

SOLOMON ISLANDS

MINISTRY OF HEALTH AND MEDICAL SERVICES



Solomon Islands COVID-19 Emergency Response Project

World Bank: P173933

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

VERSION: FINAL, MARCH 2021

Table of Contents

List of Figures	5
List of Tables	5
1 Background	6
2 Project Description.....	6
2.1 Project Summary.....	6
2.2 Project Subcomponents.....	7
2.3 Summary of Key Project Subcomponent Activities	8
2.4 Project Area and Beneficiaries	10
3 Policy, Legal and Regulatory Framework.....	10
3.1 Country Context.....	10
3.1.1 Environmental Assessment, Review and Permitting	10
3.1.2 Health-care Regulatory and Policy Framework	13
3.1.3 Infection Prevention Control and Health Care Waste Management.....	14
3.1.4 Labour Legislation	16
3.2 World Bank Environmental and Social Standards.....	16
3.2.1 ESF Standards Relevant to the Project.....	16
3.2.2 World Bank Group Environmental, Health and Safety Guidelines (EHS Guidelines) relevant to the project	17
3.2.3 World Bank Response to COVID-19	18
3.3 Relevant International and Regional Agreements.....	18
3.4 Relevant Good International Industry Practice (GIIP).....	19
4 Environmental and Social Baselines	20
4.1 Socio-Economic Baseline	20
4.1.1 Population	20
4.1.2 Human Development Index	21
4.1.3 Indigenous People and Culture	22
4.1.4 Vulnerability.....	22
4.1.5 Economy.....	23
4.1.6 Health and Health-care Services	24
4.1.7 Education	25
4.1.8 Gender Based Violence	25
4.2 Environmental Baseline	26

4.2.1	Solid Waste Management.....	26
4.2.2	Asbestos	28
4.2.3	Health-care Waste Management.....	28
4.3	COVID-19 Status and Response	33
4.3.1	Current Covid-19 Status	33
4.3.2	National COVID-19 Preparedness and Response.....	33
4.3.3	Testing for COVID-19.....	34
5	Environment and Social Risks, Potential Impacts and Mitigation	34
5.1	Summary of Main Environmental Risks	34
5.2	Summary of Main Social Risks	35
5.3	Preliminary Risk Analysis.....	36
6	Procedures to Address Environmental and Social Issues	53
6.1	Overview of the Screening Process.....	53
6.2	Screening of Project Activities	53
6.3	Land Commitment Guide	58
7	Consultation and Stakeholder Engagement	58
7.1	Project Stakeholders	59
7.1.1	Affected Parties.....	59
7.1.2	Other Interested Parties	59
7.1.3	Vulnerable Groups	60
7.2	Consultation and Information Disclosure	60
7.2.1	Stakeholder Engagement during Project Preparation	60
7.2.2	Consultation and Disclosure during Project Implementation.....	60
7.3	Grievance Procedures	64
7.3.1	Grievance Mechanism.....	64
7.4	Monitoring and Reporting	64
8	Implementation Arrangements, Responsibilities and Capacity Building.....	65
8.1	Implementing Agency	65
8.2	Activity Level Environmental and Social Risk Management Responsibilities	67
8.3	World Bank Environmental and Social Team.....	68
8.4	Capacity Building.....	69
8.5	E&S Risk Management Budget.....	70
9	Annexes.....	72

Annex I.	Abbreviations and Acronyms	73
Annex II.	Code of Environmental and Social Practice (CoESP) for Minor Works	75
Annex III.	Chance Finds Procedure.....	93
Annex IV.	Screening Form for Potential Environmental and Social Issues.....	94
Annex V.	Environmental and Social Management Plan (ESMP) Template	99
Annex VI.	MHMS Infection Prevention and Control Guidelines (IPCG)	116
Annex VII.	Labour Management Procedure (LMP)	234
Annex VIII.	Resource List: COVID-19 Guidance	262
Annex IX.	Land Commitment Template	264
Annex X.	Terms of References for E&S Specialists in MHMS.....	266

List of Figures

Figure 1 - EIA procedural steps	12
Figure 2 – Key Activity Screening Steps	54
Figure 3 –Activity Screening Process	56

List of Tables

Table 1 - Components and Key Activities Cost Estimates	8
Table 2 – Summary of Proposed Project Activities	9
Table 3 – Legislation and Regulations Impacting Healthcare Waste Governance - Solomon Islands	15
Table 4 - Required Project Environmental and Social Standard Actions	16
Table 5 – WHO Guidelines for COVID-19	19
Table 6 –Solomon Islands’ Human Development Index Trends	21
Table 7 – Waste Management Processes Observed at Six Solomon Island Hospitals.....	30
Table 8 – Assessment of key project risks/impacts and proposed mitigation methods – planning and design stage	37
Table 9 – Assessment of key project risks/impacts and proposed mitigation methods – renovation/refurbishment stage	42
Table 10 – Assessment of key project risks/impacts and proposed mitigation methods – operational stage.....	44
Table 11 - Ineligible Activity List.....	57
Table 12 - Project Consultation and Disclosure	61
Table 13 - ESMF Implementation Costs.	71

1 Background

The Solomon Islands Government (SIG) has secured US\$5 million IDA credits allocated from the World Bank through the Fast Track Covid-19 Response Program for the COVID-19 Emergency Responses Project (the Project). The Project reflects the emergency response under the COVID-19 Strategic Preparedness and Response Program (SPRP). The Project aims to prevent, detect and respond to the threat posed by COVID-19 and to strengthen national systems for public health preparedness in the Solomon Islands. The project coverage will be national in scale, but also includes support to selected Provinces.

This Environmental and Social Management Framework (ESMF) sets out the principles, policies and procedures for environmental and social protection that the SIG will employ in the context of the Project. The ESMF template for COVID-19 Response was used to guide the development of this ESMF. The rationale of using an ESMF instead of project-specific environmental and social assessment and management plans, is that the exact locations of project activities, as well as the type and magnitude of the environmental and social impacts will not be known until the project is at an advanced stage of implementation.

The purpose of the ESMF is to guide the Ministry of Health and Medical Services (MHMS), and any Sub-component project proponents, on the environmental and social screening processes and subsequent assessment during implementation, including activity-specific plans, in accordance with the World Bank Environmental and Social Framework (ESF).

The scope of this ESMF includes procedures relevant to the development of all activities, including how to conduct screening of project activities to assess the environmental and social risks and impacts and identify mitigation measures, as part of activity-specific assessment and plans. This ESMF is supported by the MHMS Infection Prevention Control Guidelines (IPCG), and Projects Code of Environmental and Social Practice (CoESP), Labour Management Procedure (LMP), Stakeholder Engagement Plan (SEP), Project Operational Manual (POM) and other specific plans that have been or will be prepared for the Project. This ESMF will allow the SIG to clarify, to the extent possible and based on existing information, the approach that should be taken at the activity level, in accordance with the World Bank ESF.

2 Project Description

2.1 Project Summary

The Project Development Objective (PDO) for the Project is to prevent, detect and respond to the threat posed by COVID-19 and strengthen national systems for public health preparedness.

The PDO will be monitored through the following PDO level outcome indicators:

- Number of suspected cases of COVID-19 reported and investigated per approved national protocol;
- Number of acute healthcare facilities with isolation capacity.

The Project objectives are aligned to the results chain of the COVID-19 SPRP. This project is prepared under the global framework of the World Bank COVID-19 Response financed under the Fast Track COVID-19 Facility.

2.2 Project Subcomponents

The proposed project components and sub-components are:

Component 1. Emergency COVID-19 Preparedness and Response (US\$1,300,000)

This component provides immediate support to implement prevention, preparedness, and emergency response activities for COVID-19 in Solomon Islands at all levels of health facilities across all provinces, focusing on the following areas: (a) improving infection prevention and control measures by providing personal protective equipment to front line health workers (which are largely women, about 67%) as well as necessary supplies and consumables, including test kits and laboratory consumables; (b) enhancing case detection, confirmation, and contact tracing capabilities; (c) upgrading quarantine facilities in areas bordering Papua New Guinea (Nila, Shortlands and Taro, Choiseul); and isolation units at Good Samaritan and Atoifi hospitals to prepare for potential surge in demand to separate people who are ill with symptoms of COVID-19 and/or have tested positive; (d) mobilizing contractual health care workers (including laboratory technicians) to respond to a surge in demand for health care services, and general operating expenses for the response, including gender-based violence (GBV) support in quarantine facilities and GBV messaging in all forms of community health outreach as part of the emergency response. In renovating and upgrading quarantine facilities and isolation units the project will implement climate change adaptation measures, including energy efficiency improvements such as sustainable cooling (with passive cooling as first option), renewable energy sources, energy efficient equipment, including low energy lightbulbs (LED lightbulbs) and replacement of old inefficient equipment, such as refrigerators and cooling systems, to mitigate the release of greenhouse gas (GHG) emissions.

Component 2. Health Systems Strengthening (US\$3,350,000)

This component supports health systems strengthening activities to ensure continuity of delivery of critical health services and to cope with the surge in demand for care posed by COVID-19. The activities include: (a) renovating and upgrading intensive care units and capacity building in two Provincial hospitals (Tulagi and Helena Goldie hospitals); (b) enhancing health care waste management by financing energy efficient incinerators, transport for waste disposal, and training in health care waste management. The location for the incinerators to be supported under the project will be climate safe and determined by MHMS in accordance with criteria satisfactory to the World Bank, which will be elaborated in the Project Operations Manual (POM); (c) upgrading the national medical storage facility (NMS) by financing refurbishment of the warehouse and training of staff; (d) supporting MHMS with establishing a national health emergency coordination center by financing upgrading and repurposing of existing building (Zome) currently used as temporary accommodation for health care workers. Currently the emergency operation center is housed at NRH; (e) training of health care workers in hospital infection control, and disease surveillance (including climate-related infectious diseases and other climate related health outcomes). All training for health workers will include a module on GBV to build capacity of staff to identify GBV cases, appropriately handle disclosure, and refer patients for additional services. The renovation and upgrading of existing health infrastructures (two provincial hospitals, NMS, and national health emergency coordination center) will consider a climate adaptive design features such as: passive ventilation for cooling, cooling vegetation, shutters on windows, for cooling and hence decreased need for energy use for air-conditioning, roof and wall insulation to buildings keep cool during heat events, flood protection in flood prone areas. This component will also finance goods for

MHMS such as fuel-efficient trucks (where feasible there will be electric) for health care waste management, which contribute to climate change mitigation

Component 3: Project Implementation Management, Monitoring and Evaluation (M&E) (US\$350,000)

This component supports the management and M&E of project activities and outputs. It will also finance capacity building activities to MHMS staff and consultants who will be directly involved in Project management and procurement of goods and consulting services. Key activities include: (a) financing interim support from an existing World Bank project's Project Management Unit (PMU) ; (b) support for establishing a PMU in MHMS through contracting fiduciary staff, among others; (c) capacity building for project management, financial management (FM), procurement, environmental and social management, training on climate change and sharing lessons learnt on climate change, M&E, and reporting; (d) sharing lesson learnt from response exercises and joint learning with other Pacific countries; and (e) operating expenses. The M&E will be implemented in coordination with technical departments responsible for implementing activities using the agreed M&E tools.

Table 1 - Components and Key Activities Cost Estimates

Project Component and Key Activities	Budget (US\$ millions equivalent)
Component 1: Emergency COVID-19 Preparedness and Response	1.30
Component 2: Health Systems Strengthening	3.35
Component 3: Project Implementation Management, Monitoring and Evaluation	0.35
Total	5.00

2.3 Summary of Key Project Subcomponent Activities

The project-supported activities include purchase of goods and equipment, existing facility refurbishments, provision of training, and operational costs for rapid response and surveillance. The main project activities will include provision of goods and supplies including Personal Protective Equipment (PPE), test kits and laboratory consumables; enhancing case detection, confirmation, and contact tracing capabilities; upgrading quarantine facilities and isolation units; mobilizing contractual health care workers; renovating and upgrading intensive care units (ICUs); enhancing health care waste management including the provision of incinerators; training in health care waste management; upgrading the national medical storage facility; supporting MHMS with establishing a national health emergency coordination center; and training of health care workers in hospital infection control, and disease surveillance. The Project will not fund procurement of COVID-19 vaccines nor will it provide operational support for rollout of COVID-19 vaccine.

Some minor civil works associated with the installation of the incinerators and existing health centre refurbishments are expected. Minor civil works will be undertaken to expand treatment capacity by refurbishing existing ICU facilities within existing facilities, upgrading and repurposing an existing building to function as a national health emergency coordination centre, upgrading the existing central medicine store in Honiara and refurbishing other existing health facilities in the nominated five provinces. However, project activities are not expected to involve land acquisition, physical or economic displacement, or restriction of access to natural resources.

Energy efficient incinerators may be procured. The exact number, type and location for the incinerators is yet to be determined but will be climate safe and determined by MHMS in accordance with criteria satisfactory to the World Bank. Decisions on the procurement of new incinerators will be based on a feasibility study that will be undertaken during implementation. The review will also include assessments of possible repairs of malfunctioning units procured in 2015 under the Secretariat of the Pacific Regional Environment Programme (SPREP) PacWaste Project.

There will be no security forces funded by the project. However, there may be security present on sites where project activities take place, such as the quarantine facilities. The security personnel will be engaged by the SIG and limited to general security functions related to the COVID-19 response.

The general types of project activities can be summarized into the following general activities which will be assessed and screened for their environmental and social risks:

Table 2 – Summary of Proposed Project Activities

Project Activity	Description
Provision of goods and supplies	Includes PPE, test kits, and laboratory consumables - Component 1 (a)
Renovations and refurbishments	Renovation of quarantine facilities in areas bordering Papua New Guinea - Component 1 (c)
	Renovation of isolation units at Good Samaritan and Atoifi hospitals - Component 1 (c)
	Renovation of ICUs in two Provincial hospitals (Tulagi and Helena Goldie hospitals) - Component 2 (a)
	Refurbishment of the national medical storage facility (NMS) by financing refurbishment of the warehouse – Component 2 (c)
	Refurbishment of the existing Zome building to establish a national health emergency coordination center (NHEC) - Component 2 (d)
Capacity building and training	Enhancing case detection, confirmation, and contact tracing capabilities - Component 1 (b)
	Capacity building in two Provincial hospitals (Tulagi and Helena Goldie hospitals) - Component 2 (a)
	Training in health care waste management - Component 2 (b)
	Training of staff at the NMS on medical warehouse management - Component 2 (c)
	Training of health care workers in hospital infection control, and disease surveillance, GBV – Component 2 (e)
Enhancing health-care waste management	Financing energy efficient incinerators - Component 2 (b)
	Waste disposal transport, specifically four fuel-efficient trucks - Component 2 (b)

2.4 Project Area and Beneficiaries

This emergency operation will be implemented at both national and provincial levels, with the five participating provinces currently being Western Province, Malaita, Choiseul, Isabel and Greater Honiara. Among others, the purchase of consumables is expected to cover all provinces under the central coordination of MHMS; while the infrastructure investments will largely focus on the provinces of Malaita, Choiseul, Isabel, Western Province and Honiara.

The expected project beneficiaries will be the Solomon Islands population at large given the nature of the disease, infected people, at-risk populations, particularly the elderly and people with chronic conditions, medical and emergency personnel, medical and testing facilities (all levels), and public health agencies engaged in the response in participating countries.

3 Policy, Legal and Regulatory Framework

3.1 Country Context

3.1.1 Environmental Assessment, Review and Permitting

The SIG has a well-established regulatory framework that provides measures to protect and preserve the environment. The Environment Act 1998 and Environment Regulations 2008 make provision for the conservation and protection of the environment. This Act laid the foundation of Solomon Islands' environmental impacts assessment (EIA) system, which is implemented by the Environment Conservation Division (ECD) of the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM).

3.1.1.1 *Environment Act 1998*

The Environment Act 1998 (the Act) provides for the protection and conservation of the environment. The core objectives of the Act are to provide for and establish integrated systems of development control, EIA, and pollution control, including:

- Prevention, control and monitor pollution;
- Reducing risks to human health and prevent degradation of the environment by all practical means, including the following;
- Regulating the discharge of pollution to the air, water and land;
- Regulating the transport, collection, treatment, storage and disposal of wastes;
- Promoting recycling, re-use and recovery of materials in an economically viable manner; and
- To comply with and give effect to regional and international conventions and obligations relating to the environment.

The Act is divided into four sections. Part I provide the Act with considerable power and states that in the event of conflict between the Act and other legislation, the Environment Act shall prevail. Part II establishes and defines the powers and role of the ECD. Part III establishes the requirements for environmental assessment, review and monitoring. This provides for an environmental assessment to consist of either a public environment report or if the development is shown to be of such a nature as to cause more serious impacts then the developer is required to prepare and submit an environmental impact statement EIS. Part IV details requirements for pollution control and emissions (noise, odour and electromagnetic radiation) and requirements to permits for the discharge of waste. Noise (restrictions on emitting unreasonable noise) is covered in Article 51(1).

Part III Article 17 requires any developer who proposes to carry out any prescribed development to make an application to the Director of ECD. Article 19 specifies that a developer shall not commence or continue to carry out any prescribed development unless the developer has been issued with a development consent (defined in the Act as a consent to carry out any development under Part III). Activities that require assessment are described as ‘prescribed developments’ and are included in the Second Schedule of the Act. There are two levels of environmental assessment; public environment report (PER), as described in Article 20, or if the development is shown to be such a nature as to cause more serious impacts then the proponent is required to prepare and submit an Environmental Impact Statement (EIS), as described in Article 23.

3.1.1.2 Environment Regulations (2008)

The Environment Regulations 2008 (the Regulations) establish the procedures for undertaking the environmental assessment of any projects categorized as a prescribed development.

The developer is required to first submit a “development application” which is reviewed by the ECD to determine the likely significance of impact and required level of environmental assessment. The decision resulting from the review may include that:

- No further assessment is required, as such the development application is accepted, and development consent is issued;
- A PER is required; or
- Where major projects are considered such as logging, large agricultural developments, mining and large-scale tourism developments and infrastructure projects, an EIS is required which includes technical, economic, environmental and social investigations.

