision impairment to follow the path (e.g. landmarks or guide rail)?			
	Is the path and ramp slope moderate enough for a wheelchair user to use independently? *Maximum slope gradient: 1 in 12			
	Can the facility be entered without using steps?			
	If there is a ramp into the facility, does it have handrails (at least on one side)			
	Does the path make users (including girls or women with disabilities) feel safe (e.g. it does not pass through an unsafe area)?			
	Entrance			
	Can a wheelchair user open the door and enter the facility independently? *Minimum door width: 80cm (32 inches)			
	Is the door easy to open (and lock) by someone with weak hands or by a child?			

Getting in	Can a wheelchair user close the door (and lock it) easily from inside?			
	If someone faced harassment or other safety risks when using the facility would they be able to safely get away from the facility?			
	Inside			
	Does the layout of the facility allow enough space for a wheelchair user/crutches user or a user and assistant to turn around in?			
	Is the floor non slip?			
	Is the floor easy to clean?			
	When the door is closed is there enough light to see inside the toilet during the day?			
	Does the toilet provide enough privacy for users?			
Getting on	***Squatting latrine***			
	Is there a something to guide a person with vision impairment to the latrine hole?			
	Is there something to hold onto when squatting to support people to squat and stand? (e.g. ropes or rails)			
	Is there a portable seat (commode) for people who cannot squat?			
	Are their handrails to support a wheelchair user easily transfer onto the portable seat?			
	Sitting latrine			
	Is there something to hold when sitting? (e.g. rope or rail)			
	Are there handrails to support a wheelchair user to easily transfer onto the latrine?			
	Can a wheelchair user flush the toilet (if applicable) independently?			
Hygiene	***Anal cleansing***			
	Can the anal cleansing system be reached when sitting on the latrine or portable seat?			
	Disposal of sanitary products			
	Is there a bin with a lid for disposal of sanitary products?			
	Is the bin emptied regularly?			
	Is there an agreed and safe procedure for the final disposal of waste?			
	Hand washing			
	Is there water available for hand washing all year round?			
	Is there soap or another method for cleaning (e.g. ash) available?			
	Can a wheelchair user access the hand washing facility and soap?			
	Is the tap or water device easy to operate by someone with weak hands or a child?			
	Is the hand washing facility private for females managing their menstruation?			
Comments:				

Step 2: Take photos of the following:

- ☐ *Path*
- ☐ *Entrance*
- ☐ *Inside*
- ☐ *Latrine*
- ☐ *Anal cleansing system*
- ☐ *Hand washing facilities*

Part B:

Step 1: Answer checklist questions by ticking the yes or no column:

Section	Area of concern	Suggested low cost improvement	Suggested long term solution
Path			
Entrance			
Inside			
Latrine			
Anal cleansing			
Sanitary product disposal			
Hand washing			

About this tool: This document was developed by CBM Australia as part of a partnership with World Vision to strengthen disability inclusion within World Vision's Civil Society WASH project in Sri Lanka, with support from the Australian Government. It was adapted from WaterAid – How to conduct a WASH accessibility and safety audit http://www.wateraid.org/what-we-do/our-approach/research-and-publications/view-publication?id=5e30af9c-73dd-4743-85ef-c936e1df19cb which used the 2014 WEDC and WaterAid: Accessibility and Safety Audit tool.

Steps to carrying out an accessibility audit

The following identifies the steps to take to carry out an accessibility audit:

Step 1 Partner with a local DPO

- Accessibility audits are a good way to engage with DPO. A WASH organisation can partner with a DPO, invite them to participate in each stage of the process, including the training and when doing the accessibility audit.
- This means that you hear directly from people with disabilities on what their barriers to accessing WASH are, and also builds DPO's knowledge of WASH.

Step 2 Select the facilities to be assessed

- Identify the public latrine to be assessed in the audit.
- You might choose to inform the owner of the latrine and invite them to attend the audit.