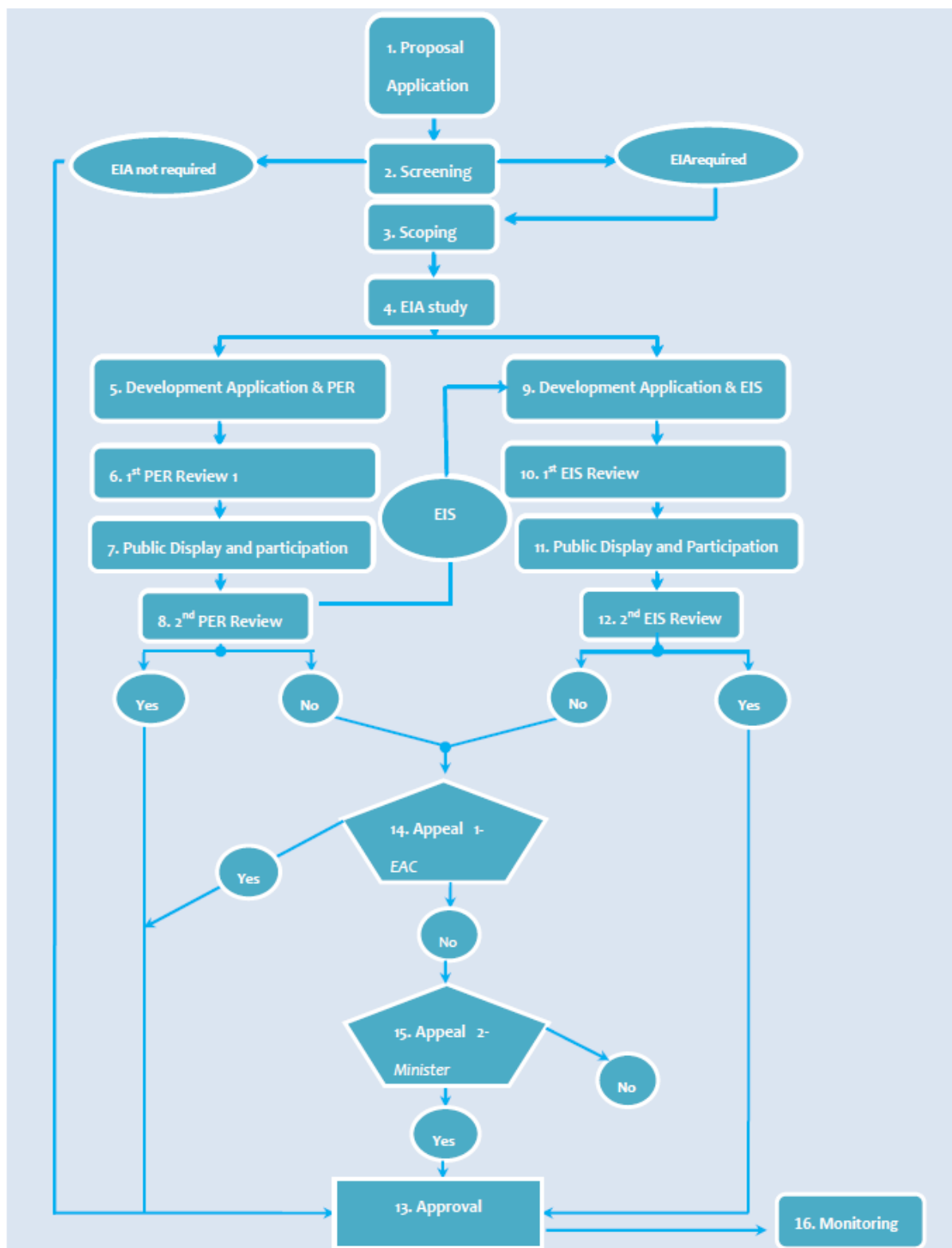
The Regulations establishes the procedures for undertaking the environmental assessment of ‘prescribed developments’ and the process of issuing development consent. The Regulations detail the process prescribed in the Act and set out the contents of PER and EIS.

Both the PER and EIS require public consultation. Following review and approval by the ECD, the development consent is issued either with or without conditions.

3.1.1.3 Environmental Impact Assessment Guidelines (2010)

The ECD developed the Environmental Impact Assessment Guidelines (2010) to provide basic advice and guidance to government officers, planners, developers, resource owners and those involved in processing development proposals, on the EIA process. The guidelines aim to clearly explain the procedures of EIA outlined in the Act and the Regulations. The guidelines describe the procedures needed to be undertaken (Figure 1), forms, and fees required before obtaining the development consent approval.

Figure 1 - EIA procedural steps¹



¹ ECD, 2010. EIA Guidelines 2010

3.1.1.4 *Relevance to Project Activities*

The ‘prescribed developments’ that may apply to Project activities are: Activity 9 - Public Works Sector (b) infrastructure developments; and (h) waste management, drainage and disposal systems. The minor renovations and refurbishments will likely not meet the definition of ‘infrastructure development’ as no new buildings or structures will be erected. However, MHMS will consult with the ECD to confirm this. The incinerators will likely meet the definition of a ‘waste management system’ under the Act. The MHMS will follow the ECD environmental approval process and consult with ECD to determine what level of environmental impact assessment (PER or EIS) will be needed for the incinerators.

3.1.1.5 *Capacity of ECD*

The ECD have overall accountability for environmental management in Solomon Islands. MHMS will consult with the ECD regarding installation of the incinerators, which constitute the only project activity subject to the EIA process. The ECD have some existing World Bank safeguard experience and capacity gained from working on previous World Bank funded projects. However, ECD advise in their EIA Guidelines 2010 that the environment approval process can take several months (2-3 months at the minimum). Therefore, it is advisable that a proposal application to the ECD be lodged as early as possible to avoid delays. ECD also advise that prior to submission of the proposal application by the developer, it is advisable that the Developer should first seek written advice from the ECD².

3.1.1.6 *Other Relevant Policies, Plans and Regulations*

- **Solomon Islands National Implementation Plan for Stockholm Convention on Persistent Organic Pollutants.** Submitted in fulfilment of Solomon Islands obligations as a party to the Stockholm POPs Convention.
- **National Waste Management and Pollution Control Strategy 2017-2026.** The Solomon Islands National Waste Management and Pollution Control Strategy 2017-2026 is the country's roadmap for managing waste and controlling pollution in the natural environment for 10 years with the vision for ‘clean, healthy and green happy isles’. The strategy addresses 5 main waste streams: Solid Waste, Liquid Waste, Hazardous and Chemical Waste, Healthcare Waste and Electronic Waste. The Strategy serves as a blueprint for waste management and pollution control that captures the national priorities and targets and identifies the relevant strategies to realize the priority targets in the next decade. It represents a major step forward for integration of waste issues and concerns into broader sustainable development policy. Objectives include to promote waste minimization in all aspects of development and to improve and upgrade existing management and disposal systems.
- **Provincial Government Act 1997.** This Act gives power to the provinces to make their own legislation and pass ordinances including for protection and conservation of environment, culture, wildlife and coastal and lagoon shipping.
- **Town and Country Planning Act 1979.** This Act applies to all urban areas (Honiara and provincial towns) and includes the management of land (all types of ownership) and management and planning functions for urban and rural areas including development.

3.1.2 *Health-care Regulatory and Policy Framework*

The Health Services Act (1996) sets up the Ministry of Health and Medical Services (MHMS) who are responsible for the provision of health and medical services in the Solomon Islands. The MHMS provides

² ECD, 2010. EIA Guidelines 2010

overall stewardship of the health sector and plays a regulatory role through strategic planning, standard setting and guidelines, for both government and non-state providers. The MHMS is responsible for providing public health services, including maternal and child health, family planning, school-based outreach, dental services, mental health, and vaccination and immunization. Section 10 (2) of the Health Services Act enables the Ministry to arrange with Provincial Assemblies and the Honiara City Council (HCC) to undertake any of the above-mentioned public health services. Section 13 of the Act also empowers the Ministry to make arrangements with church or voluntary bodies for the provision of health services³.

The Environmental Health Act 1980 sets up the administration and structure of community health in Solomon Islands. The Minister of Health is responsible for the administration of environmental health services. The Minister may delegate this administration to the Provincial Government and the HCC which are designated as Enforcement Authorities. The Environmental Health (Public Health Act) Regulations deal with public health issues and how to deal with them when they occur. The regulations empower the Minister and the Under Secretary of the MHMS to take specific measures to prevent the occurrence of a public health disease or where such disease had already occurred, to take measures to contain and prevent the spread of the disease⁴.

To ensure quality of care, key legislative instruments implemented and upheld by the MHMS include:

- **Health Workers Act 1989** – which regulates the functions and duties of various categories of health-workers and establishes a Health Workers Board “to prescribe registration, deal with matters pertaining to discipline and other connected matters”;
- **Medical and Dental Practitioners Act 1988** – “to regulate medical and dental practitioners”;
- **Nursing Council Act 1987** – which establishes a Nursing Council to register and regulate nurses, midwives and auxiliary nurses; and
- **Quarantine Act 1978** – “for the inspection, exclusion, detention, observation, segregation, isolation, protection, treatment, sanitary regulation and disinfection of vessels, persons, goods and things” in order to prevent the introduction or spread of diseases.

Other relevant plans and policies include:

- **National Health Strategic Plan 2016-2020.** The MHMS developed a five-year National Health Strategic Plan 2016-2020. The plan intends to target four key areas; improve service coverage, build strong partnerships, improve service quality and lay the foundation for the future. National Health outcomes and indicators are developed to ensure all operational plans of the ministry is directed and guided towards achieving this targets and other international objectives⁵.

3.1.3 Infection Prevention Control and Health Care Waste Management

Infection Prevention and Control Guidelines (IPCG) for Health Facilities were commissioned in 2020 by the World Health Organization (WHO) in collaboration with the MHMS (Annex VI). The overall purpose of these guidelines is to provide guidance on IPC standards and healthcare waste management for all levels of health service provision within the Solomon Islands. These guidelines are based upon the WHO

³ WHO, 2015. Solomon Islands Health System Review. Vol. 5. No. 1.

⁴ International Waters Programme, 2003. National Assessment of Environment, Natural Resources and Relevant Related Legislation and Regulation in Solomon Islands

⁵ MHMS, 2017. Annual Report 2017

Core Components of Infection Prevention and Control, Sierra Leone National IPC Guidelines, the previous MHMS Solomon Islands IPC Guidelines, and the Secretariat of the Pacific Community (SPC) Infection Prevention and Control Guidelines.

The MHMS is responsible for the regulation of healthcare waste in the Solomon Islands. However, generally the management of healthcare waste lies with the individual hospitals with little intervention from the MHMS. MECDM is responsible for waste disposal and waste disposal facilities⁶. The waste management sector relies largely on legislative and regulatory documents that contain general waste provisions. The legislations summarized in Table 3 should be used as the guidance for proper management of healthcare wastes in the Solomon Islands. The MHMS IPCG also contains measures for managing health-care wastes (Annex VI).

Table 3 – Legislation and Regulations Impacting Healthcare Waste Governance - Solomon Islands⁷

Legislation	Type	Summary	Regulator/ Agency
Environment Act 2008	Act	The Act makes provisions for the protection and conservation of the environment. With regards to waste control and management, section 3c of the Act specifies the following: 'to reduce risks to human health and prevent the degradation of the environment by all practical means. In section 3(c)(ii), objects of the Act include to regulate the transport, collection, treatment, storage and disposal of wastes and to comply with and give effect to regional and international conventions and obligations relating to the environment. Waste is dealt with in Part IV Control of Pollution. Section 5 establishes an ECD consisting of a Director and Environmental Inspectors who enforce provisions of the Act.	MECDM/ECD
Environmental Regulations 2008	Regs	Part 5 details the considerations the Director must take in approving a licence application for waste discharge. Regulation 14(1)(d) states the Development may issue a Development Consent if satisfied that 'the proposed prescribed development will not contravene any relevant environmental obligation under any international treaty, convention or instrument to which Solomon Islands is a party'. Under r 18(1)(c), an appeal may be made against a decision of the Director under s 32 of the Act on the grounds the decision was 'inconsistent with any international treaty, convention or regional arrangement to which Solomon Islands is a party to'. Regulation 23(1)(c) states the Director may issue a license in Form 8 (a license to discharge waste) if 'the amendment will not contravene any environmental obligation under any international treaty, convention or arrangement to which Solomon Islands is a party'.	MECDM/ECD

⁶ SPREP, 2014. Baseline Study for the Pacific Hazardous Waste Management Project - Healthcare Waste

⁷ SPREP, 2014. Baseline Study for the Pacific Hazardous Waste Management Project - Healthcare Waste and SPREP, 2020. Stocktake of Existing and Pipeline Waste Legislation: Solomon Islands

Environmental Health Act 1980	Act	This Act's objective is to ensure the maintaining of environmental health. Its regulation prohibits people from causing nuisances including the prohibiting of discharging of noxious matter or waste from premises. Section 94 prohibits depositing waste in water sources of urban sanitary districts. Sch 5 part I section 4 assigns refuse collection and street cleaning and refuse disposal to HCC.	MHMS
The Honiara (Refuse Disposal) Bylaw 1995	Bylaw	The By-Law provides for the use of standard receptacles as approved by the council and the means of disposal. The receptacles must be in good condition and taken care of. Fines are also incurred for offenders to the By-law.	Honiara City Council

3.1.4 Labour Legislation

Labour legislation relevant to the Project is summarized in the Labour Management Procedure (LMP) (Annex VII).

3.2 World Bank Environmental and Social Standards

3.2.1 ESF Standards Relevant to the Project

The Environmental and Social risk is classified as 'Substantial' for the Project. Six of the ten Environmental and Social Standards (ESSs) of the World Bank's (WB's) ESF have been screened as relevant. They are assessed in Table 4 below. The other four are considered not relevant, namely: ESS5 Land Acquisition, Restrictions on Land Use and Involuntary Resettlement, ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources, ESS8 on Cultural Heritage, and ESS9 on Financial Intermediaries. Detailed information on the Bank's ESF are available at:

<https://www.worldbank.org/en/projects-operations/environmental-and-social-framework>.

The ESS that apply to the Project and the required measures and actions that apply, as contained in the Environmental and Social Commitment Plan (ESCP), are listed in **Table 4**.

Table 4 - Required Project Environmental and Social Standard Actions

Environmental & Social Standard	Required Measures and Actions
ESS1 Assessment and Management of Environmental and Social Risks and Impacts	<p>The MHMS shall recruit a full-time local Environmental, Social and Health and Safety and Community Engagement (ESHS&CE) Specialist. This position will be recruited/appointed within 6 months after the effective date of the Financing Agreement for the Project (Effective Date). An additional part time international Environmental, Social and Health and Safety (ESHS) Specialist and a GBV specialist shall be recruited/appointed upon Project approval and retained on an as-required basis.</p> <p>The interim PMU shall supply the services of its Safeguards Officer for a period of up to 6 months or until the ESHS&CE specialist has been recruited.</p> <p>The MHMS shall develop an Environmental and Social Management Framework (ESMF). The ESMF will be prepared, disclosed and adopted no later than 30 days after the Effective Date and prior to commencement of relevant Project activities.</p>

ESS2 Labor and Working Conditions	The MHMS will adopt Labour management procedures (LMP). The LMP will be prepared, disclosed and adopted as part of the ESMF, no later than 30 days after the Effective Date and before the carrying out of the relevant Project activities.
ESS3 Resource Efficiency and Pollution Prevention and Management	The MHMS will follow the MHMS IPCG, which contains healthcare waste management procedures. The MHMS IPCG will be reviewed and included in the ESMF, no later than 30 days after the Effective Date.
ESS4 Community Health and Safety	Precaution measures in line with the ESMF, MHMS IPCG and WHO guidelines on COVID-19 shall be put in place to prevent or minimize the spread of the infectious disease/COVID-19 from quarantine and isolation centres to the community. The project will promote the avoidance of sexual exploitation and abuse/ sexual harassment (SEA/SH) by implementing the WHO Code of Ethics and Professional Conduct for all workers, as well as the provision of gender-sensitive infrastructure such as segregated toilets.
ESS7 Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Indigenous Peoples are expected to be the sole or the overwhelming majority of direct project beneficiaries. Accordingly, a separate Indigenous Peoples Planning Framework (IPPF) will not be prepared. The elements of an IPPF have been included in the overall project design and the SEP. The SEP requires that IPs are consulted about the project in a culturally-appropriated manner to identify and address any economic or social constraints that may limit opportunities to benefit from, or participate in, the project. The SEP will be updated, disclosed and adopted no later than 30 days after the Effective Date.
ESS8 Cultural Heritage	Although this standard is not considered relevant, in the unlikely event of construction or the movement of earth in connection with any project activities that have not yet been identified a chance finds procedure (CFP) will be prepared and integrated into the ESMF for the project. The CFP will be prepared, disclosed and adopted as part of the ESMF no later than 30 days after the Effective Date.
ESS10 Stakeholder Engagement and Information Disclosure	The SEP will be updated, disclosed and adopted by MHMS no later than 30 days after the Effective Date. The MHMS shall adopt, implement and update the Grievance Mechanism (GM). The GM will be adopted within 30 days of the Effective Date and thereafter implemented and updated throughout project implementation

3.2.2 World Bank Group Environmental, Health and Safety Guidelines (EHS Guidelines) relevant to the project

The following EHS guidelines are relevant to the project and have been used to guide the development of the CoESP and LMP:

- General EHS Guidelines: Environmental
- General EHS Guidelines: Occupational Health and Safety
- General EHS Guidelines: Community Health and Safety
- General EHS Guidelines: Construction and Decommissioning
- Environmental, Health, And Safety Guidelines Health Care Facilities.

3.2.3 World Bank Response to COVID-19

The World Bank Group (WBG) has developed the following guidance material in response to COVID-19 outbreak:

- Guideline for the preparation of a Contingency Plan for Project Sites.
- Technical Note: Public Consultations and Stakeholder Engagement to be applied to projects under implementation and those under preparation.
- Technical Note: Use of Military Forces to Assist in COVID-19 Operations Suggestions on how to Mitigate Risks.
- Technical Note: SEA/H for HNP COVID-19 Response Operations.

For ESS1, the WBG also identifies risks and mitigations measures for the transactions involving specific project finance activities (i.e. works, goods and services, and technical assistance). The guidance has been considered during the preparation of this ESMF and supporting documents.

3.3 Relevant International and Regional Agreements

Solomon Islands is a party to the following regional and international agreements:

- **London Convention and Protocol.** The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972, commonly called the "London Convention", is an agreement to control pollution of the sea by dumping. Its objective is to promote the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter. In 1996, the "London Protocol" was agreed to further modernize the Convention and, eventually, replace it. Under the Protocol all dumping is prohibited, except for possibly acceptable wastes on the so-called "reverse list". The Protocol entered into force on 24 March 2006 and there are currently 53 Parties to the Protocol, including the Solomon Islands.
- **Natural Resources & Environment of South Pacific Region (1986) (SPREP or Noumea Convention).** This Convention is the major multilateral umbrella agreement in the Pacific Region for the protection of natural resources and the environment. This Convention was ratified by the Solomon Islands in 1989.
- **Pacific Regional Solid Waste Management Strategy 2010-2015.** Solomon Islands was one of several Pacific island countries to adopt the Pacific Regional Solid Waste Management Strategy, initiated by SPREP, and adopted by member countries in 2009. This regional strategy covers medical wastes from public institutions such as hospitals and health care clinics, and special and difficult wastes such as asbestos.
- **Stockholm Convention for Persistent Organic Pollutants.** The Stockholm Convention on Persistent Organic Pollutants is an international environmental treaty, signed in 2001 and effective from May 2004, that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs). This convention was ratified and entered into force in Solomon Islands in May 2004.
- **Waigani Convention on Hazardous Waste.** The 1995 Waigani Convention is a treaty that bans the exporting of hazardous or radioactive waste to Pacific Islands Forum countries and prohibits Forum island countries from importing such waste. The convention has been ratified by Solomon Islands and entered into force in 2001.

3.4 Relevant Good International Industry Practice (GIIP)

Relevant Good International Industry Practice (GIIP) such as WHO technical guidance have been developed for addressing COVID-19. These technical guidance documents are evolving, and they are being updated as new information becomes available. The guidance has been considered during the preparation of this ESMF and supporting documents.

WHO resources include technical guidance on: (i) [laboratory biosafety](#), (ii) [infection prevention and control](#), (iii) [rights, roles and responsibilities of health workers, including key considerations for occupational safety and health](#), (iv) [water, sanitation, hygiene and waste management](#), (v) [quarantine of individuals](#), (vi) [rational use of PPE](#), (vii) [oxygen sources and distribution for COVID-19 treatment centres](#), (viii) [Surveillance and case definitions](#), (ix) [Risk communication and community engagement](#), (x) [vaccine readiness assessment](#).