Step 3 Form an accessibility audit team

- The team should be diverse, comprising men and women with disabilities with a range of impairments (including a wheelchair user). A group could include a person with vision impairment, a wheelchair user, a person who uses crutches or other mobility aids. You might also like to invite a pregnant woman and an older person, and a child accompanied by their parent or guardian.
- If there are no wheelchair users in your community, make sure you involve someone else with a mobility impairment.

Step 4 Train the team on how to conduct the audit

- Read through the Accessibility audit checklist together
- Assign roles (leader, note taker, photographer) to team members
- Gather items (checklists, clipboard, pens, camera, tape measure) needed to undertake the audit
- As part of your training you might like to use the following short video explains what an accessibility audit looks like: https://www.youtube.com/watch?v=f5VEqukqZw8. It is in Khmer, but has English subtitles.

Step 5 Assess the public latrine

- The audit team moves to the public latrine and completes the Accessibility audit check list for public latrines by requesting member of the team to attempt to get into and identify how they can/cannot use the public latrine. Then take photos.

Step 6 Developing solutions

- Immediately after the audit, the team should meet together as a group and review answers to check list, paying attention to any 'no' answers and the comments.
- The team can then identify and record their ideas on the solutions.
- Once a list of potential solutions has been identified, consider these in more detail. Discussion should include: *Are the suggested solutions realistic? *Can you group solutions into short-term (immediately doable), medium term (requires some planning) and long-term (requires consultation, planning and resources)? *Which aspects of the audit worked well and which did not work so well?

Annex G. JMP SDG Monitoring Indicators and Core questions for WASH in HCF

Table 9: JMP Service Ladders for monitoring basic WASH services in healthcare facilities

Water	Sanitation	Hygiene	Healthcare Waste	Environmental Cleaning
Advanced Service To be defined at national level	**Advanced Service** To be defined at national level	**Advanced Service** To be defined at national level	**Advanced Service** To be defined at national level	**Advanced Service** To be defined at national level
Basic Service Water is available from an improved source located on premises	**Basic service** Improved sanitation facilities are usable 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 people with limited mobility.	**Basic service** Functional hand hygiene facilities (with water and soap and/or alcohol-based hand rub) are available at points of care, and within 5 meters of toilets	**Basic service** Waste is safely segregated into at least three bins and sharps and infectious waste are treated and disposed of safely.	**Basic service** Basic protocols for cleaning available, and staff with cleaning responsibilities have all received training.
Limited service An improved water source is within 500 meters of the facility, but not all requirements for basic service are met.	**Limited service** At least one improved sanitation facility, but not all requirements for basic service are met.	**Limited service** Functional hand hygiene facilities are available at either points of care or toilets, but not both.	**Limited service** There is limited separation and/or treatment and disposal of sharps and infectious waste, but not all requirements for basic service are met.	**Limited service** There are cleaning protocols, or at least some staff have received training on cleaning.
No service Water is taken from unprotected dug wells or springs, or surface water sources; or an improved source that is more than 500 m from the facility; or the facility has no water source.	**No service** Toilet facilities are unimproved (pit latrines without a slab or platform, hanging latrines and bucket latrines), or there are no toilets or latrines at the facility.	**No service** No functional hand hygiene facilities are available at either points of care or toilets.	**No service** There are no separate bins for sharps or infectious waste, and sharps and/or infectious waste are not treated/disposed of.	**No service** No cleaning protocols are available, and no staff have received training on cleaning.

Table 10: JMP Service Ladder for monitoring WASH and related IPC in the delivery room

Water	Sanitation	Hygiene	Healthcare Waste	Environmental Cleaning
Advanced Service To be defined at national level	**Advanced Service** To be defined at national level	**Advanced Service** To be defined at national level	**Advanced Service** To be defined at national level	**Advanced Service** To be defined at national level
Basic Service Running water is available in the delivery room	**Basic service** Usable (available, functional, private) and single sex toilets are accessible to women	**Basic service** Hand washing facilities (with soap and water) and equipment for clean births are available in the delivery room and women have access to a bathing area	**Basic service** Waste is segregated into bins for sharps, infectious and other waste are segregated into labelled bins in the delivery room, and placentas are disposed of safely	**Basic service** Basic protocols exist for cleaning the delivery room, and staff with cleaning responsibilities have all received training
Limited service Water is available in the delivery room in a storage container but without a tap	**Limited service** There are toilets, but not all requirements for basic service are met.	**Limited service** Hand washing facilities (with soap and water) or equipment for clean births or showers are not available in the delivery room	**Limited service** Either waste is not segregated or placentas are not disposed of safely	**Limited service** Cleaning protocols are absent, or not all staff have received training
No service No water available in the delivery room	**No service** There are no toilets available for women in the delivery room	**No service** Handwashing (with soap and water) are absent	**No service** Bins are not used for waste segregation and placentas are not disposed of safely	**No service** No protocols exist and no staff have received training

Table 11: JMP Questions for WASH in healthcare facilities

Code	Question	Possible responses
G-W1.	What is the main water supply for the facility? (Tick one) *Note If there is more than one source, the one used most frequently should be selected. If patients need to bring water from home because water is not available at the facility, "no water source" should be selected. Response options and terminology should be modified to reflect the local context such that respondents are able to clearly understand each option. Photos may be useful, where feasible.*	Piped supply inside the building (if yes, skip to G-W3) Piped supply outside the building Tube well / Borehole Protected dug well Unprotected dug well Protected spring Unprotected spring Rain water Tanker truck Surface water (river/dam/lake/pond) Other (specify) _____ Don't know (skip to G-S1) No water source (skip to G-S1)
G-W2.	Where is the main water supply for the facility located? *Note On premises means within the building or facility grounds. This question refers to the location from where the water is accessed for use in the health facility (e.g. tap, borehole), rather than the source where it originates.*	On premises Up to 500 m 500 m or further
G-W3.	Is water available from the main water supply at the time of the survey? *Note To be considered available, water should be available at the facility at the time of the survey or questionnaire. Where possible, the enumerator should confirm that water is available from this source, e.g. check that taps or hand pumps deliver water*	Yes No
G-S1.	What type of toilets/latrines are at the facility for patients? *Note If more than one type of toilet is used, the most common type of toilet/latrine in the service area should be selected*	Flush / Pour-flush toilet to sewer connection Flush / Pour-flush toilet to tank or pit Pit latrine with slab Composting toilet Flush / Pour-flush toilet to open drain Pit latrine without slab/open pit Bucket Hanging toilet/latrine

		No toilet/latrine (skip to G-H1) Other (specify) _____
G-S2.	Is at least one toilet usable (available, functional, private)? *Note To be considered usable, a toilet should be available, functional and private at the time of the survey or questionnaire. Toilets are available when on premises, doors are unlocked or with a key available at all times. To be functional, the hole or pit is not blocked, water is available for flush/pour flush toilets, and there are no cracks or leaks in the toilet structure. To be considered private, the toilet stall has doors that can be locked from the inside and there are no large gaps or holes in the structure. If any of these criteria are not met, the toilet/latrine is not counted as usable.*	Yes No
G-S 3-6.	Are there toilets that … *Notes* *3. Staff toilets should be for the exclusive use of staff.* *4. Toilets can be in a room with multiple stalls or in a private room with a single toilet. Toilets in rooms with multiple stalls should all be dedicated for use by either women or men. A gender-neutral room with a single toilet is also considered as sex-separated, as it allows women and men to use toilets separately.* *5. A toilet can be considered to have menstrual hygiene facilities if it • has a bin with a lid on it for disposal of used menstrual hygiene products, and • water and soap available in a private space for washing.* *6. A toilet can be considered accessible for people with limited mobility if it meets relevant national or local standards. In the absence of such standards, it should meet the following conditions: • can be accessed without stairs or steps, • handrails for support are attached either to the floor or sidewalls, • the door is at least 80 cm/2 feet 7 inches wide, and • the door handle and seat are within reach of people using wheelchairs or crutches/sticks.*	3. Are dedicated for staff? Yes/No 4. Are in sex-separated or gender-neutral rooms? Yes/No 5. Have menstrual hygiene facilities? Yes/No 6. Are accessible for people with limited mobility? Yes/No
G-H1.	Is there a functional hand hygiene facility at points of care on the day of the survey?	Yes No, there are hand hygiene facilities at points of care but