WHO Guidelines for COVID-19 are summarized in Table 5. Additional guidance is also listed in Annex VIII.

Table 5 – WHO Guidelines for COVID-19

WHO Guideline	Content
Covid-19 guidance environmental on cleaning for healthcare facilities 17 April 2020	Guidance on the cleaning and disinfection of rooms and wards or areas in healthcare facilities occupied with suspected and confirmed COVID-19 patients.
Covid19-stigma-guide	Methods to address risk of social stigma and discriminatory behaviours against people of certain ethnic backgrounds as well as anyone perceived to have been in contact with the virus.
Critical preparedness readiness and response actions COVID-10 2020-03-22_FINAL-eng	Update to the interim guidance document. This version provides updated links to WHO guidance materials and provides the full list of WHO technical guidance available for COVID-19 and provides updated recommendations in the table.
WHO-2019-nCoV-essential_health_services-2020.1-eng	Countries will need to make difficult decisions to balance the demands of responding directly to COVID-19, while simultaneously engaging in strategic planning and coordinated action to maintain essential health service delivery, mitigating the risk of system collapse. ... Establishing effective patient flow (including screening, triage, and targeted referral of COVID-19 and non-COVID-19 cases) is essential at all levels.
WHO-2019-nCoV-Hand_Hygiene_Stations-2020.1-eng	Hand hygiene is the most effective single measure to reduce the spread of infections through multimodal strategies.
WHO-2019-nCoV-HCF_operations-2020.1 – eng	To guide the care of COVID-19 patients as the response capacity of health systems is challenged; to ensure that COVID-19 patients can access life-saving treatment, without compromising public health objectives and safety of health workers.
WHO-2019-nCoV-HCW_risk_assessment-2020.2-eng	This data collection form and risk assessment tool can be used to identify infection prevention and control breaches and define policies that will mitigate health care worker's exposure and nosocomial infection (infection originating in a hospital).

WHO-2019-nCov-HCWadvice-2020.2-eng	This document highlights the rights and responsibilities of health workers, including the specific measures needed to protect occupational safety and health.
WHO-2019-nCov-IPC_Masks-2020.3-eng	It is possible that people infected with COVID-19 could transmit the virus before symptoms develop. It is important to recognize that pre-symptomatic transmission still requires the virus to be spread via infectious droplets or through touching contaminated surfaces.
WHO-2019-nCoV-IPC_WASH-2020.2-eng	Frequent and proper hand hygiene is one of the most important measures that can be used to prevent infection with the COVID- 19 virus. WASH practitioners should work to enable more frequent and regular hand hygiene by improving facilities and using proven behaviour-change techniques.
WHO-2019-nCoV-IPC-2020.3-eng	Guidance on infection prevention and control (IPC) strategies for use when COVID-19 is suspected.
WHO-2019-nCoV-IPCPE_use-2020.2-eng	Summarizes WHO's recommendations for the rational use of personal protective equipment (PPE) in health care and community settings, as well as during the handling of cargo.
WHO-2019-nCoV-Leveraging_GISRS-2020.1-eng	Several countries have demonstrated that COVID-19 transmission from one person to another can be slowed or stopped. The key actions to stop transmission include active case finding, care and isolation, contact tracing, and quarantine.
WHO-COVID-19-lab_testing-2020.1-eng	Laboratory testing guidance for COVID-19 in suspected human cases.
WHO-COVID-19-IPC_DBMgmt-2020.1-eng	Interim guidance for all those, including managers of health care facilities and mortuaries, religious and public health authorities, and families, who tend to the bodies of persons who have died of suspected or confirmed COVID-19.
WHO-WPE-GIH-2020.2-eng	The purpose of this document is to provide interim guidance on laboratory biosafety related to the testing of clinical specimens of patients that meet the case definition of the novel pathogen identified in Wuhan, China, that is, coronavirus disease 2019 COVID-19.
WHO 2019 Overview of the Technologies for the Treatment of Infectious and Sharp Waste from Health Care Facilities?	The purpose of this document is to provide 1) criteria for selecting technologies to facilitate decision making for improved health care waste management in health care facilities and 2) an overview of specific health care waste technologies for the treatment of solid infectious and sharp waste for health care facility administrators and planners, WASH and infection prevention control staff, national planners, donors and partners.

4 Environmental and Social Baselines

4.1 Socio-Economic Baseline

4.1.1 Population

Solomon Islands has around 19.8% (or 102,030) of its estimated present total population of 515,870 living in urban and peri-urban areas. The country is divided into nine provinces namely Central, Choiseul, Guadalcanal, Isabel, Makiri-Ulawa, Malaita, Rennell and Bellona, Temotu, Western and the capital, Honiara City which is situated on the north-western coast of Guadalcanal. Malaita has the largest population size of 137,596 people, followed by Guadalcanal (93,614), Western (76,649) and Honiara city (62,609) based on the 2009 census.

Data from the 2009 Census of Population and Housing suggests that Solomon Islands’ annual population growth rate of 2.3% is still relatively high compared with other countries in the region. The population growth rate is the highest in Guadalcanal (4.4%) followed by Choiseul (2.8%), Honiara (2.7%), Makira-Ulawa (2.6%) Western (2%). A contributing factor to Solomon Islands’ high natural growth rate is the high fertility rate. Although the average number of children per woman dropped marginally from 5 in 1999 to 4.7 in 2009, Solomon Islands still has a relatively high fertility rate. In addition, the infant mortality rate (IMR) declined by 6 deaths per 1,000 births, and life expectancy at birth improved during the period 1999–2009. Life expectancy for Solomon Islands women in 2009 was 73.1 years, compared with 66.2 years for men.

International migration has declined since the mid-1990s. However, internal migration is significant, with Honiara and Guadalcanal Province being target destinations because of employment opportunities and developments in Honiara.

4.1.2 Human Development Index

Solomon Islands’ HDI value for 2019 is 0.567, which is below the average of 0.631 for countries in the medium human development group and positions it at 151 out of 189 countries and territories. The Solomon Islands’ HDI of 0.567 is below the average of 0.747 for countries in East Asia and the Pacific, but is comparable to Kiribati and Vanuatu, which have HDIs ranked 134 and 140, respectively.⁸

Between 2000 and 2019, Solomon Islands’ HDI value increased from 0.475 to 0.567, an increase of 19.4%. Between 1990 and 2019, Solomon Islands’ life expectancy at birth increased by 8.6 years, mean years of schooling increased by 1.2 years and expected years of schooling increased by 4.2 years. Solomon Islands’ GNI per capita increased by about 15.2% during this period.

Table 6 –Solomon Islands’ Human Development Index Trends

Year	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2017 PPP\$)	HDI value
1990	64.4	6.0		1,956	
1995	65.6	7.2		2,356	
2000	67.4	6.6	4.6	1,811	0.475
2005	69.2	8.4	4.8	1,854	0.509
2010	70.7	10.7	5.1	1,671	0.537
2015	72.2	10.3	5.4	2,298	0.563
2016	72.4	10.2	5.4	2,240	0.561
2017	72.6	10.2	5.5	2,225	0.562
2018	72.8	10.2	5.5	2,251	0.564
2019	73.0	10.2	5.7	2,253	0.567

⁸ UNDP, Human Development Report 2020. The Next Frontier: Human Development and the Anthropocene

4.1.3 Indigenous People and Culture

The majority of Solomon Islanders are ‘indigenous people’ with traditional tenure, knowledge and governance structure which are still prevalent in their livelihood. Almost 87 per cent of the land in the Solomon Islands remains under some form of customary tenure and group or individual right of access to land through customary processes. Customary law and practices are rights recognised in the laws and the Solomon Islands Constitution and remain one of the main components of ethnic and national identity. Ninety-five per cent of the population is indigenous Melanesian, with smaller Chinese, European, Micronesian (1.2%) and Polynesian groups (3.1%) also resident. However, there is significant diversity within the Melanesian population, which comprises approximately 95 language groups with strong affiliation to cultural groupings. Governance and politics is also usually based on cultural traits such as patronage and the ‘big man’ patrimonial system which is deeply rooted in tradition and culture. This cultural orientation plays an important role in how communities respond to socioeconomic development and the management of their environment and natural resources⁹.

4.1.4 Vulnerability

In common with other small island states, the Solomon Islands economy is structurally vulnerable due to:

- The Solomon Islands’ small population, which is an indicator of the country’s limited ability to achieve structural economic transformation.
- The economic remoteness of the archipelago.
- The share of the total population consisting of people who live in low-lying coastal areas is higher than the average for other lesser developed countries, including neighbouring Pacific Islands states.
- The level of merchandise export concentration in the Solomon Islands.

While these factors indicate a significant degree of economic vulnerability, it should be noted that the share of the primary sector in the Solomon Islands economy is not been greater than the average among lesser developed countries; instability of agricultural production has been lower; and the export of goods and services has been less unstable than in the Solomon Islands than in comparable economies. Although the Solomon Islands can be classified as vulnerable due to its geographical location and economic concentration, it has not in practice been significantly destabilized by shocks beyond domestic control.¹⁰

Within the population, vulnerability may stem from a person’s origin, gender, age, health condition, economic deficiency and financial insecurity, disadvantaged status in the community (e.g. minorities or fringe groups), dependence on other individuals or natural resources, etc. Aggregate poverty has declined since the period of civil conflict between 1998 and 2003 known as the Tensions. The poverty rate, based on the national poverty line, reduced from 22% in 2005/06 to 14% in 2012/13, implying that some 45,000 people were lifted out of poverty over that period. However, a high proportion of Solomon Islanders remain vulnerable to falling into poverty. Despite improvement in poverty rates, the wellbeing of Solomon Islanders remains highly vulnerable to frequent shocks. Poverty remains extensive

⁹ MECDM, 2017. Solomon Islands National Waste Management and Pollution Control Strategy – 2017-2026

¹⁰ United Nations Committee for Development Policy 20th Plenary Session, 2018. Vulnerability Profile of Solomon Islands

in the country, with 12.7% of the people still living below the national basic needs poverty line. The geographical distribution of poverty in the Solomon Islands is uneven and is significantly higher in the Makira and Guadalcanal provinces. Moreover, poverty in the Solomon Islands is largely a rural phenomenon: 87% of Solomon Islanders below the food poverty line live in rural areas. Poverty also depends on education attainment and economic activity: the number of poor households declines when the education level of the household's head is higher, and poverty rates are significantly lower among wage workers than across other types of workers.

4.1.5 Economy

Solomon Islands' per-capita gross domestic product of USD\$600 ranks it as a lesser developed nation, and more than 75% of its labor force is engaged in subsistence and fishing. The economy has been described for some time as a dual economy due to the earnings emerging from natural resource extraction, which has allowed the development of a two-tiered economy. The first is the traditional and informal economy centred on subsistence agriculture, fishing and collection of forest products. This economy remains only partially cash based and is central to the lives of the majority of the population in rural areas. It is estimated that this economy could represent as much as 60% of the formal economy. Its continuation is closely linked with access to land and resources. It is constrained by limited provision of state services and poor access to markets. The second tier is a fully cash-based economy driven primarily by revenue from the extraction of resources, but supporting an emerging service industry. Services account for about 57.4% of GDP (approximately half being Government services), agriculture 33.4% (not including subsistence) and industry 9.3%. Despite strong growth within this economy, it remains unable to provide sufficient employment to meet an ever-increasing demand linked to both an increasing population and an increasing demand for consumer goods. It is estimated that in rural areas, on average, less than 10% of rural population has access to formal employment, while in Honiara, unemployment within 15 to 24 year olds is estimated at 80%. The growing dependency of the rural community on the cash economy has significant implications for the growth of urban centres, with the capital Honiara experiencing an influx of migrants from all provinces¹¹.

COVID-19 has triggered a severe regional and global economic downturn. It has affected the East Asia and Pacific regional economy through both domestic and external channels. The necessary but economically costly lockdowns have led to a sharp contraction of economic activity and an abrupt tightening of global financing conditions. Regional commodity exporters – including those in the Solomon Islands – have experienced a sharp decline in commodity prices.¹² Growth in the region, excluding China, is projected to contract by 1.2% in 2020 and to rebound in 2021 as the effects of the virus dissipate. Growth forecast downgrades are sizable both in the region's major economies and in the Pacific Islands' smaller export and tourism driven economies which have limited policy space to mitigate the impact of the outbreak and, in addition, are recovering from the devastating impact of cyclone Harold in April 2020. The downgrades reflect high exposure of these countries to the rest of the world through tourism, remittances and, particularly relevant to the Solomon Islands, commodity exports. The World Bank forecasts a 6.7% fall in Solomon Islands' projected Gross National Product in 2020 and a 0.3% fall in 2021.

¹¹ MECDM, 2017. Solomon Islands National Waste Management and Pollution Control Strategy – 2017-2026

¹² World Bank, 2020. Global Economic Prospects

4.1.6 Health and Health-care Services

The MHMS is the key health provider in the Solomon Islands through a network of over 300 public facilities. Key constraints to access include poor maintenance of health facilities, high rates of facility closure, and inadequate referral systems. At 1.3 per 1,000, the hospital bed-to-population ratio is relatively low. There are approximately 22 doctors per 100,000 of population and 205 midwives and nurses per 100,000. Health services are concentrated in the urban centers with a hierarchy of facilities available ranging from nurse aide posts and rural clinics to National Referral Hospital. Of the nine provinces in the Solomon Islands, eight have a public hospital. However, there are disparities in access to health services due to a population spread over a difficult geographic terrain. Although the number of health workers per capita has improved in recent years, the skill mix and distribution of health workers across provinces, disease burden, and national programs is generally inequitable and supply driven.¹³

The large majority of health expenditure is publicly funded by the Solomon Islands Government, from both domestic and development partner funding. Total health expenditure (THE) per capita was US\$102 (SB\$753) in 2014, comparable to other countries with similar levels of income. In nominal terms, THE and per capita health expenditure increased between 2007 and 2014 but in real terms THE expenditure per capita fell by 8% during this period, reflecting high population growth. In 2014, public expenditure on health was 92% of THE, the highest share in the region. Solomon Islands almost tripled its nominal domestic allocation to MHMS between 2007 and 2016 and has consistently allocated MHMS the second largest recurrent budget after the education sector. MHMS's largest expenditure is on payroll and staff benefits, and the largest spending groups are provincial divisions, followed by the National Referral Hospital (NRH) and corporate services. In 2016, just over one-half of MHMS total recurrent expenditure was spent on payroll and staff benefits. Goods and services represented one-quarter of total recurrent expenditure, but this share is declining as the share of expenditure on grants to provincial divisions is increasing. Provincial divisions incurred 40 percent of total recurrent expenditure in 2016, followed by the NRH (just under 20%). This is in line with MHMS policy to move resources to the provincial divisions to deliver services for the majority of the population that still lives outside of the main urban center of Honiara.

Many population health outcomes have improved significantly in Solomon Islands in the last two decades, for example, a marked decline in the prevalence of malaria and tuberculosis and the improvement of overall immunization coverage. However, the country still faces significant challenges. In general, malaria and tuberculosis are the major public health concerns in Solomon Islands, along with sexually transmitted infections, acute respiratory tract infections, diarrhea, viral hepatitis, dengue fever, and measles. Recent outbreaks suggest immunization coverage is still insufficient. Poor sanitation continues to be a serious issue, and tuberculosis and chronic respiratory infections remain a significant share of the disease burden. Ongoing challenges with communicable diseases and maternal, neonatal, and nutritional health persist. The Solomon Islands is suffering the classic "double burden of communicable and non-communicable diseases" not dissimilar to most other countries in the region, requiring society to adapt rapidly to the challenge of coping with a heavy and growing caseload of communicable and non-communicable disease (NCDs) simultaneously. NCDs now account for 66% of the burden of disease, up from 4% of morbidity and mortality in 1990. In 2015, cardiovascular diseases were responsible for the largest share of the overall disease burden, causing 21% of all Disability

¹³ World Bank, 2018. Solomon Islands Health Financing System Assessment

Adjusted Life Years (DALYs) lost due to morbidity and premature mortality, followed by diabetes, urogenital, blood, and endocrine diseases (12%), and diarrhea, lower respiratory and other infectious diseases (8%). The top risk factors for death in 2015 were largely lifestyle related and closely linked to NCDs, with dietary risks, high body mass index and high fasting plasma glucose prominent risk factors. Tobacco smoking remains a high-risk factor, with smoking rates of 41.4% for men and 10.6% for women over the age of 15.

Both under- and overnutrition remain a concern, with 36% of children under five years of age stunted when compared to the World Health Organization growth standard. Across provinces, the highest stunting rates are reported in Makira, at 46% of children, a reflection of the fact that it has the highest poverty of any province. The stunting rate is slightly higher in urban areas, in poorer households. Stunting is a well-established risk marker and proxy indicator for a range of physical and environmental factors which impair child health and well-being. Undernutrition in the first 1,000 days is associated with poor cognitive and educational outcomes in childhood and adolescence, as well as lower wage earnings and decreased likelihood of exiting poverty in adulthood.

4.1.7 Education

As per the 2009 census data the highest level of education completed, 15 % of males and 9% of females 12 years and older responded that they attended secondary education; 59% and 51% of males and females completed only primary level, and 19% of males and 35% females had no schooling completed. 3% of males and 1% of females had tertiary education. The average literacy rate for people aged 15 years and older is relatively low at around 76%; this is likely due to a range of factors including lack of compulsory education, poor access to services in some areas, low enrolment and completion rates and the prevalence of extreme poverty. Honiara, as the center of education in country, has schools that include the Solomon Islands National University, University of the South Pacific (USP), and Woodford International School. Solomon Islands National University was initiated in 2012 from the Solomon Islands College of Higher Education which was basically pooled from all the existing government schools in 1984. The USP Solomon Islands Campus at Honiara provides tertiary education to students of the South Pacific. The Woodford International School offers the International Baccalaureate Primary Program from early childhood to Year 5 and then the Cambridge International Middle Years and High School Program up to the Cambridge Advanced Level Program in Year 12.

4.1.8 Gender Based Violence

Solomon Islands has high background rates of Gender-based Violence (GBV). The causes of GBV are multiple, but it primarily stems from gender inequality and its manifestations. In Solomon Islands, GBV has been largely normalized: 73% of men and 73% of women believe violence against women is justifiable, especially for infidelity and “disobedience,” as when women do “not live up to the gender roles that society imposes.”¹⁴ The Solomon Islands Family Health and Safety Study (2009) reveals that 64% of women between the ages 15 to 49 years of age reported experiencing physical or sexual violence or both by an intimate partner. Regional evidence suggests that this was further exacerbated by COVID-

¹⁴ Rasanathan J. K. and Bhushan, A., 2011. Gender-based violence in Solomon Islands: Translating research into action on the social determinants of health. World Health Organization, Regional Office for the Western Pacific

19 lockdowns¹⁵. 94% of women in the Solomon Islands said their mental health has been affected since the spread of COVID-19, as compared to 37% of men¹⁶. One of the recommendations arising out of the Family Health and Safety Study was to build health workers' capacity to be able to respond effectively to victims of violence through a training program that incorporated good practices from international guidelines and was sensitive to the cultural and social context. Following that study, in the period 2015 to 2017, the MHMS through the Gender-based violence Program Coordinator delivered training sessions in five provinces on GBV to about 20% of Solomon Islands' health workers.

In 2017, a government multi-ministry collaboration led by the Ministry of Women Children and Health Affairs, and funded by the World Bank, developed the SAFENET Assessment & National Action Plan 2014-2016. The intention was that the implementation of such a plan would bring about real and tangible change to the benefit of victims and survivors of GBV in the Solomon Islands. In 2010 SIG passed the National Policy on Eliminating Violence Against Women (EVAW Policy) to further help control the problems of VAW. Yet, the prevalence of GBV is still widespread with little change in norms justifying wife beating between 2009 (the Family Health and Safety Study) and 2015 (Demographic and Health Survey). The persistence of GBV in the Solomon Islands undermines the potential of many women to participate equally in the economic and social development of the country.

Limited services to support GBV victims exist outside the capital Honiara, which leaves many vulnerable women and men living in the remaining provinces without essential service or care such as clinics, counseling, and security. Partial or complete lockdowns have disrupted women's already limited access to services: traditional service providers such as women's organizations and civil society organizations are often the first to close, due to funding being diverted elsewhere or because they are not classified as "essential" services¹⁷.

The health care system, which is often a first point of contact for survivors of violence, thus becomes even an even more critical part of the GBV referral system during the pandemic, with the capacity to provide up-to-date information on available service providers, including non-traditional providers such as hotlines. With only 20% of frontline health care workers trained in GBV response and referral, there exists an untapped opportunity to strengthen the health care's system GBV response during and after the pandemic through the training of frontline health care workers. Global evidence has found that incorporating even one module on GBV in training curricula for health care providers may enable healthcare providers to better recognize key signs and symptoms and more adequately treat and/or refer survivors¹⁸.

4.2 Environmental Baseline

4.2.1 Solid Waste Management

Solid waste represents the majority of the waste produced in many parts of Solomon Islands. The total solid waste generation rate (household and non-household) for Solomon Islands is estimated to be

¹⁵ UN Women, Jun 11. 2020. Across the Pacific Region, crisis centers respond to increased cases of violence against women amid COVID-19

¹⁶ UN Women, 2020. Unlocking the lockdown.

¹⁷ World Bank. Service Provision for GBV Survivors During COVID-19 Response: Essential Information for World Bank Teams in South Asia

¹⁸ USAID, 2009.

0.75–1.0 kilogram (kg) per person per day. With a population of around 80,000 and a waste generation rate of 1.0 kg/ person/day, the greater Honiara urban area is estimated to generate 80 tons per day or 29,000 tons per year. It is estimated that 40%–50% of waste is organic. If the urban population continues growing at its current rate, solid waste generation is expected to double within 18 years¹⁹.

4.2.1.1 *Waste Collection*

The HCC Environmental Health Division is responsible for collecting household waste within Honiara City and transporting it to the Ranadi dump site. HCC is also responsible for collecting waste from the central market. HCC formerly contracted out all household waste collection to private companies, but a donation of three small, used compactor trucks induced HCC to take up most of the service again. HCC now uses the donated trucks to collect household waste on six of 10 routes—leaving the other four for tender by private contractors. HCC and three private contractors also collect commercial wastes in and around Honiara, and transport it to the Ranadi dump site. HCC uses the proceeds of its commercial collection service to subsidize the household collection service²⁰.

However, less than half of Honiara City's population is provided with waste collection services. The large informal settlements, which fall outside of the HCC municipal boundary, also do not receive waste collection services. Since only a small proportion of solid waste is collected, much of the Honiara urban area's waste is improperly disposed of through open burning and illegal dumping. This has serious public health and environmental consequences. For example, poor solid management practices were linked to a severe outbreak of dengue fever in Honiara in 2013²¹.

Poor collection systems are a broad ranging challenge covering urban centres, settlements and communities. This issue is directly related to the ability of responsible agencies to collect and dispose of waste. Honiara is a prime example of this challenge where the pressure on the collection system of HCC is further exacerbated by the lack of waste segregation by household and business premises. At the provincial level, the challenge is directly related to the absence of proper landfills and the limited capacity to source appropriate collection and disposal equipment²².

4.2.1.2 *Waste Disposal*

There are no sanitary landfills in the Solomon Islands. The largest dumpsite in the country is located in Honiara (Ranadi Landfill). It is used for domestic, commercial and industrial wastes collected by HCC as well as individual industries and the general public²³. The HCC Environmental Health Division is responsible for managing the Ranadi dumpsite, which is located 6 kilometers from the city, on what was once a wetland, sited behind the sand berm that formed the nearby beach in a light industrial area²⁴.

The active part of the dumpsite covers about 1.5 hectares, but the total area is likely double that since beach erosion to the northwest reveals a thick layer of rubbish, and waste has also spread to adjacent properties. It is estimated that 20 to 30 tons of solid waste is disposed of daily at the landfill. Access to

¹⁹ ADB, 2014. Solid Waste Management in the Pacific - Solomon Islands Country Snapshot

²⁰ ADB, 2014. Solid Waste Management in the Pacific - Solomon Islands Country Snapshot

²¹ ADB, 2014. Solid Waste Management in the Pacific - Solomon Islands Country Snapshot

²² MECMD, 2017. Solomon Islands National Waste Management and Pollution Control Strategy – 2017-2026

²³ MHMS, 2009. National Solid Waste Management Strategy 2009-2014

²⁴ ADB, 2014. Solid Waste Management in the Pacific - Solomon Islands Country Snapshot

the site is unrestricted, and all wastes are accepted. Scavenging at the dumpsite provides a source of income for several dozens of nearby residents²⁵.

Until recently, Ranadi site was an unmanaged open dump. Uncontrolled burning was commonly used to reduce the volume of wastes at the site, with no leachate treatment or control. Records on the number of vehicles and quantity of wastes entering the dump site are not kept. In 2013, upgrading works on the dumpsite began with assistance provided by the Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management funded by the Japan International Cooperation Agency (JICA)²⁶. The project is implemented in partnership with the MECDM, MHMS and the HCC. As part of the assistance, new cells have been created where waste is now being compacted. Large bulky wastes, such as vehicle bodies and white goods, have been removed to create more space; and a simple drainage system to capture leachate and a small settling and digestion pond have been installed. An office is also being established to improve administrative management of the dumpsite²⁷.

All provincial centres face challenges with allocation of land and/or designation of the proper landfills²⁸. Most wastes are collected and transported to local (unsanitary) landfills where they are buried or burned. Waste minimization, and better recycling systems, will be essential in reducing the volume of wastes that enter the landfill.

4.2.2 Asbestos

Asbestos is a naturally occurring rock fibre that it is harmful to humans. When products containing asbestos are damaged, such as during demolition or refurbishment, small fibres are released and become airborne. Breathing in asbestos fibres can cause a range of diseases including cancer²⁹. A regional survey undertaken by the PacWaste project found a low-moderate relative risk of confirmed asbestos-containing materials (non-residential) in Solomon Islands. However, it is possible that some asbestos may be present in old buildings and structures to be refurbished and that asbestos may end up in demolition debris during renovation / refurbishment activities. All asbestos waste and products containing asbestos should be removed by specially trained workers and buried at an approved and licenced landfill. The waste must not be tampered with or broken down to ensure that no fibres become airborne. During the course of the PacWaste survey, new building materials containing asbestos were identified in retail outlets in the Solomon Islands³⁰. This means that the asbestos problem in Solomon Islands is not just a historical one as the number of houses with asbestos is likely to be growing. Annex II – CoESP contains management measures for the safe handling and disposal of asbestos wastes and prohibits the use of asbestos containing building materials in Project activities.

4.2.3 Health-care Waste Management

Healthcare waste is defined as the total waste stream from a hospital or health-care facility, which would include non-hazardous or general waste and hazardous healthcare waste. Hazardous healthcare

²⁵ ADB, 2014. Solid Waste Management in the Pacific - Solomon Islands Country Snapshot

²⁶ MECDM, 2017. Solomon Islands National Waste Management and Pollution Control Strategy – 2017-2026

²⁷ ADB, 2014. Solid Waste Management in the Pacific - Solomon Islands Country Snapshot

²⁸ MECDM, 2017. Solomon Islands National Waste Management and Pollution Control Strategy – 2017-2026

²⁹ SPREP, EU & WHO, 2016. The State of Asbestos in the Pacific

³⁰ SPREP, EU & WHO, 2016. The State of Asbestos in the Pacific

waste has the potential to be infectious to humans, cause injury or pollute the environment. Correct treatment and disposal is therefore important to protect people and the environment³¹.

In the past, there was little to no management of health care wastes at the National Referral Hospital in Honiara. Wastes such as amputated body parts, sharps, and health care equipment were thrown at the back of the hospital compound near the seashore where they were buried or burnt. Health authorities have been initiating ways of improving the countries health care management. Provincial hospitals and clinics have experienced the same problems as at the National Referral Hospital. The use of incinerators might ease management of such special wastes in the provinces³².

PacWaste conducted a healthcare waste management baseline survey in July 2014, through which information was collected on current waste management processes. Audits were conducted at six hospitals: Honiara National Referral Hospital (Honiara); Gizo Hospital (Gizo); Helena Goldie Hospital (Munda); Kilu'ufi Hospital (Auki); Atoifi Adventist Hospital (Atoifi); and Kirakira Hospital (Kirakira)³³. The baseline study identified the following inadequacies: 1) Lack of documented waste management planning system; 2) sub-standard healthcare waste segregation and containment practices; 3) inadequate facilities for storage of healthcare waste before treatment; 4) treatment infrastructure incapable of definitively destroying the healthcare waste infection risk; 5) Inappropriateness and irregular use of PPE; and 6) no structured training programs for healthcare waste management stakeholders³⁴.

The survey identified the need for improved storage, treatment and disposal solutions for healthcare waste across Solomon Islands, noting that the method for treatment of healthcare waste was not up to standard at any of the hospitals visited. To address these needs, PacWaste procured five high temperature incinerators and provide much needed equipment, PPE and healthcare waste management training at all six of the locations surveyed³⁵. However, it is understood that none of the PacWaste Project funded incinerators operates properly and are currently not being used.

In 2008, the Ministry of Health developed a draft healthcare waste policy with the objective to ensure the management of healthcare waste, including waste equipment and waste storage areas, is achieved in a safe, hygienic and efficient manner. No progress has been made since the draft policy, with each hospital and respective healthcare centres resorting to their own initiative to properly manage the healthcare wastes³⁶.

Information regarding the waste management process occurring, from ward-level waste generation, separation of wastes, through to ultimate treatment and disposal as assessed by SPREP in 2014, is described for six Solomon Islands hospitals in Table 7.

³¹ SPREP, 2014. Healthcare Waste in the Pacific Factsheet

³² MHMS, 2009. National Solid Waste Management Strategy 2009-2014

³³ SPREP, 2014. PacWaste Country Profile – Solomon Islands

³⁴ SPREP, 2014. Baseline Study for the Pacific Hazardous Waste Management Project Healthcare Waste – Solomon Islands.

³⁵ SPREP, 2014. PacWaste Country Profile – Solomon Islands

³⁶ MECDM, 2017. Solomon Islands National Waste Management and Pollution Control Strategy – 2017-2026

Table 7 – Waste Management Processes Observed at Six Solomon Island Hospitals³⁷

	Hospital Name	Honiara National Referral Hospital			Gizo Hospital (opened 2013)		Helena Goldie Hospital			Kilu'ufi (Auki) Hospital			Atoifi Hospital			Kirakira Hospital			
Generation & Segregation	Dedicated Containers/ Bags	Y			Y		N			N			N			Y			
	Colour Coding	Y			Y		Y			N			Y			N			
	Sharps segregated & secure	Y			Y		Y			Y			Y			Y			
	Signage Present	N			Y		N			N			N			Y			
Internal Handling	Degree of manual handling of bags	High			Medium		High			High			High			High/Limited			
	Internal Transport Mode	Wheelie Bin/Trolley			Wheelie Bin/Trolley		Manual			Manual/Wheelie Bin			Manual			Manual			
	Spill Kit Present	N			Y		N			N			N			N			
Storage	Dedicated & Appropriate Area	N			N		N			N			N			Y			
	Loading/unloading acceptable	N			Y		N			N			Y			Y			
	Spill Kits Present	N			Y		N			N			N			N			
	Monitoring & record keeping occurs	N			Y		N			N			N			Y			
Treatment	Treatment per Waste Stream		Tech. Type	Volume (kg/wk)		Tech. Type	Volumes (kg/wk)		Tech. Type	Volume(kg/wk)		Tech. Type	Volume s (kg/wk)		Tech. Type	Volume s (kg/wk)		Tech. Type	Volumes (kg/wk)
	Healthcare Waste	✓	Landfill (w/o treat)	2,500 ¹	✓	Incinerate (internal)	600	✓	Landfill (w/o treat)	250 ²	✓	Concrete Block Incinerate/ Open Burning (internal)	250 ³	✓	Incinerate (internal)	150 ⁴	✓	Bury off site	450 ⁵
	Sharps	✓	Incineration	As above	✓	Incinerate (internal)	600 ⁶	✓	Landfill (without treatment)	As above	✓	Incinerate (internal)	17.5	✓	Incinerate (internal)	As above	✓	Incinerate (internal)	As above
	Pharmaceutical	✓	Crush and dilution	Not known	✓	Incinerate (internal)	189 ⁷	✓	Landfill (without treatment)	Not known	✓	Landfill (without	Not known	✓	Landfill (without treatment)	Not known	✓	Crush and dilution	Not known

³⁷ SPREP, 2014. Baseline Study for the Pacific Hazardous Waste Management Project Healthcare Waste – Solomon Islands. Table 7 updated in March 2021.

			Incineration								treatment)								
	Cytotoxic	×	Incineration	90-100kg	×	NA	NA	×	N/A	NA	×	NA	NA	×	NA	NA	×	NA	NA
	General	✓	Landfill (without treatment)	Not known	✓	Landfill (without treatment)	Not known	✓	Landfill (without treatment)	Not known	✓	Landfill (with treatment)	250 ⁸	✓	Incinerate (internal)	Not known	✓	Landfill (without treatment)	Not known
If incinerator present																			
	Make, Model, Year commissioned	Controlled Air Incinerator, Model CA 30			UHT-300 II 0 UCHIMURAGUM CO. LTD (Made in Japan. Diesel.			Incinerator installed in 2018. Diesel.			Locally made – concrete and iron overhead shelter			Locally made – concrete design			Wood fired - no name		
	Operating Temp (°C)	700-1100			Not known			Not known			Not known			Not known			Not known		
	No. chambers	2			1			1			1			1			1 – locally made		
	Condition	Working			Reasonable			Not working			Poor			Reasonable			Poor		
	Comments	The incinerator is under phase 1 of Pac Waste (SPREP) Used for all clinical wastes including sharps			Two incinerators present. One used for sharps and vials and one for health care waste. (1) Old incinerator open fire currently in use. Fire wood and kerosene. (2) New combust incinerator pending commissioning since 2018. Diesel			Since instalment, the incinerator has not been working. Awaiting for part since then. The wood incinerator not used since 2011.			The current incineration is a homemade one with concrete and iron built because the (mediburn) incinerator build by SPREP doesn't functioning on installation. We continue each year to maintain our current concrete block and iron plate incinerator			The incineration (Photo 26) is to be replaced by a new incinerator which was built on site in the workshop.			The incinerator is only used for the treatment of sharps as residents complain about the fumes. Engine 8 is not functioning..		
Operational statistics																			

	Per year						
	Waste Throughput (kg)	3-400kg/burn	400kh	100kg/per load	Not known	100kg/per load	N/A
	Operating Hours (hr)	2-4 hrs	4hrs	Approx 2 hours	2 hours daily	Approx 2 hours	Approx 2 hours
	Fuel	Diesel	Diesel	Wood	Wood and diesel	Wood	Wood/fuel
	Fuel use (kg/litres)	200l/burn	Not known	Not known	40 litres/week	Not known	
	Fuel use per kg waste burnt	120kg /hr	Not known	Not known	Not known	Not known	Not known
	Technology siting and operation issues	When windy and it smokes can blow directly into nearby residential area. Normally doesn't smoke.	Coastal erosion, sea rise. Wet, windy, uncovered and close to residents (staff residences and offices)	Public are able to access the incinerator area. The area has now become overgrown and derelict.	Incinerator does not get hot enough and fumes enter the hospital due to low heat and low stack.	No proper water supply to the incinerator house + walkway wet and muddy..	Wet, uncovered and close to residents and hospital ward.
	Offsite transport assessment	Fair	Fair	Poor	Fair	Poor	Poor

4.3 COVID-19 Status and Response

4.3.1 Current Covid-19 Status

Solomon Islands was one of 12 countries with no confirmed COVID-19 case until the country's COVID-19-free status ended on October 3, 2020, when an asymptomatic student repatriated from the Philippines tested positive on arrival in Honiara. As of January 18, 2021, the total COVID-19 cases have increased to 18 (seven students repatriated from Philippines, now recovered, and eleven on incoming flights in October and November from Auckland, New Zealand). All international flights were stopped on March 22, 2020. With the limited number of flights between May 26 and September 29, 2020, a total of 1,159 passengers (899 nationals and 260 foreign national) have travelled back to Solomon Islands on 18 flights. While borders are currently closed between Papua New Guinea and Solomon Islands, Papua New Guinea has recorded a total of 1,316 cases and 13 deaths as of March 1st, 2021, and there is a risk that COVID-19 could potentially cross to Solomon Islands through some of the northern island groups.

Solomon Islands has had many COVID-19 free months to prepare its health and quarantine system, but the risks are high that COVID-19 could spread widely and rapidly should quarantine and containment efforts fail. All citizens not working in Honiara were requested to return to their home province and village; this is likely to put significant additional pressures on Provincial Divisions' health facilities, staff, and supplies. Furthermore, there has also been disruption to routine health services mainly supervised deliveries, immunization rates and outreach activities. Immunization for Measles, PCV 3, Polio 3, PENTA 3, BCG and Hep B at Birth have all shown lower coverage rates compared to the same period for 2018 and 2019. Outreach activities between January and June 2020 dropped by 14%. In addition to the eighteen confirmed cases, the crisis has already caused casualties after 27 people aboard a shipping vessel drowned on April 4 in rough seas while being transported from Honiara to take refuge from COVID-19 (at the advice of government).

4.3.2 National COVID-19 Preparedness and Response

The Solomon Islands has prepared the Consolidated National Preparedness and Response Plan for COVID-19 (issued on March 12, 2020) and an updated Phase 2 plan issued on August 27, 2020. The SIG declared a public health state of emergency on March 26, 2020. This allowed the government to enforce a number of emergency measures and procedures stipulated under its Emergency Act. In early March, MHMS developed a COVID-19 preparedness and response plan (PRP) with support from DFAT, with estimated cost of SBD 20 million (~US\$ 2.42 million) largely for PPEs and Consumables. The MHMS was also allocated a supplementary domestic budget of SBD 6.6 million (~US\$ 0.8 million) to assist with implementing the plan. In August the PRP was revised (Phase 2) to also include all COVID-19 related activities including quarantine, infrastructure, medical equipment and human resources (surge capacity for COVID-19) as well as investments in other sectors, including education, agriculture, and infrastructure. This plan was costed at SBD 334 million (~US\$ 40 million), with 50% estimated funding gap. In addition to this COVID-19 specific lending operation, the World Bank has increased the financing amount for the First Solomon Islands Transition to Sustainable Growth Development Policy Operation (approved in May 2020) from US\$10 million to US\$15 million to respond to critical fiscal needs due to COVID-19; and the Solomon Islands Port Authority and Solomon Power (both state owned entities) have together contributed SBD 10 million (~US\$1.2 million) towards the COVID-19 response.