	Note For facilities with multiple consultation rooms or areas, select one at random and observe if a functional hand hygiene facility is present. A functional hand hygiene facility is any device that enables staff, patients and visitors to clean their hands effectively. It may consist of soap and water with a basin/pan for washing hands, or alcohol-based hand rub (ABHR). If ABHR is used, healthcare staff may carry a dispenser around between points of care. Chlorinated water (a prepared solution of chlorine suspended in water) is not considered an adequate substitute for soap and water or for ABHR. Points of care are any location in the healthcare facility where care or treatment is delivered (e.g. consultation/exam rooms). The term "hand hygiene" is used in place of "handwashing", because this is an umbrella term that also includes cleaning hands with ABHR.	not functional, or lacking soap and water or alcohol-based hand rub. No, no hand hygiene facilities at points of care No, no hand hygiene facilities at the healthcare facility (if yes, skip to G-C1)
G-H2.	Is there a functional handwashing facility at one or more toilets on the day of the survey? *Note Handwashing facilities at toilets must include water and soap, rather than ABHR alone, since ABHR does not remove faecal matter. Check "yes" if at least one toilet has a handwashing facility with soap and water within 5 meters.*	Yes No, there are handwashing facilities near the toilets but lacking soap and/or water No, no handwashing facilities near toilets (within 5 meters)
G-WM1.	Is waste correctly segregated into at least three labelled bins in the consultation area? *Note For facilities with multiple consultation rooms, select one at random and observe whether sharps waste, infectious waste and non-infectious general waste are segregated into three different bins. The bins should be colour-coded and/or clearly labelled, no more than three quarters (75%) full, and each bin should not contain waste other than that corresponding to its label. Bins should be appropriate to the type of waste they are to contain; sharps containers should be puncture-proof and others should be leak-proof. Bins for sharps waste and infectious waste should have lids.*	Yes, waste is segregated into three labelled bins No, bins are present but do not meet all requirements or waste is not correctly segregated No, bins are not present

G-WM2.	How does this facility usually treat/ dispose of infectious waste? *Note If more than one applies, select the method used most often. Methods considered to meet the basic service level include autoclaving; incineration; burial in a lined, protected pit; and collection for medical waste disposal off-site.*	Autoclaved Incinerated (two chamber, 850-1000 °C incinerator) Incinerated (other) Burning in a protected pit Not treated, but buried in lined, protected pit Not treated, but collected for medical waste disposal off-site Open dumping without treatment Open burning Not treated and added to general waste Other (specify)
G-WM3.	How does this facility usually treat/ dispose of sharps waste? *Note If more than one applies, select the method used most often. Methods considered to meet the basic service level include autoclaving; incineration; burial in a lined, protected pit; and collection for medical waste disposal off-site.*	Autoclaved Incinerated (two chamber, 850-1000 °C incinerator) Incinerated (other) Burning in a protected pit Not treated, but buried in lined, protected pit Not treated, but collected for medical waste disposal off-site Open dumping without treatment Open burning Not treated and added to general waste Other (specify)
G-C1.	Are cleaning protocols available? *Note Protocols should include: • step-by-step techniques for specific tasks, such as cleaning a floor, cleaning a sink, cleaning a spillage of blood or body fluids, and • a cleaning roster or schedule specifying responsibility for cleaning tasks and frequency at which they should be performed. The term for protocols may differ according to local practice; they may be referred to as Standard Operating Procedures (SOPs), guidelines, instructions, etc.* *Where possible, protocols should be observed by the enumerator.*	Yes No
G-C2.	Have all staff responsible for cleaning received training? *Note "Staff responsible for cleaning" refers to*	Yes, all have been trained No, some but not all have been trained No, none have been trained

	non-healthcare providers such as cleaners, orderlies or auxiliary staff, as well as healthcare providers who, in addition to their clinical and patient care duties, perform cleaning tasks as part of their role. *Training refers to structured training plans or programs led by a trainer or appropriately qualified supervisor.*	No, there are no staff responsible for cleaning

Using the above basic JMP questions, a survey of healthcare facilities will provide information on the following indicators for national reporting.