The Solomon Islands, in addition to the internal domestic support for activities related to COVID-19, is also receiving assistance from several development partners (DPs). These include the United Nations (UN-mainly WHO and UNICEF), who are providing PPE along with laboratory supplies, disease

surveillance and response technical assistance, and communications support efforts; DFAT is providing a broad range of ongoing technical assistance, as well as funding for budget support and other health related activities (including quarantine facilities, laboratory and medical equipment), as is the New Zealand MFAT (including upgrading the ICU at the National Referral Hospital and a new x-ray machine). The European Union, Asian Development Bank, and China have all contributed financially and in-kind to the MHMS COVID-19 response efforts. The World Bank FTCT investment support has been designed to fill critical gaps in the preparedness and response efforts and complement activities committed by other DPs. In addition, through a multi-year program of advisory and analytics, the World Bank continues to provide advisory and analytical services to MHMS on health financing and related health system strengthening activities.

The Solomon Islands has established a National Health Emergency Operations Center (NHEOC) to oversee all operations and activities relating to COVID-19. The public health State of Emergency (SOE) remains in effect since March 26, 2020. This allows the government to enforce several emergency measures and procedures stipulated under its Emergency Act. The NHEOC, which was created due to the COVID-19 pandemic, oversees all operations and activities relating to COVID-19. NHEOC reports to the National Disaster Operations Center - Health (NDOC-H) committee which then reports to the Permanent Secretary of MHMS and the Executive Management Team. The NHEOC is located at the NRH and is chaired by a senior medical doctor at NRH. The NHEOC has seven teams reporting to it. These teams are as follows: provincial team, public health team, planning and operation team, clinical team, administration and finance team, and risk-communication team. In addition, the MHMS has established a COVID-19 financing committee to oversee how COVID-19 funds received from various sources are being utilized. The NDOC is located at the MHMS headquarters (physically just across the road from NRH) and is chaired by the Deputy Secretary for Health Improvement.

4.3.3 Testing for COVID-19

Solomon Islands gained the capacity to test for COVID-19 when it acquired two PCR-Polymerase Chain Reaction machine (donated by the People Republic of China and from the Australian Department of Foreign Affairs and Trade (DFAT)). Between May 19, 2020 and January 18, 2021, 6,018 tests have been conducted (with only eighteen positive cases). Testing is mainly being conducted in the capital Honiara, but it is also available in Western Province at Gizo hospital since September 2020. In addition, Solomon Islands has 10 GeneXpert machines located across provincial hospitals (8) and the national referral hospital (2). COVID-19 cartridges for the GeneXpert machines have been pre-ordered (with assistance from Development Partners). These cartridges will strengthen the lab testing capacity of provincial and the national referral hospitals.

5 Environment and Social Risks, Potential Impacts and Mitigation

The project is developed to support SI to respond to the COVID-19 pandemic and to strengthen its health system for public health emergency, which is thus expected to result in long-term positive environmental and social impacts. In the short to medium term, however, environmental and social risks are assessed to be Substantial.

5.1 Summary of Main Environmental Risks

The project investments will focus on the provision of equipment, surveillance, case management, upgrades of existing facilities, and capacity building activities. Minor civil works will be undertaken for

the renovation and expansion of ICU capacity within existing facilities, renovation of the National Medical Store and other health facilities in five provinces; as well as the installation of the incinerators. The negative impacts directly associated with construction activities will be minor and can be mitigated through the standard measures outlined in the Project CoESP (Annex II). The main operational environmental risks identified are: (a) OHS issues related to testing, handling of supplies and the possibility that they are not safely used by laboratory technicians and medical crews; (b) OHS issues for medical staff and employees related to the treatment of COVID-19 patients; (c) medical waste management and community health and safety issues related to the handling, transportation, disposal of hazardous and infectious healthcare waste; (d) real or perceived inequities to delivery of services, (e) potential for SEA/SH of COVID patients and frontline health care workers in quarantine.

Recent outbreaks in the country (dengue and measles in 2013/14), low coverage and investment in essential health services, and lack of properly trained healthcare workers exacerbate the environmental risks associated with COVID-19 interventions, despite the availability of readily implementable and effective mitigation measures in the form of WHO guidance, WB EHS Guidelines and other GIIP. As discussed in Chapter 4.2.3, a healthcare waste management baseline study conducted in 2014 under PacWaste identified the inadequacies in health care waste segregation, storage, treatment and disposal, staff training, PPE availability and other OHS management aspects. Many of these identified issues were expected to be addressed by the PacWaste project and JICA investments, including the preparation of a national healthcare waste management strategy (already drafted, but yet to be endorsed at the ministerial level). However, there will continue to be a need for additional interventions to further reduce the public health risks resulting from healthcare waste management (e.g. hospitals not covered by PacWaste, poor maintenance and dysfunction of existing incinerators, etc). The understanding is that the PacWaste Project funded the installation of five incinerators, which none operates properly. A feasibility study is planned during early implementation of the Project to assess the need for new incinerators, as well as the feasibility of repairing the malfunctioning units, with a view to fund these as part of the Project. Although the COVID-19 emergency operation is not expected to generate large incremental volumes of medical waste with high population proximity exposed to this waste; the probability of serious adverse effects to human health from exposure to medical waste is low, the project's environmental risks are considered Substantial due to the prevailing environmental, health and safety risk management capacity constraints in the health sector and the country in general.

5.2 Summary of Main Social Risks

The project is expected overall to have positive impacts at a national scale. The social risks are considered Substantial even as some social risks and impacts (for example quarantine and isolation units, distribution of PPE, medical supplies) are considered temporary, predictable, and readily managed through project design features and standard mitigation measures.

The key social issues are outlined further in Table's 8, 9 and 10 and include the following:

- Occupational and community health and safety impacts from the minor civil works such as the renovation and upgrading of existing ICU facilities.
- Increase in sexual exploitation and abuse/ harassment (SEA/SH) related to the contractor(s) workforce.
- OHS risks related to exposure to infections / diseases e.g. from testing, laboratory and health care waste, treatment of COVID-19 patients etc.

- Community health and safety issues related to the handling, transportation and disposal of hazardous and infectious health-care wastes.
- Real or perceived inequities regarding access to project health services that lead to conflict or civil unrest.
- Project activities have the potential to contribute to virus transmission.
- SEA/SH risks for COVID patients and frontline health care workers in quarantine.
- General OHS risks for medical store and NHEC staff e.g. slips, trips, falls.
- OHS impacts to staff operating the incinerator(s).
- Provision of private or government security personnel leads to human rights violations, diversion of materials, aid and assistance etc.

5.3 Preliminary Risk Analysis

The following tables provide a preliminary analysis of the type of project activities identified, potential social and environmental impacts that may result from the project activities, key mitigation methods for residual impacts, and environmental and social risk management tools that are required.

Table 8 – Assessment of key project risks/impacts and proposed mitigation methods – planning and design stage

Activity	Significant Potential Risks / Impacts	Key Mitigation Methods	E&S Risk Management Tools
Planning and Design Stage			
Procurement of goods and supplies (sub-component 1(a))	<p>Failures in procurement process e.g. incorrect standard or quality of PPE leads to spread of infection to health-care workers.</p> <p>Procurement and use of goods will not be sustainable.</p>	<p>Due diligence and assessments will be undertaken by MHMS to ensure fit for purpose equipment is procured.</p> <p>ESHS provisions incorporated into bidding documents, in accordance with the new World Bank Procurement Framework. Bidding documents to be reviewed by the PMU E&S specialist/s and World Bank E&S specialists prior to procurement.</p> <p>The MHMS purchases will follow the WHO interim guidance on rational use of PPE for coronavirus disease 2019 which describes the types of PPE that are required for different functions.</p> <p>Sustainable use of goods and materials will be encouraged through capacity building and training of health service personnel.</p>	N/A
Design of health-care facilities e.g. refurbishment of quarantine facilities, isolation units, and ICUs (sub-components 1(c) and 2 (a)).	<p>Design of refurbished health-care facilities do not meet layout and engineering requirements for nosocomial infection control, increasing risk of spreading COVID-19 in health facilities.</p> <p>Design of waste management facilities are inappropriate, do not allow for the separation of infectious and non-infectious waste increasing the risk of spreading COVID-19.</p> <p>Design of refurbished facilities does not consider universal access e.g. women, children, elderly, and users with disabilities.</p>	<p>Design of facilities will reflect guidance from WHO and/or Centre for Disease Control and Prevention (CDC) on COVID-19 management and infection control as detailed in the Project's CoESP.</p> <p>Design of facility will follow guidance from WHO and/or CDC on health-care waste management and infection prevention control as detailed in the MHMS IPCG (Annex VI).</p> <p>Consideration of the need for differentiated access for different users of the facilities in the design as detailed in the Project CoESP. Consultation in accordance with the SEP to ensure proposed project</p>	<p>CoESP</p> <p>SEP</p> <p>MHMS IPCG</p>

	<p>Refurbished facilities that are not covered by adequate life and fire safety (L&FS) risk assessment and mitigation measures.</p> <p>Asbestos, lead from lead paints, synthetic mineral fibre (SMF), ozone depleting substances (from old air conditioning units) and polychlorinated biphenyls (PCBs) may be present in structures to be renovated.</p>	<p>sites can be utilized for project infrastructure activities.</p> <p>L&FS master planning will be included in the design of the facilities in line with GIIP and national legal requirements. MHMS will ensure that all national legal L&FS requirements are met, upon completion of the refurbishments. The facilities should be provided with Fire Detection and Alarm; Means of Egress; Fire Control and Suppression; Smoke Control.</p> <p>Designers to undertake building inspection(s) that identifies whether asbestos or other hazardous materials are present prior to renovations /refurbishments commencing. If found, a hazardous material management procedure must be detailed in WMP(s) to be developed during project by the contractor (refer to Table 9).</p> <p>Project's SEP will ensure widespread engagement with communities - including its more vulnerable groups - to disseminate information related to community health and safety.</p>	
Design of the NMS refurbishment (Component 2 (c))	<p>Facilities that are not covered by adequate life and fire safety (L&FS) risk assessment and mitigation measures.</p> <p>Designs not providing for pharmaceutical or chemical storage and disposal.</p> <p>Asbestos, lead from lead paints, synthetic mineral fibre (SMF), ozone depleting substances (from old air conditioning units) and polychlorinated biphenyls (PCBs) may be present in the medical store to be renovated.</p>	<p>L&FS master planning will be included in the design of the refurbished facility in line with GIIP and national legal requirements. MHMS will ensure that all national legal L&FS requirements are met, upon completion of the installation. The medical store should be provided with Fire Detection and Alarm; Means of Egress; Fire Control and Suppression; Smoke Control.</p> <p>Design should be developed for proper chemical handling, storage and disposal in accordance with the substances Material Safety Data Sheet(s) (MSDS(s)), and GIIP such as ISO standards on the handling and storage of chemicals from the ISO</p>	<p>CoESP</p> <p>SEP</p>

		<p>14001 Documentation Toolkit, the ESF, and Solomon Islands law.</p> <p>Designers to undertake building inspection(s) that identifies whether asbestos or other hazardous materials are present prior to refurbishment commencing.</p> <p>Consultation to ensure proposed site can be utilized for Project activities.</p>	
Design of the NHEC refurbishment (Component 2 (d))	<p>Facilities that are not covered by adequate life and fire safety (L&FS) risk assessment and mitigation measures.</p> <p>Asbestos, lead from lead paints, synthetic mineral fibre (SMF), ozone depleting substances (from old air conditioning units) and polychlorinated biphenyls (PCBs) may be present in structures to be renovated.</p>	<p>L&FS master planning will be included in the design of the facility in line with GIIP and national legal requirements. MHMS will ensure that all national legal L&FS requirements are met, upon completion of the installation. The facility should be provided with Fire Detection and Alarm; Means of Egress; Fire Control and Suppression; Smoke Control.</p> <p>Designers to undertake building inspection(s) that identifies whether asbestos or other hazardous materials are present prior to refurbishment commencing.</p> <p>Consultation to ensure proposed site can be utilized for Project activities.</p>	<p>CoESP</p> <p>SEP</p>
Procurement and location of the incinerators (sub-component 2 (b))	<p>Failures in procurement process e.g. incinerators are not fit for the purpose and could lead to:</p> <ul style="list-style-type: none"> incinerators unable to operate at a high enough temperature to kill the virus. incinerators do not have measures to reduce air quality issues e.g. scrubbers. <p>Incorrect siting of incinerators which affects the dispersion of the plume from the chimney causing reduced air quality and/or community and OHS issues.</p>	<p>A feasibility study is planned during early implementation of the Project to assess the need for new incinerators, as well as the feasibility of repairing the malfunctioning units, with a view to fund these as part of the Project. The feasibility study will advise on the best fitting incinerator type and site locations and alternatives for the incinerator(s) and ash pit(s). The proper design of the incinerators should achieve desired temperatures, residence times, and other conditions necessary to destroy pathogens. Ash pits must be</p>	<p>Feasibility Study</p> <p>ESMP (WB) incorporating PER/EIS (Solomon Islands)</p> <p>SEP</p>

	<p>Incorrect siting of the ash pit(s) leads to air, land and/or water pollution and/or causes a nuisance to sensitive receptors.</p>	<p>located away from water bodies and sensitive receptors. The feasibility study terms of reference (ToR) and final report will be reviewed by the PMU E&S specialist/s and World Bank E&S specialists prior to procurement of the incinerators.</p> <p>If the incinerators are procured, an ESMP will be required to manage the environmental and social impacts associated with the incinerator(s) location, installation and operation and ash pit(s) location prior to the commencement of procurement. The ESMP will confirm that emissions are compliant with the ESF and ESHGs and that locations proposed minimize nuisance and air quality impacts on nearby residents. An ESMP template is included in Annex V.</p> <p>The incinerators likely meet the definition of a Prescribed Development ('waste management system') and will require a development consent and either a PER or EIS to be determined in consultation with the ECD during Project implementation. The ECD environmental approval process will be followed by the PMU E&S specialists to determine what level of environmental assessment (PER or EIS) will be needed for the incinerators. If a PER or EIS is determined during project implementation to be required by ECD, the PER/EIS can be incorporated into the ESMP prepared in accordance with the World Bank ESF.</p> <p>The World Bank, MHMS and ECD will review and approve the incinerators specifications and proposed locations based on the feasibility study prior to procurement of the incinerators. ESHS provisions will be incorporated into bidding documents, in accordance with the new World Bank Procurement Framework.</p>	
--	--	--	--

		Public consultation shall be undertaken to ensure the proposed locations within the individual health facilities can be utilized for the incinerators to minimize nuisance and air quality impacts on nearby residents.	
Procurement of waste management equipment e.g. trucks (sub-component 2(b)).	Failures in procurement process e.g. equipment that is inappropriate and could lead to: <ul style="list-style-type: none"> • spread of infection to workers. • causes health & safety risks to workers. • causes adverse environmental harm. 	Due diligence and assessments will be undertaken by MHMS regarding purchase of equipment to ensure correct fit for purpose equipment is procured to Solomon Islands standards. ESHS provisions incorporated into bidding documents, in accordance with the new World Bank Procurement Framework.	N/A

Table 9 – Assessment of key project risks/impacts and proposed mitigation methods – renovation/refurbishment stage

Activity	Significant Potential Risks / Impacts	Key Mitigation Methods	E&S Risk Management Tools
Renovation/Refurbishment Stage			
Renovations and refurbishments such as: <ul style="list-style-type: none"> • Quarantine facilities (component 1 (c)) • Isolation units (component 1 (c)) • ICUS (component 2(a)) • The NMS (component 2 (c)) • Zone building to establish NHEC (component 2(d)) • Installation of the incinerators (component 2 (b)) 	<p>Minor civil works may generate limited adverse environmental impacts such as extraction of materials, nuisances from dust, noise, vibration; pollution from erosion and uncontrolled sediment; minor hydrocarbon spills; and traffic obstruction.</p> <p>Incorrect waste disposal causing negative impacts to soil and groundwater or on community and/or worker health.</p> <p>Asbestos, lead from lead paints, synthetic mineral fibre (SMF), ozone depleting substances (from old air conditioning units) and polychlorinated biphenyls (PCBs) may be present in old buildings or demolition debris.</p> <p>Occupational health and safety (OHS): refurbishment activities pose various OHS risks such as working at heights, suspended loads, handling hazardous materials (e.g. asbestos) and sprains, strains, cuts and crush injuries etc.</p> <p>Community health and safety: refurbishment activities pose a risk to community members through increased noise, dust and traffic, storage and delivery of oxygen, and the incorrect disposal of hazardous materials.</p> <p>Issues related to inappropriate worker accommodations which further spread COVID-19.</p> <p>Increase in sexual exploitation and abuse/harassment (SEA/SH) related to workforce</p>	<p>Renovation impacts managed and monitored in accordance with the Project's CoESP.</p> <p>Waste minimization and management measures detailed in Waste Management Plan(s) WMP(s) to be developed during project by the contractor and submitted to the PMU E&S Specialists for approval prior to any physical works commencing.</p> <p>If asbestos or other hazardous materials are found during the building inspections undertaken by the designers at the design stage, a hazardous material management procedure must be developed and detailed in WMP(s) developed during project by the contractor in accordance with GIIP and submitted to the PMU E&S Specialists for approval prior to any physical works commencing. Building inspection that identifies whether asbestos or other hazardous materials are present prior to physical works commencing. Asbestos containing materials managed in accordance with GIIP as detailed in the CoESP. No asbestos containing materials used for renovations / refurbishments.</p> <p>Health and Safety (H&S) management plan(s) to be developed during project by the contractor, and refurbishment works completed accordingly. H&S management plan(s) must be developed and submitted to the PMU E&S Specialists for approval prior to any physical works commencing. A Traffic management plan must be included in the Contractor(s) H&S Management Plan.</p> <p>Labour issues including working conditions, OHS, SEA/SH addressed in Project's LMP and CoESP. Implementation of</p>	<p>CoESP</p> <p>Waste Management Plan(s) (contractor)</p> <p>H&S Management Plan(s) (contractor)</p> <p>LMP</p> <p>GM</p> <p>CFP</p>

	<p>Cultural heritage impacts.</p>	<p>Code of Ethics and Professional Conduct. Provide separate facilities for female and male workers.</p> <p>Project GM available to enable communities to raise project related concerns and grievances.</p> <p>Chance Finds Procedure (CFP) in place prior to any physical works commencing (Annex III).</p>	
--	-----------------------------------	---	--

Table 10 – Assessment of key project risks/impacts and proposed mitigation methods – operational stage

Activity	Significant Potential Risks / Impacts	Key Mitigation Methods	E&S Risk Management Tools
Operational Stage			
Use of goods and supplies (sub-component 1(a))	<p>Incorrect use of PPE leads to spread of infection to health-care workers and cleaners.</p> <p>Inequitable distribution of goods. Negative reaction to perceived unfairness of resource distribution.</p>	<p>MHMS Infection Prevention Control Guidelines (IPCG) followed (Annex VI).</p> <p>Clear communication of risks and prevention measures will be included in training and stakeholder engagement activities and covered under the National Covax Communication Plan & Strategy (NCCPS)</p> <p>MHMS has committed to the provision of services and supplies to all people in the project ESCP.</p>	<p>MHMS IPCG</p> <p>SEP</p> <p>MHMS NCCPS</p>
Health-care workers health and safety (Components 1 (c) and 2 (a))	<p>OHS risks related to exposure to infections / diseases e.g. from testing, laboratory and health care waste, treatment of COVID-19 patients etc.</p> <p>Surfaces of imported materials may be contaminated during handling and transportation which may result in the spread of infection.</p> <p>OHS risks related to the delivery and storage of goods, including samples, pharmaceuticals, reagents and other hazardous materials.</p> <p>General OHS risks from working in a medical facility /laboratory e.g. manual handling injuries, such as sprains and strains from lifting and carrying patients; falls, trips, and slips; injuries caused by moving objects; sharps injuries, and mental stress fatigue, psychological distress, stigma.</p>	<p>MHMS IPCG followed (Annex VI).</p> <p>Training of personnel financed under component 2(a) and 2(e) on hospital infection control, testing, waste management, and disease surveillance.</p> <p>A Labour Management Procedure (LMP) developed and implemented to protect project direct workers and contracted staff who may be at risk of exposure to infected patients, hazardous waste etc.</p> <p>If concerned about contaminated imported materials (for example when dealing with goods that have come from countries with high numbers of infected people) equipment may be decontaminated using disinfectant. After disinfecting, workers should wash hands with soap and water or use alcohol -based hand rub.</p> <p>Clear communication of risks and prevention measures will be included in training and stakeholder engagement activities.</p>	<p>MHMS IPCG</p> <p>LMP</p> <p>SEP</p>

COVID-19 testing and diagnosis (Components 1 (c) and 2 (a))	<p>Improper collection of samples and testing for COVID-19 and appropriate laboratory biosafety could result in spread of disease to medical workers or laboratory workers, or population during the transport of potentially affected samples.</p>	<p>MHMS IPCG followed (Annex VI).</p> <p>Collection of samples, transport of samples and testing of the clinical specimens from patients meeting the suspect case definition will be performed in accordance with WHO interim guidance Laboratory testing for coronavirus disease 2019 (COVID-19) in suspected human cases. Tests will be performed in appropriately equipped laboratories (specimen handling for molecular testing requires BSL-2 or equivalent facilities) by staff trained in the relevant technical and safety procedures.</p> <p>National guidelines on laboratory biosafety will be followed. There is still limited information on the risk posed by COVID-19, but all procedures will be undertaken based on a risk assessment. For more information related to COVID-19 risk assessment, see specific interim guidance document: WHO interim guidance for laboratory biosafety related to 2019-nCoV.</p> <p>Samples that are potentially infectious materials (PIM) will be handled and stored as described in WHO guidance to minimize risks for facilities collecting, handling or storing materials potentially infectious for polioviruses (PIM Guidance).</p> <p>For general laboratory biosafety guidelines, see the WHO Laboratory Biosafety Manual, 3rd edition.</p>	<p>MHMS IPCG</p> <p>LMP</p>
Isolation, care and treatment of COVID-19 patients in healthcare facilities (Components 1 (c) and 2 (a))	<p>Weak compliance with the precaution measures for infection prevention and control in isolation and treatment of infected cases spreads COVID-19 infections in healthcare facilities.</p>	<p>MHMS IPCG followed (Annex VI).</p> <p>Health facilities will follow the MHMS IPCG and establish and apply Standard Precautions including:</p> <ul style="list-style-type: none"> • Hand Hygiene (HH); • Respiratory hygiene/cough etiquette. • Use of PPE; 	<p>MHMS IPCG</p>

		<ul style="list-style-type: none"> • Handling of patient care equipment, and soiled linen; • Environmental cleaning; • Prevention of needle-stick/sharp injuries; • Appropriate Health Care Waste Management. <p>In addition, health facilities will establish and apply transmission-based precautions (contact, droplet, and airborne precautions) as well as specific procedures for managing patients in isolation room/unit.</p> <p>Establishment of standard precautions and transmission-based precautions will be in line with National guidelines for IPC in healthcare facilities and take into account guidance from WHO and/or CDC on COVID-19 infection control:</p> <ul style="list-style-type: none"> ✓ WHO interim guidance on Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected; ✓ WHO guidance on infection prevention and control at health care facilities (with a focus on settings with limited resources); ✓ CDC Guidelines for isolation precautions: preventing transmissions of infectious agents in healthcare settings; and ✓ CDC guidelines for environmental infection control in healthcare facilities. <p>Special considerations will be made to address the particular needs of vulnerable groups in delivering these services.</p> <p>Training of personnel financed under component 2(a) and 2(e) on hospital infection control and disease surveillance.</p>	
Generation of health care wastes (Components 1 (c) and 2 (a))	Medical waste management and community health and safety issues related to the handling, transportation and disposal of hazardous and infectious health-care wastes with respect to both	Methods outlined in section 4.8 of the MHMS IPCG, such as colour coding or labelling of containers, followed (Annex VI) to ensure the correct separation, storage,	MHMS IPCG

	<p>disease transmission and contamination of the receiving environment such as soil or water.</p> <p>Offsite disposal facilities (if used) do not comply with standards required by transport and disposal regulations and for licensing of transport vehicles.</p>	<p>transport and disposal of health care wastes (both infectious, hazardous and non-infectious wastes).</p> <p>Training of personnel on waste management financed under component 2(b) to ensure compliance with the MHMS IPCG, WHO guidance and GIIP.</p> <p>The Project will investigate the procurement of appropriate waste management infrastructure e.g. incinerators and waste disposal transport equipment i.e. four fuel-efficient trucks.</p>	
Poor sanitation and improper management of wastewater (Components 1 (c) and 2 (a))	<p>Poor sanitation and improper management of wastewater related to COVID-19 diagnosis and treatment services transmitting diseases to communities and polluting environment.</p>	<p>MHMS IPCG followed (Annex VI).</p> <p>Health facilities will ensure the provision of safe water, sanitation, and hygienic conditions, which is essential to protecting human health during all infectious disease outbreaks, including the COVID-19 outbreak.</p> <p>Health facilities will establish and apply good practices in line with WHO guidance on water, sanitation and waste management for COVID-19, and the MHMS IPCG.</p>	MHMS IPCG
Community impacts (Components 1 (c) and 2 (a))	<p>Risk of COVID-19 transmission in the community from project activities e.g. operation of the health-care facilities, incinerator, etc. if not properly managed and controlled.</p> <p>Wider public and patients are not treated with respect for their dignity, human rights and fundamental freedoms.</p> <p>Real or perceived inequities regarding access to project health services that lead to conflict or civil unrest.</p>	<p>The MHMS IPCG (Annex VI) contains detailed procedures for the safe operation of health facilities and protection of the public from exposure to the virus as a result of these operations.</p> <p>The operation of quarantine and isolation units will be implemented in a way that both the wider public, as well as the patients are treated in line with international best practice as outlined in WHO guidelines. Patients will be treated with respect for their dignity, human rights and fundamental freedoms and minimize any discomfort or distress associated with such measures taking into consideration their gender, sociocultural, ethnic or religious needs</p>	<p>MHMS IPCG</p> <p>SEP</p> <p>GM</p>

		<p>MHMS has committed in the Project ESCP to the provision of services and supplies to all people, regardless of their social status based on the urgency of the need, in line with the latest data related to the prevalence of the cases.</p> <p>The Project's SEP will ensure widespread engagement with communities - including its more vulnerable groups - to disseminate information related to community health and safety, particularly about social distancing, high-risk demographics, self-quarantine, and mandatory quarantine.</p> <p>Grievance mechanism (GM) enables communities to raise project related concerns and grievances.</p>	
Sexual Exploitation and Abuse SEA)/SH risks (Components 1 (c) and 2 (a))	SEA/SH risks for COVID patients and frontline health care workers in quarantine.	<p>MHMS has committed in the Project ESCP to the implementation of a Code of Ethics and Professional Conduct which includes provisions for SEA/SH prevention as well as the provision of gender-sensitive infrastructure such as segregated toilets.</p> <p>MHMS has committed in the Project ESCP to engage a GBV specialist to ensure quality messaging of the risk of GBV which will include a communication campaign in all forms of community health outreach in all phases of the emergency response.</p> <p>All training for healthcare workers will include a module on the identification and management of GBV cases.</p> <p>The Project will ensure that quarantine and isolation centers are operated effectively throughout the country, including in remote areas, including GBV support in quarantine facilities.</p>	<p>SEP</p> <p>MHMS NCCPS</p>
Vulnerable groups access to project	Marginalized and vulnerable social groups are unable to access facilities and services designed to	MHMS has committed in the Project ESCP to the provision of services and supplies to all people, regardless of their	SEP

services and facilities (Components 1 (c) and 2 (a))	combat the disease, in a way that undermines the central objectives of the project	<p>social status, based on the urgency of the need, in line with the latest data related to the prevalence of the cases.</p> <p>MHMS will implement WHO guidance tools for COVID-19 risk communication and engagement, including with respect to social stigma (https://www.who.int/docs/default-source/coronaviruse/covid19-stigma-guide.pdf).</p>	
Operation of the NMS (Component 2 (c))	<p>Incorrect storage and disposal of medical supplies leads to community and/or worker health and safety impacts and/or water/soil pollution.</p> <p>General OHS risks for medical store staff e.g. slips, trips, falls.</p> <p>Risk of increased SEA/SH.</p>	<p>Waste management plan (WMP) that addresses correct disposal of chemical and other solid wastes to be prepared by the MHMS and submitted to the PMU E&S specialists for approval.</p> <p>Health and Safety management plan for NMS operation to be prepared by the MHMS and submitted to the PMU E&S specialists for approval.</p> <p>Labour issues including working conditions, OHS, SEA/SH addressed in Project's LMP. Implementation of Code of Ethics and Professional Conduct. Provide separate facilities for female and male workers.</p>	<p>WMP</p> <p>H&S Plan.</p> <p>LMP</p>
Operation of the NHEC (Component 2 (d))	<p>General OHS risks for staff.</p> <p>Risk of increased SEA/SH.</p>	<p>Health and Safety management plan for operation of the NHEC to be prepared by the MHMS and submitted to the PMU E&S specialists for approval.</p> <p>Labour issues including working conditions, OHS, SEA/SH addressed in Project's LMP. Implementation of Code of Ethics and Professional Conduct. Provide separate facilities for female and male workers.</p>	<p>H&S Plan.</p> <p>LMP</p>
Capacity building and training activities (Components 1 (b), 2 (a), 2 (b), 2 (c) and 2 (e)).	Outcomes that are contrary to health-care workers' well-being and/or activities have adverse environmental impacts.	<p>MHMS IPCG followed (Annex VI).</p> <p>Environmental, social, and health and safety best practices incorporated into training programs.</p>	<p>MHMS IPCG</p> <p>SEP/GM</p>

	<p>Negative reaction to perceived unfairness of health-care workers' access to training.</p>	<p>PMU E&S specialists will review any interim and progress reports to ensure that environmental and social mitigation measures are in place.</p> <p>Project objectives and operational strategies clearly communicated through SEP to address any perception of inequitable access to training.</p> <p>GM to address concerns regarding distribution of project benefits.</p>	
<p>Operation of incinerators (Component 2 (b)).</p>	<p>Air quality negatively impacted by incinerators e.g. POP emissions when not operated at the correct temperatures. Incinerators can generate particulates, heavy metals, dioxins and furans, which may be present in the waste gases, water or ash.</p> <p>Incorrect disposal of ash causing adverse environmental and social impacts e.g. soil contamination and/or spreading the virus.</p> <p>Other minor environmental impacts associated with the operation of the incinerator such as minor fuel spills.</p> <p>Community health and safety impacts from reduced air quality due to the incorrect positioning or operation of the incinerator.</p> <p>OHS impacts to staff operating the incinerator (contact with contaminated medical waste, reduced air quality and use of combustible fuel etc.)</p> <p>Operation of incinerators is not hot enough to kill the virus.</p> <p>Lack of ongoing maintenance causing incinerators to no longer operate or operate inefficiently.</p>	<p>The PMU E&S Specialists will develop an Environmental and Social Management Plan (ESMP) for the incinerators and screen for sensitive receptors e.g. schools, day care facilities, patient wards, residential areas.</p> <p>The incinerators likely meet the definition of a Prescribed Development ('waste management system') and will require a development consent and either a PER or EIS to be determined by the ECD during Project implementation. The ECD environmental approval process will be followed by the PMU E&S Specialists to determine what level of environmental assessment (PER or EIS) will be needed for the incinerators. The PER/EIS can be incorporated into the ESMP prepared in accordance with the World Bank ESF.</p> <p>Waste Management and Health and Safety plans for incinerator operation will be prepared by the MHMS and submitted to the PMU E&S Specialists for approval prior to commencement of operations.</p> <p>Training for operators on operation in accordance with GIIP including the method to achieve the desired combustion conditions and emissions will be provided under Component 2(b); for example, appropriate start-up and cool-down procedures, achievement and maintenance of a minimum temperature before waste is burned, use of appropriate loading/charging rates (both</p>	<p>ESMP (WB) incorporating PER/EIS (Solomon Islands) WMP</p> <p>E&S Plan</p> <p>Operator capacity building and training plan(s)</p> <p>Operation and maintenance plan(s)</p>

		<p>fuel and waste) to maintain appropriate temperatures, proper disposal of ash and equipment to safeguard workers. Operator capacity building and training plans will be prepared by the MHMS and submitted to the PMU E&S Specialists for approval prior to commencement of operations.</p> <p>Project will develop and implement operation and maintenance plans that specify the responsibilities for regular maintenance schedules to replace or repair defective components. Operation and maintenance plans will be prepared by the MHMS and submitted to the PMU E&S Specialists for approval prior to commencement of operations.</p>	
Use of waste management equipment e.g. trucks (sub-component 2(b)).	<p>Medical waste management and community health and safety issues related to the handling, transportation and disposal of hazardous and infectious health-care wastes with respect to both disease transmission and contamination of the receiving environment such as soil or water.</p> <p>General OHS risks for waste management workers using equipment such as the trucks e.g. vehicle and pedestrian interactions.</p> <p>Lack of maintenance causing OHS impacts for waste management workers.</p>	<p>Methods outlined in section 4.8 of the MHMS IPCG followed (Annex VI).</p> <p>Training of personnel financed under component 2(b) to ensure compliance with the MHMS IPCG and WHO guidance and GIIP.</p> <p>Health and Safety management plan / code of practice for vehicle operation to be prepared by MHMS and submitted to the PMU E&S Specialists for approval prior to commencement of operations.</p> <p>To ensure sustainability of the equipment purchased through the Project, MHMS will ensure adequate maintenance budget is included in the annual budget appropriation.</p>	<p>MHMS IPCG</p> <p>H&S Plan</p>
Use of security personnel to assist in Covid-19 operations.	<p>Potential risks include:</p> <ul style="list-style-type: none"> • Diversion of materials, aid and assistance. Diversion can take the form of confiscations and re-use, misappropriation and theft. • Allegations of human rights violations including SEA/SH). 	<p>The Project is not expected to utilize security forces or security personnel in relation to project activities. However, the government will support the project by providing private or government security personnel, to provide safety to the people in quarantine facilities.</p>	N/A

	<ul style="list-style-type: none"> World Bank staff are put at risk e.g. when Bank staff are trying to address the risk of diversion. International media negative commentary and reaction. 	<p>The Project will take measures to ensure that, prior to deployment, such personnel are: (i) screened to confirm that they have not engaged in past unlawful or abusive behaviour, including SEA/SH or excessive use of force; (ii) adequately instructed and trained, on a regular basis, on the use of force and appropriate behaviour and conduct (including in relation to SEA and SH); and (iii) deployed in a manner consistent with applicable national law, the ESF and the guidance provided in the World Bank’s technical note on the “use of military forces to Assist in COVID-19 Operations: suggestion on How to Mitigate Risks.” The security personnel must follow a strict code of conduct and avoid any escalation.</p>	
--	---	---	--

6 Procedures to Address Environmental and Social Issues

6.1 Overview of the Screening Process

The screening process will be used to screen all Project activities for risks and then identify the environmental and social risk management tools that need to be prepared or followed. The purpose of the screening is to: (i) determine whether activities are likely to have potential negative environmental and social risks and impacts; (ii) identify appropriate mitigation measures for activities with adverse risks or impacts; (iii) incorporate mitigation measures into implementation of the activity; (iv) review and approve the management plan/s and (v) monitor application of management plan/s for those activities requiring E&S due diligence.

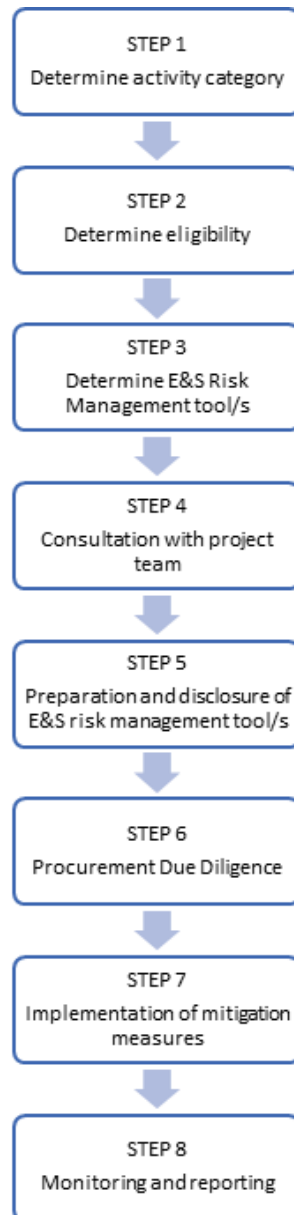
The project typologies identified as requiring environmental and social screening and management during implementation of the Project include: procurement and use of goods and supplies; refurbishment and operation of the health-care facilities (quarantine facilities, isolation units, ICUs); refurbishment and operation of the NMS; refurbishment and operation of the NHEC; capacity building and training activities; procurement, installation and operation of the incinerators; and procurement and use of waste management equipment.

The local ESHS&CE Specialist, supported by the International ESHS Specialist (E&S Specialists), to be employed in the MHMS PMU, will undertake the environmental screening, preparation and disclosure of site-specific instruments, ECD development consent applications and preparation of additional E&S instruments (ESMP, as required), and consultation and information dissemination activities with relevant stakeholders. The interim PMU shall supply the services of its Safeguards Officer for a period of up to 6 months or until the ESHS&CE specialist has been recruited. Responsibilities for implementing these procedures are outlined in further detail in Section 8. The screening process should be reviewed after 12 months of project implementation by the E&S Specialists to ensure that the process is appropriate.

6.2 Screening of Project Activities

The following provides the steps that will be undertaken in the assessment of project activities. The screening of activities will take place either during the annual work plan or on ad hoc basis as activities are defined by the Project Team/s. The screening process will follow the key steps in Figure 2:

Figure 2 – Key Activity Screening Steps



Step 1 - Determine Activity Category

The first step of screening is to determine what type of activity is being proposed and determine the immediate next step. To determine the project activity category, refer to Figure 3 – Activity Screening Process.

Step 2- Determine Eligibility

If the activity has been pre-screened as part of Chapter 5 and is eligible for project funding, proceed directly to Step 3 – Determine Environmental and Social (E&S) Risk Management Tool/s.

If the activity has not been pre-screened as part of Chapter 5, and E&S risk management tool/s already identified, the next step is to complete the Screening Form for Potential Env & Social Issues (Annex IV)

and check Table 11 – Ineligible Activities to determine the activities eligibility for project funding and to screen for risks. The purpose of screening is to (i) determine whether activities are eligible to be financed, and likely to have potential negative environmental and social risks and impacts; and (ii) identify appropriate mitigation measures for activities with adverse risks or impacts.