Proportion of healthcare facilities……	
Water	**with an improved water supply located within 500 meters**
	with an improved water supply on premises
	with an improved water supply with water available
	with water available from an improved water supply located on premises*
Sanitation	**with improved toilets**
	with improved toilets which are usable
	with improved toilets which are dedicated for staff
	with improved toilets which are sex-separated
	with improved toilets with facilities for menstrual hygiene management
	with improved toilets which are accessible for people with limited mobility
	with improved toilets which are usable, sex-separated, provide for menstrual hygiene management, separate for patients and staff, and accessible for people with limited mobility*
Hygiene	**with hand hygiene facilities at point of care with water and soap and/or alcohol hand rub available**
	with handwashing facilities within 5 meters/16 feet of toilets with water and soap available
	with hand hygiene facilities at point of care with water and soap and/or alcohol hand rub available and handwashing facilities within 5 meters of the toilets with water and soap available*
Healthcare Waste Management	**with waste correctly segregated in the consultation area**
	with infectious waste safely treated/disposed
	with sharps waste safely treated/disposed
	with waste correctly segregated in the consultation area and infectious and sharps waste safely treated/disposed*
Environ-mental Cleaning	**with cleaning protocols available**
	where all staff responsible for cleaning have received training
	with cleaning protocols available and where all staff responsible for cleaning have received training*

*SDG indicator for "basic" service

Table 12: JMP Questions for WASH and related IPC (WASH-IPC) in the delivery room

Code	Question	Possible responses
D-W1.	Is there a water supply in the delivery room? (Tick one) *Note If more than one type is used select the main one.*	Running water: piped with tap Running water: storage container with tap Storage container without a tap No water in the delivery room Other (specify) _____
D-W2.	Is water available in the delivery room at the time of the survey?	Yes No
D-S1.	Are there toilets in the area where maternal and newborn services are provided? *Note If No, skip to D-H1. Toilets in general service areas or other areas outside where maternal and newborn services are provided (eg. child vaccination, HIV counselling) should not be counted.*	Yes No
D-S2	Is there at least one toilet in the area where maternal and newborn services are provided that is … *Note* *a. To be considered usable, a toilet should be available, functional and private at the time of the survey or questionnaire. Toilets are available when on premises, doors are unlocked or with a key available at all times. To be functional, the hole or pit is not blocked, water is available for flush/pour flush toilets, and there are no cracks or leaks in the toilet structure. To be considered private, the toilet stall has doors or screens that can be closed if needed and there are no large gaps or holes in the structure. If any of these criteria are not met, the toilet/latrine is not counted as usable.* *b. Women may have limited mobility during labour and after delivery therefore for a toilet to be considered accessible, a toilet should meet all the following additional conditions. It: • can be accessed without stairs or steps, • has handrails for support which are attached either to the floor or sidewalls, and has space for assistance to be provided to the woman in labour and during recovery immediately after labour if needed • should be within the area where maternal and newborn services are provided.* *c. Toilets can be in a room with multiple stalls or in a private room with a single toilet. Toilets in rooms with multiple stalls should all be dedicated for use by women or men. A gender-neutral room with a single toilet is also considered as single-sex, as it allows women and men to use toilets separately*	a. Usable at the time of the survey (available, functional and private)? Yes /No b. Accessible to women in labour (no steps, handrails and space for assistance)? Yes/No c. Single-sex? Yes/No