Step 3 – Determine E&S Risk Management Tool/s

The third step is to determine what specific E&S risk management tool/s are required or apply, if any, under World Bank and Solomon Islands E&S risk management requirements. The project activity screening process (Figure 3 – Activity Screening Process) will assist in determining the E&S risk management tool/s that need to be prepared or followed, if any, for pre-screened activities. For activities not pre-screened, the completed Screening Form for Potential Env & Social Issues (Annex IV) will identify what specific E&S risk management tool/s are required or apply, if any.

Step 4: Consultation with Project Team

If required, the screening outcomes will be discussed with the project team and design personnel to identify ways to reduce or avoid any adverse impacts. Any adjustments to the design, categorization or E&S risk management tool/s can be refined following this process.

Step 5: Preparation and Disclosure of E&S Risk Management Tools

If required, the next step is to prepare the relevant E&S risk management tool/s, both for Solomon Islands and WB processes. This process may include site visits and data gathering, consultation, and public disclosure of the documents in accordance with the Section 7 – Consultation and Stakeholder Engagement.

Step 6 - Procurement Due Diligence

Determine if procurement is required for the activity. If yes, then ESHS provisions will be incorporated into bidding documents, in accordance with the new World Bank Procurement Framework.

Step 7: Implementation of Mitigation Measures

The implementation of the E&S risk management tool/s and conditions of any environmental approvals will need to be implemented, monitored and enforced. Training of implementing staff may be needed to ensure that conditions of the E&S risk management tool/s are met. For contractors, monitoring and supervision will be needed to ensure that conditions of the E&S risk management tool/s are met.

Step 8: Monitoring and Reporting

Monitoring is required to gather information to determine the effectiveness of implemented mitigation and management measures and to ensure compliance with the approved E&S risk management tool/s. Monitoring methods must provide assurance that E&S risk management tool/s measures are undertaken effectively.

Six-monthly reports will need to be prepared and provided to the WB. The semi-annual E&S monitoring reports to the Bank will include: (i) the status of the implementation of mitigation measures; (ii) the findings of monitoring programs; (iii) stakeholder engagement activities; (iv) grievances log; and (v) any incidents/accidents with adverse impacts and the actions taken to address it and prevent reoccurrence

Figure 3 –Activity Screening Process

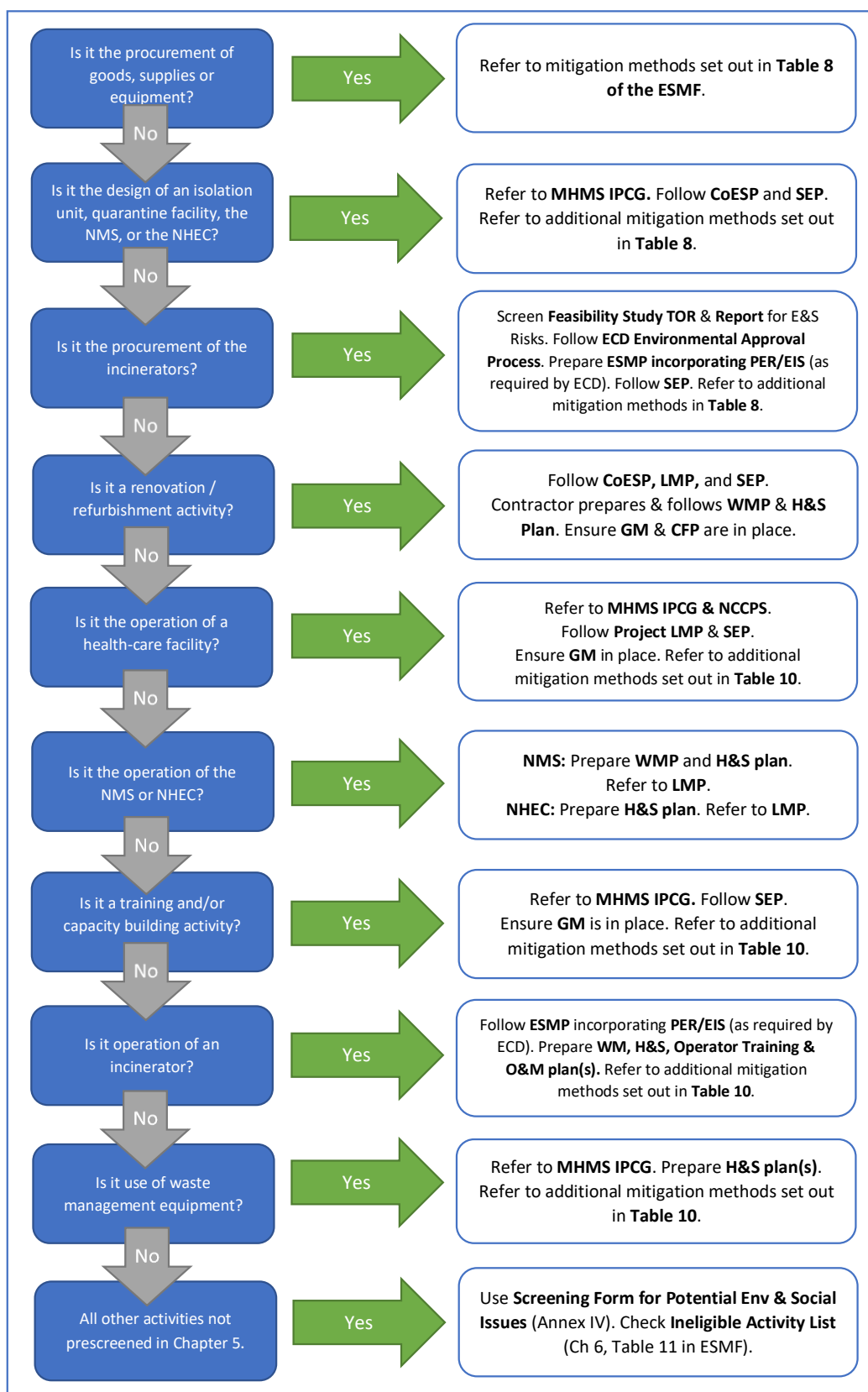


Table 11 - Ineligible Activity List

The following type of activities shall not be eligible for financing under the Project:

- Activities of any type classifiable as “High” risk pursuant to the World Bank's Environment and Social Standard 1 (ESS1) of the Environment and Social Framework (ESF). The following activities are illustrative examples of “High” risk activities. The screening process in Annex IV would identify any additional activities considered “High”:
 - Activities that may cause long term, permanent and/or irreversible (e.g. loss of major natural habitat) adverse impacts;
 - Activities that have high probability of causing serious adverse effects to human health and/or the environment not related treatment of COVID-19 cases;
 - Activities that may have significant adverse social impacts and may give rise to significant social conflict;
 - Activities that may affect lands or rights of indigenous people or other vulnerable minorities;
 - Activities that may involve permanent resettlement or land acquisition or adverse impacts on cultural heritage;
 - Activities that are considered by the World Bank (a) to have potential to cause significant loss or degradation of critical natural habitats whether directly or indirectly or those that could adversely affect forest and forest health; (b) that could affect sites with archaeological, paleontological, historical, religious, or unique natural values; and (c) that will result in adverse impacts on involuntary taking of land, relocation of households, loss of assets or access to assets that leads to loss of income sources or other means of livelihoods, and interference with households’ use of land and livelihoods; and
 - Use of goods and equipment as considered by the World Bank to meet the following conditions: (a) lands abandoned due to social tension/conflict, or the ownership of the land is disputed or cannot be ascertained; (b) to demolish or remove assets, unless the ownership of the assets can be ascertained, and the owners are consulted; (c) involving forced/conscripted labour, child labour (under the age of 18), or other harmful or exploitative forms of labour; (d) activities that would affect indigenous peoples, unless due consultation and broad support has been documented and confirmed prior to the commencement of the activities; and/or (e) other paramilitary purposes.

6.3 Land Commitment Guide

The project will not finance activities that will require the acquisition of private land, but, may secure tribal land through a “land commitment letter”. However, the likelihood of this being necessary for Project activities is considered very low..

Drawing from previous World Bank projects, if the land is required as part of a subproject proposal, a **“Land Commitment Letter”** must be signed by the relevant parties (e.g. the public or clan that owns the land and the other representatives (clans and traditional leader of the community). If necessary, a duly completed Land Commitment Letter must accompany a community subproject proposal to be considered for approval. The Land Commitment Letter, used by RDPII (other WB project) in Annex IX, will be used for this project.

The process that would be used to enter into the terms of a Land Commitment Letter is as follows:

- If the land is required for the identified community subproject then the land owner or clan leaders of the community, along with other community leaders as appropriate ⁴(chief, religious leaders, etc.) would organize a meeting with the representatives of the specific clan who have customary ownership of the proposed land;
- The meeting would discuss the proposed subproject with the landowner or landowning clan (in the event the clan had not participated in the community meetings to prioritize the subproject) to share the rationale for the subproject and its proposed siting, and seek the donation of the necessary land by the owning clan;
- At the same time, the land owner or owning clan would also be notified that their agreement to donating their land should be entirely voluntary;
- If the land owner or owning clan agrees, then a Land Commitment Letter will be signed between the clan, the other clans and the leader of the community;
- The signed Land Commitment Letter will be submitted as part of the subproject proposal.

7 Consultation and Stakeholder Engagement

A stand-alone SEP has been developed to describe the project’s program for stakeholder engagement, public information disclosure and consultation.

The SEP outlines the ways in which the project team will communicate with stakeholders and provides a mechanism through which people can raise concerns, provide feedback, or make complaints about the project or any activities related to the project. Engagement with the local population is essential to ensure collaboration between project staff and local communities and to minimize and mitigate environmental and social risks related to the proposed project activities. Culturally appropriate and adapted awareness raising activities are particularly important to sensitize the communities to the importance of improved health service logistics and delivery, information management, implementation and M&E capacity in relation to infectious diseases.

Stakeholder engagement will continue throughout the life of the project and will include formal scheduled consultations and meetings as well other means of communication. The stakeholder engagement process has two components:

- Early and ongoing engagements with key stakeholders at national, sub national and community to provide information on the Project and obtain feedback on experiences and outcomes of the Project and its activities.
- A GM to address any public complaints during the implementation of the Project.

7.1 Project Stakeholders

To ensure effective and targeted engagement, the Project identifies three core stakeholder categories: affected parties; other interested parties; and vulnerable groups.

7.1.1 Affected Parties

Affected Parties comprise persons, groups and other entities within the project area of influence that are directly influenced (actually or potentially) by the project and/or have been identified as most susceptible to change associated with the project, and who need to be closely engaged in identifying impacts and their significance, as well as in decision-making on mitigation and management measures.

The following are considered affected parties in the context of this project:

- Ministry of Health and Medical Services (MHMS) officials/staff;
- Healthcare Workers (Doctors, nurses, scientists, educators);
- Health waste management workers;
- National Emergency Operations Committee (including heads of relevant line agencies);
- Government Ministries;
- Provincial Health Divisions;
- Neighbouring communities to the quarantine facility;
- Contractors and workers at construction sites of ICU facilities;
- People under COVID-19 quarantine or self-isolation;
- Family members of COVID-19 infected people including those under quarantine or self-isolation;
- COVID-19 infected people and their family members; and
- Communities (i.e. religions, gender) of COVID-19 infected people.

7.1.2 Other Interested Parties

Other interested parties include individuals, groups and other entities that may not experience direct impacts from the project but who consider or perceive their interests as being affected by the project and/or who could affect the project and its implementation in some way. These include:

- Traditional media
- Participants of social media
- Politicians
- Other national and international health organizations
- Local and international non-governmental organizations (NGOs)
- Local businesses
- Businesses with international links
- The public at large

7.1.3 Vulnerable Groups

The Project identifies vulnerable groups as any persons or groups who may be disproportionately impacted or further disadvantaged by the project due to their vulnerable status, and who may require special engagement efforts to ensure their equal representation in project consultation and decision-making processes. The project will conduct targeted engagement with vulnerable groups to ensure they are fully informed of the project and to understand their concerns and needs in accessing information, medical facilities and services and other challenges they face at home, at workplaces and in their communities.

Vulnerable groups may include, but are not limited to, the following:

- Elderly
- Illiterate people
- Vulnerable groups working in informal economy
- People with disabilities
- Female-headed households
- Children, especially those who may be malnourished with low immunity
- People with pre-existing medical conditions such as heart or lung disease, diabetes, cancer, HIV/AIDS among others

7.2 Consultation and Information Disclosure

7.2.1 Stakeholder Engagement during Project Preparation

Given the emergency nature of the project and the transmission dynamics of COVID-19, consultations during the project preparation phase and during the development of the ESMF were limited to relevant government officials, health experts, hospital administrators and others from institutions working in health sector.

Any significant changes to the ESMF and SEP will be consulted on and disclosed during the project implementation period.

7.2.2 Consultation and Disclosure during Project Implementation

Consultation will take place throughout the life of the Project, to disclose information to project stakeholders and seek their feedback. Dedicated channels for information dissemination will be established to ensure consistent communication at national and local levels throughout the project. Stakeholder engagement will comprise consultations with stakeholders throughout the entire project cycle to inform them of the project and to solicit their concerns, feedback and complaints about any activities related to the Project and consultations to improve Project design and implementation.

Stakeholders will be kept informed as the project develops, including reporting on project environmental and social performance and implementation of the SEP and the GM.

The project consultation and disclosure programme is summarized in Table 12 below.

Table 12 - Project Consultation and Disclosure

Project Component	Methods	Target Stakeholders	Information to be disclosed
<p>Components 1 & 2: Renovation and refurbishment activities e.g.:</p> <ul style="list-style-type: none"> Renovation of quarantine facilities in areas bordering Papua New Guinea - Component 1 (c) Renovation of isolation units at Good Samaritan and Atoifi hospitals - Component 1 (c) Renovation of ICUs in two Provincial hospitals (Tulagi and Helena Goldie hospitals) - Component 2 (a) Refurbishment of the national medical storage facility (NMS) by financing refurbishment of the warehouse – Component 2 (c) Refurbishment of the existing Zome building to establish a national health emergency coordination center (NHEC) - Component 2 (d) 	<ul style="list-style-type: none"> Internal GOS communication channels including letters/memos/emails and round table meetings. One-on-one meetings with community leaders and representatives. One-on-one meetings with warehouse and hospital management staff and with construction contractor(s) Community and small group meetings with vulnerable groups, where these are safe and culturally appropriate Dissemination of materials (posters, leaflets, brochures) with project information Press releases (for key events and major announcements) Social media updates 	<ul style="list-style-type: none"> Government ministries Warehouse, hospital, and ICU management Warehouse, hospital, and ICU staff Construction contractors and workers Neighbouring communities to the quarantine facilities Affected communities Disadvantaged /vulnerable groups 	<ul style="list-style-type: none"> Project objectives/ implementation Project design documents Construction activities schedules / work plans and progress reports Community safety measures Project environment and social risk and impact management / ESMF GM's
<p>Component 1(b): Enhancing case detection, confirmation, and contact tracing capabilities</p>	<ul style="list-style-type: none"> Information and communication materials developed and sent to health care facilities. These materials include guidance on early detection, case confirmation, contact tracing and appropriate use of supplies and consumables. 	<ul style="list-style-type: none"> Provincial Health Divisions Laboratory management Health care workers 	<ul style="list-style-type: none"> Early Covid-19 detection Case confirmation Contact tracing Appropriate use of supplies and consumables. LMP & Worker GM

<p>Component 1(e): Training of health care workers in hospital infection control, and disease surveillance</p>	<ul style="list-style-type: none"> • Internal MHMS communication channels including letters/memos/emails • Letters to provincial governments • Carrying out capacity building activities and training in relation to interpersonal communication by health workers related to COVID-19, infection prevention and control, testing, waste management and clinical management of patients with mild symptoms in primary care settings. • Information and communication materials developed and sent to health facilities. These materials include guidance for preparedness, appropriate use of personal protective equipment (PPE) and protective measures in health care facilities • Using the medical and nursing schools to promote health worker contribution to the pandemic • Provide capacity building support for communication (through training, mentoring and remote assistance) • Training of Trainers will enable communication focal points to also train others doing the 	<ul style="list-style-type: none"> • MHMS officials/staff • Local Government officials • Provincial Health Divisions • Health institutions management and staff • Isolation and testing facility management and staff • Health care workers • Health waste management workers 	<ul style="list-style-type: none"> • Infection prevention and control • Covid-19 testing • Waste management • Clinical management of patients in primary care settings. • Use of PPE and protective measures in health care facilities • LMP & Worker GM
--	---	--	--

	<p>messaging at the community levels</p> <ul style="list-style-type: none"> • Prevention materials for isolation officers and screeners on infection prevention and control 		
Component 2 (b): Enhancing health-care waste management	<ul style="list-style-type: none"> • Providing information materials and training for health care workers on health care waste management. • Training in procurement, installation and operation of medical waste incinerator(s). 	<ul style="list-style-type: none"> • MHMS • Health facility management • Waste incinerator management and staff • Health care workers 	<ul style="list-style-type: none"> • Health care waste management. • Procurement, installation and operation of medical waste incinerator(s)
Component 3: Project Implementation Management, Monitoring and Evaluation	<ul style="list-style-type: none"> • Training to improve oversight, coordination, surveillance, and data analysis to support project implementation management, M&E. • Support to M&E framework development, implementation, and reporting. 	<ul style="list-style-type: none"> • MHMS management and personnel • Provincial Health Divisions • Health care facility management and staff 	<ul style="list-style-type: none"> • Data collection, analysis and reporting to support health management, M&E. • Financial management

7.3 Grievance Procedures

7.3.1 Grievance Mechanism

The project GM will seek to resolve complaints and grievances in a timely, effective and efficient manner that satisfies all parties involved. It will provide a transparent and credible process for fair, effective and lasting resolution of grievances. It will also build trust and cooperation as an integral component of broader community consultation that facilitates corrective actions.

MHMS will establish and implement the GM within 30 days and update the GM as necessary throughout project implementation. The GM will be coordinated by the ESHS&CE Specialist working under the supervision of the Project Manager. The GM will:

- Provide affected people with avenues for making a complaint or resolving any dispute that may arise during the course of the implementation of Projects.
- Ensure that appropriate and mutually acceptable redress actions are identified and implemented to the satisfaction of complainants.
- Avoid the need to resort to judicial proceedings.

7.4 Monitoring and Reporting

The SEP will be periodically revised and updated as necessary in the course of project implementation in order to ensure that the information presented is consistent and reflects the evolving nature of information required at different stages of the project, and that the identified methods of engagement remain appropriate and effective in relation to the project context and specific phases of the development. Any major changes to project related activities or schedule will be reflected in the SEP. Quarterly summaries and internal reports on public grievances, enquiries and related incidents, together with the status of implementation of associated corrective/preventative actions, will be collated by the designated GM officer (ESH&CE Specialist), and referred to the Project Manager and Project Steering Committee. Quarterly summaries will provide a mechanism for assessing both the number and the nature of complaints and requests for information, along with the project's ability to address those in a timely and effective manner.

8 Implementation Arrangements, Responsibilities and Capacity Building

8.1 Implementing Agency

The MHMS of Solomon Islands will be the project's implementing agency and will have the overall implementation responsibility for the Project, including the responsibility for carrying out day-to-day management and implementation of the project and coordinating with other government ministries/agencies and stakeholders on all aspects of project implementation as required.

A Project Operational Manual (POM) will be developed no later than three months after the effective date of the Financing Agreement (approximately by end- April 2021) to support the PMU to meet its responsibilities for management and implementation of the Project. The POM will describe detailed arrangements and procedures for the implementation of the project, such as responsibilities of the PMU, operational systems and procedures, project organizational structure, office operations and procedures, finance and accounting procedures (including funds flow and disbursement arrangements), procurement procedures, personal data collection and processing, and implementation arrangements for the ESCP as well as the preparation and/or implementation of instruments referred to in the ESCP, per World Bank ESF guidance.