D-H1.	Is there a hand washing facility (water and soap) in the delivery room? *Note A functional hand washing facility must include water and soap (in bar or liquid form). Alcohol based hand rub may also be available, but it is still a minimum requirement to have the ability to wash hands with soap and water in the delivery room/area.*	Yes No, there are hand washing facilities but either water or soap are unavailable No hand washing facilities with water and soap, but alcohol-based hand rub is available No handwashing facilities or alcohol-based hand rub
D-H2.	Are the following materials available in the delivery room? *Note If Clean Birth Kits are routinely provided to all women using the facility respond 'yes' to all questions. If a sterile blade and cord tie is disposable, it should be unused and in appropriate sterile packaging. If a sterile blade and cord tie is reusable, it must have been appropriately decontaminated (e.g. cleaned followed by sterilization using an autoclave) and stored in sterile packaging. Note, sterilization by chemical disinfection is not recommended. Refer to WHO (2016)* Decontamination and reprocessing of medical devices for health-care facilities. *Disposable gloves should be unused and in appropriate sterile packaging "Clean surface for woman to deliver on" refers to the surface on which the woman will give birth on. This surface must be visibly clean and free from dust, soil, blood, body fluids, and signs of damage*	Sterile blade to cut the umbilical cord Yes/No Sterile cord tie Yes/No Clean surface for woman to deliver on (or clean material to put underneath the woman) Yes/No Disposable gloves Yes/No
D-H3.	In the area where maternal and newborn services are provided, is there a place for women to shower or bathe? *Note If No, skip to D-WM1. If Yes, ask to see the shower or bathing area.*	Yes No
D-H4.	Observe the shower or bathing area to determine if: *Note If there is piped water in the bathing area, check that taps are working. If there is no piped water check that containers are available (or delivered to the bathing area when needed).*	Water is currently available or delivered when needed Yes/No The area is free of obstacles Yes/No The area is large enough to allow a companion to assist a woman in bathing Yes/No The area provides for drainage of water Yes/No There are doors or screens to provide privacy so the woman cannot be viewed Yes/No

D-WM1.	Is waste correctly segregated into at least three labelled bins in the delivery room? *Note Observe whether sharps waste, infectious waste and non-infectious general waste are segregated into three different bins. The bins should be colour-coded and/or clearly labelled, no more than three quarters (75%) full, and each bin should not contain waste other than that corresponding to its label. Bins should be appropriate to the type of waste they are to contain; sharps containers should be puncture-proof and others should be leakproof. Bins for sharps waste and infectious waste should have lids.*	Yes, waste is segregated into three labelled bins No, bins are present but do not meet all requirements or waste is not correctly segregated No, bins are not present
D-WM2.	How does this facility usually dispose of placentas? *Note If more than one applies, please select the method used most often.*	With other infectious waste With non-infectious general waste Buried in placenta pit Taken home by women and/or carers after disinfection Taken home by women and/or carers without disinfection Other (specify)
D-C1.	Are there cleaning protocols in place for the delivery room? *Note Where possible, enumerators should check the protocols are available. Specific protocols should be in place for cleaning the delivery room. The term for protocols may differ according to local practice; they may be referred to as Standard Operating Procedures (SOPs), guidelines, instructions, etc.*	Protocol for cleaning a delivery bed Yes/No Protocol for cleaning a floor Yes/No Protocol for cleaning a sink Yes/No Protocol for cleaning a spillage of blood or bodily fluids (urine, faeces, vomit) Yes/No Cleaning roster or schedule Yes/No Outline of roles and responsibilities Yes/No
D-C2.	Have all staff responsible for cleaning the delivery room received training? *Note "Staff responsible for cleaning" refers to non-healthcare providers such as cleaners or auxiliary staff, as well as healthcare providers who, in addition to their clinical and patient care duties, perform cleaning tasks as part of their role. Training refers to structured teaching and instruction led by a trainer or appropriately qualified supervisor and can refer to training given during core nursing training or in-service/post-qualification.*	Yes, all cleaning staff have been trained Some but not all cleaning staff trained No cleaning staff trained No, there are no staff responsible for cleaning

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