The ESMF and associated documents will be reviewed and updated by the incoming MHMS E&S Specialists within 12 months of Project implementation. Updated documents will be re-disclosed.

The MHMS will prepare and submit regular (six-monthly) monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project, including but not limited to, the implementation of the ESCP, status of preparation and implementation of the Project's environmental and social documents, stakeholder engagement activities and grievances log, Labour Management Procedures, contractor's ESHS implementation (when required for the refurbishment of physical facilities), ESHS incidents, and the functioning of the grievance mechanism.

Project Management Unit (PMU)

The MHMS committed to establishing a Project Management Unit (PMU) under the leadership of the Deputy Secretary Corporate (DSC) within six months of project effectiveness,. The PMU will be staffed with a core team of specialists with expertise in project management, procurement, financial management, environment and social risk management, and M&E. The PMU will be responsible for the day-to-day management of the project, including FM, procurement, safeguard preparation, consolidation of workplan and budget, financial audit, ensuring compliance with environmental and social framework of the World Bank, and M&E. The PMU will also play a critical role in capacity building and transfer of knowledge and skills to the MHMS. Individual consultants with specific skill sets will be recruited to provide support to the PMU as needed.

Individual consultants with specific skill sets will be recruited to provide support to the PMU as needed. Because recruitment of personnel and establishment of the PMU will require some time, and given the emergency nature of this project, an interim arrangement (envisaged for the first six months) is necessary. While recruitment of the PMU is underway, a PMU interim committee was formally established on 8th February 2021 and this will be effective until such time when the PMU is fully established with officers recruited. The following project implementation support is also proposed: (a)

the MHMS will appoint a staff member to oversee the overall operation of the project, (b) utilize existing project staffs (Financial Management, Environmental and Social Risk Management, and Procurement and Contract Management Officers) from an on-going World Bank financed project (still to be determined) and (c) hands on support from World Bank staff on the ground in Honiara. MHMS will also involve dedicated staff from their Environmental Health and Social Welfare Divisions to assist with the early preparation of the ESF instruments and stakeholder engagement.

Commitments have been made by MHMS to recruit a full-time, local ESHS&CE Specialist within 6 months of project effectiveness, as part of the permanent PMU, who will initially be supported by the MHMS dedicated interim staff. In addition, an international part-time ESHS expert will be engaged upon Project Approval to provide training to the local environmental and social specialist and PMU staff and provide continued guidance and monitoring of the project's environmental and social performance on an as-required basis. Terms of References for E&S Specialists in MHMS are included in Annex X. A GBV specialist will also be engaged to ensure quality messaging of the risk of GBV which will include a communication campaign in all forms of community outreach in all phases of the emergency response.

ESHS&CE Specialist

The ESHS&CE Specialist, reporting to the Project Manager, will function as a core member of the PMU under MHMS and will ensure that environmental, social, and health and safety risks are managed in accordance with the requirements of the World Bank's ESF, WHO Guidance on COVID-19, and SIG Law.

Specifically, the ESHS&CE Specialist will:

- Lead the implementation of the project's ESMF and associated instruments in accordance with the World Bank ESF, project ESCP and SIG legal requirements including:
 - Review the feasibility study terms of reference (ToR) and final report for potential E&S risks prior to procurement of the incinerators.
 - Develop and deliver ESHS training for the PMU and other relevant stakeholders;
 - Managing the oversight of project contractors, including Civil Works Contractors, and review of contractor(s) waste management and health and safety plan(s);
 - Environmental and social screening (outlined in section 6), preparation and disclosure of site-specific instruments (ESMP) and ECD consent applications and associated documents (PER/EIS), consultation and information dissemination activities with relevant stakeholders;
 - Managing environmental and social risks in procurement;
 - Site-based environmental, safety and social monitoring. Address non-compliances and develop and confirm the implementation of corrective actions. Assist with the implementation of project investment opportunities that would improve performance;
 - Review incinerator waste management, health and safety, operator capacity building and training and operation and maintenance plans.
 - Preparation of the monthly and six-monthly monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project; and
 - Notification, reporting and management of incidents or accidents related to the Project which have, or are likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.

- Oversee the implementation of the project's SEP Plan in close collaboration with the Project Manager.
- Coordinate the implementation of the project's GM ensuring timely resolution of project related grievances.
- Participate in semi-annual Project Supervision missions, representing MHMS on environmental, safety and social aspects.
- Conduct other ESHS and CE related activities as required by the Project Manager.

International ESHS Specialist

The ESHS&CE Specialist will be supported by part-time, international ESHS expert, who shall be recruited/appointed and retained on an as-required basis and report to the Project Manager

Specially the International ESHS Specialist will:

- Provide technical support to the ESHS&CE Specialist to implement the project's ESMF and associated instruments in accordance with the World Bank ESF, ESCP and SIG legal requirements including:
 - Support the ESHS&CE Specialist to review the feasibility study terms of reference (ToR) and final report prior to procurement of the incinerators.
 - Support the ESHS&CE Specialist to develop and deliver ESHS training for the PMU and other relevant stakeholders.
 - Support environmental screening, preparation and disclosure of site-specific instruments, and consultation and information dissemination activities with relevant stakeholders.
 - Support site-based environmental, safety and social monitoring. Advise on suitable corrective actions/opportunities for improving performance.
 - Support the ESHS&CE Specialist to review incinerator waste management, health and safety, operator capacity building and training and operation and maintenance plans.
 - Support/Review monthly and six-monthly monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project.
 - Support notification, reporting and management of incidents or accidents related to the Project which have, or are likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.
 - Participate (remotely) in semi-annual Project Supervision missions, representing MHMS on environmental, safety and social aspects.

8.2 Activity Level Environmental and Social Risk Management Responsibilities

Construction Contractors

Construction contractor's will be used for installation and refurbishment activities such as the installation of the incinerators and refurbishment of health care facilities for isolation and quarantine centres. Contractor(s) will be required to comply with the project's E&S risk management plans and procedures, including the CoESP and LMP, as well as local legislations and this will be specified in the contractor's agreements. Contractor(s) will be expected to disseminate and create awareness within their workforce of environmental and social E&S risk management compliance, and undertake any staff training necessary for their effective implementation. Where contractors do not have existing

environmental staff, the E&S Specialists within the PMU, supported by the World Bank Environmental and Social team, will make arrangements for adequate capacity building within the contractor's workforce.

Contractor(s) will also be required to prepare and comply with WMP(s) and health and safety plan(s) in compliance with both the ESMF and local legislation, and submit those plans to the PMU E&S Specialists for approval, prior to the commencement of renovation and/or refurbishment activities and to take all necessary precautions to maintain the health and safety of their personnel. The contractor(s) will appoint a health and safety officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the site, to take protective measures to prevent accidents, to ensure suitable arrangements are made for all necessary welfare and hygiene requirements, to undertake worker training, and be a focal point to deal with COVID-19 issues. Contractors will be briefed on the GM and required to refer any grievances to the Social Specialist who will coordinate the GM.

Health-care Facilities

At the health-care facility level, the head of the health-care facility will have overall responsibility for IPC and waste management. During project implementation, the head of the health-care facility should assess the following:

- whether adequate and qualified staff are in place, including those in charge of infection control and waste management;
- whether additional staff are required: if so, how many, and with what qualifications and training;
- how relevant departments in the healthcare facility will work together to create an intra-departmental team to manage, coordinate and regularly review the issues and performance of the facility.

The head of a health-care facility should formally appoint a person or team to be responsible for implementing the procedures and mitigation measures that have been adopted to avoid or minimize the spread of COVID-19. This would be the person/team with overall responsibility for infection prevention control and waste management and would ensure that IPC and health care waste management activities are carried out in accordance with the MHMS IPCG. This person/team would also manage, coordinate and regularly review the performance of the facility in terms of how the waste streams in the health-care facilities are separated, tracked and recorded, and oversee the procedures for the safe transportation of potentially infected samples to testing facilities.

Currently, some health care facilities have a dedicated person/s who champions IPC and health-care waste management³⁸ who could also be identified for IPC and health-care waste management oversight for this Project. This will be decided during project implementation.

8.3 World Bank Environmental and Social Team

The Bank's Environmental and Social team will provide regular E&S risk management compliance monitoring and support for the duration of the project, remote and during missions, and to build

³⁸ SPREP, 2014. Baseline Study for the Pacific Hazardous Waste Management Project - Healthcare Waste – Solomon Islands

capacity for ESMF implementation and stakeholder engagement. As international travel may be slow to resume, supervision and missions may continue to be conducted remotely for some time.

8.4 Capacity Building

Whilst MHMS has no prior experience with the World Bank's safeguards policies, the interim PMU staff is very familiar working on projects using these policies. However, this will be the first World Bank-financed project subject to the ESF in Solomon Islands. During an interim period of up to six months, the dedicated Environmental Health and Social Welfare Division staff will take up day-to-day environmental and social risk management of the project activities, supported by the Safeguards Officer of the interim PMU. It is also expected that enhanced oversight from the Bank E&S team will be required.

The incoming PMU E&S Specialists may have differing level of familiarity with the WB ESS's and Procedures and may need ongoing support, training, and technical assistance to implement the Project E&S documents and prepare project activity instruments during project implementation. It is expected that enhanced oversight from the World Bank E&S team will be required and a capacity assessment will identify where training and further capacity building will be needed. Implementation support will include: (a) capacity building for MHMS staff on WB implementation and requirements; (b) an implementation support mission every six months, once international travel has resumed to Solomon Islands; (c) interim technical discussions and site visits by the WB; (d) monitoring and reporting by the implementation team on implementation progress and achievement of results; (e) annual internal and external financial audits and FM reporting; and (f) periodic procurement post review. In the event of the inability of relevant staff to travel to Solomon Islands to undertake implementation support, the use of audio/video conferencing, as has been the case during Project preparation, will continue in order to ensure "just in time" support to the MHMS. The WB will also maintain a close dialogue with the PMU E&S Specialists and ensure implementation support for environmental and social risk management and stakeholder engagement when needed. Further capacity assessments during project implementation will identify where training and further capacity building will be needed.

The Solomon Islands health sector has some experience in IPC, health-care waste management, and communication and public awareness for emergency situations through other national health projects. Effective implementation of the environmental and social risk management will require capacity development for those responsible for implementing project activities at grass-root levels.

Extensive training of hospital medical, laboratory and waste management personnel will be envisaged and funded under the project, in addition to investments in waste management equipment (e.g. incinerators and waste management trucks). Training and capacity support of hospital medical, laboratory and waste management personnel is built into to the project design (components 1 and 2) . Where other development partners (for example, ADB, DFAT, and other UN agencies) are funding complementary activities, coordinated approaches to the training will be identified and pursued.

E&S related training topics/themes will include:

- Interpersonal communication by health workers related to COVID-19;
- Infection prevention and control;
- Testing;
- Health care waste management;

- Clinical management of patients with mild symptoms in primary care settings; and
- Identification and management of GBV cases.

Training topics/themes delivered by the PMU E&S Specialists will likely cover the following topics:

- The relevant requirements of the ESMF, LMP, SEP, MHMS IPCG, provisions to prevent SEA/SH, and WHO guidelines on COVID-19.
- The roles and responsibilities of key agencies in the E&S risk management implementation.
- Managing COVID related waste, and general medical health care waste.
- Labour management procedures.
- Grievance mechanisms.
- Consultations, communications and feedback.
- Ensuring all peoples are given equal access and rights (vulnerable groups, ethnic groups).
- Understanding concerns with GBV, violence against children, social stigma with COVID 19.
- Monitoring and reporting at all levels.

8.5 E&S Risk Management Budget

ESMF implementation costs are allocated according to the budget line items in Table 13. Such costs include the PMU E&S Specialists and other costs to be determined during project implementation. Costs for undertaking monitoring and trainings as well as participation with World Bank supervision missions are also identified. The anticipated cost for all these initiatives is estimated at \$305,000 USD.

The PMU E&S Specialists, once onboard, will be maintained throughout project implementation. The E&S Specialists in the PMU will not have a standalone, earmarked budget to complete E&S risk management activities such as the preparation of activity level E&S risk management instruments. Instead the cost is embedded in the PMU E&S Specialists budgets.

Table 13 - ESMF Implementation Costs.

E&S risk management resource	USD
ESHS&CE Officer (PMU) (full-time)	\$47,000
<ul style="list-style-type: none"> • Screening of activities. • Preparation and disclosure of activity level instruments. • Supervision, monitoring, and reporting. • Information and communication • Monitoring including preparation of six-monthly monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project. • Training and workshops • Coordinating the Project's GM 	
International ESHS Specialist (PMU) (part-time. Approx. 40 days over 2 years)	\$40,000
<ul style="list-style-type: none"> • Support screening of activities. • Support preparation and disclosure of activity level instruments. • Support supervision, monitoring, and reporting. • Support monitoring including preparation of six-monthly monitoring reports on the ESHS performance of the Project. • Support notification, reporting and management of incidents or accidents. • Training and Workshops. • Capacity Building. • Support the coordination of the Project's GM. 	
Training and Communications	\$25,000
<ul style="list-style-type: none"> • PMU E&S specialist/s to travel to provide ESHS training at national and provincial level. • Consultation activities in accordance with the SEP. 	
Supervision, monitoring, and reporting	\$25,000
<ul style="list-style-type: none"> • PMU E&S specialist/s to travel to provinces semi-annually for training and conducting project supervision, monitoring and reporting. 	
TOTAL	\$137,000

9 Annexes

Annex I. Abbreviations and Acronyms

BSL	Biosafety Level
CDC	Centre for Disease Control and Prevention
CFP	Chance Finds Procedure
CoESP	Code of Environmental and Social Practice
COVID-19	Coronavirus Disease 2019
DFAT	Australia's Department of Foreign Affairs and Trade
ECD	Environment Conservation Division
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
E&S	Environmental and Social
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESHS	Environmental, Social, Health and Safety
ESHS&CE	Environmental, Social, Health, Safety and Community Engagement
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standard
FTCF	Fast Track COVID-19 Facility
GBV	Gender Based Violence
GIIP	Good International Industry Practice
GM	Grievance Mechanism
GRS	Grievance Redress Service
HCC	Honiara City Council
H&S	Health and Safety
ICU	Intensive Care Unit
IPC	Infection and Prevention Control
IPCG	Infection and Prevention Control Guidelines
LMP	Labour Management Procedures
M&E	Monitoring and Evaluation
MECDM	Ministry of Environment, Climate Change, Disaster Management and Meteorology
MFAT	Ministry of Foreign Affairs and Trade
MHMS	Ministry of Health and Medical Services
NCCPS	National Covax Communication Plan & Strategy
NCD	Non-communicable disease
NCCPS	National Covax Communication Plan & Strategy
NDOC-H	National Disaster Operations Center-Health
NHEOC	National Health Emergency Operations Center
NMS	National Medical Storage Facility
NRH	National Referral Hospital
OHS	Occupational Health and Safety
PDO	Project Development Objective
PER	Public Environment Report
PMU	Project Management Unit
POM	Project Operations Manual
POP	Persistent Organic Pollutants
PPE	Personal Protective Equipment

SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SIG	Solomon Islands Government
SH	Sexual Harassment
SPREP	Secretariat of the Pacific Regional Environment Programme
SPRP	Strategic Preparedness and Response Program
UN	United Nations
UNICEF	United Nations Children’s Fund
WB	World Bank
WHO	World Health Organization
WMP	Waste Management Plan

Annex II. Code of Environmental and Social Practice (CoESP) for Minor Works

This Code of Environmental and Social Practice (CoESP) has been developed to manage the risks associated with the minor civil works: refurbishment of existing health-care facilities; refurbishment of the National Medical Storage facility (NMS) in Honiara; refurbishment of the existing Zome building to establish a national health emergency coordination center (NHEC); as well as the installation of incinerators as part of the Solomon Islands COVID-19 Emergency Response Project (the Project). All minor works supported under the Project are required to comply with the CoESP and this will be specified in the contractor(s) agreements.

The CoESP provides the guidance for the environmental and social risk management of the minor civil works during the implementation of the Project. The potential environmental and social impacts, mitigation measures, and responsibilities during the planning and design and renovation/refurbishment and installation stages are outlined.

This CoESP should be read in conjunction with the MHMS Infection Prevention and Control Guidelines (IPCG) and the following Project documents:

- Environmental and Social Management Framework (ESMF)
- Labour Management Procedure (LMP)
- Stakeholder Engagement Plan (SEP)
- Project Operational Manual (POM)

Monitoring and Compliance

The planning and design stages of the CoESP will be followed by MHMS and compliance monitored by the World Bank E&S Risk Management Team.

The renovation/refurbishment and installation stages of the CoESP will be followed by the contractor(s) and compliance monitored by the MHMS PMU E&S Specialists.

Reporting

Six-monthly reports will need to be prepared by the PMU E&S Specialists and provided to the World Bank. The semi-annual environmental and social monitoring reports to the World Bank will include: (i) the status of the implementation of mitigation measures; (ii) the findings of monitoring programs; (iii) stakeholder engagement activities; (iv) grievances log; and (v) any incidents/accidents with adverse impacts and the actions taken to address it and prevent reoccurrence.

Incidents/accidents must be reported in accordance with the World Bank Safeguards Incident Response Toolkit' (SIRT). The SIRT outlines the requirements for reporting GBV cases and has a protocol that defines incidents using three categories.

- "Indicative" events are addressed within the Task Team with notification to the Practice Manager and Regional Safeguards Coordinator (RSC).
- "Serious" events need to be elevated by the Task Team Leader (TTL) to the Country Manager/Director, Global Practice Manager, Social and Environmental Practice Managers and Directors, Relevant Program Leaders (RVP), Legal, External and Corporate Relations (ECR), RSC Regional Safeguards Advisor, and Chief Environmental and Social Standards Officer (CESSO).

- In “Severe” events, the TTL promptly notifies the CMU (Country Manager/Country Director (CD)). The CD informs the RVP, SD VP and/or other network VP if appropriate, copying the home GP Practice Manager (PM), Director and Senior Director, RSA, CESSO, E&S PMs and Directors and Senior Directors, LEGEN (with cc to the Country Lawyer), E&S specialists, RSC, and ECR.

During the renovation/refurbishment/installation stages, monthly reports shall be prepared by the contractor(s) and submitted to the PMU E&S Specialists for review. The reports will include information on: (i) the implementation of Health and Safety and Waste Management plans; (ii) any health and safety or environmental incidents; and (iii) information on any grievances received and how they were resolved.

Planning and Design Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
Design of refurbished health-care facilities do not meet layout and engineering requirements for nosocomial infection control, increasing risk of spreading COVID-19 in health facilities.	<ul style="list-style-type: none"> The design set up and management of the facilities will take into account the advice provided by WHO and/or CDC on COVID-19 management and infection control: <ul style="list-style-type: none"> WHO guidance for Severe Acute Respiratory Infections Treatment Centre. WHO interim guidance on Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected; WHO technical brief water, sanitation, hygiene and waste management for COVID-19; WHO guidance on infection prevention and control at health care facilities (with a focus on settings with limited resources); CDC Guidelines for isolation precautions: preventing transmissions of infectious agents in healthcare settings; and CDC guidelines for environmental infection control in healthcare facilities. Hand washing facilities should be provided at the entrances to health care facilities in line with Recommendations to Member States to Improve Hygiene Practices. Isolation rooms should be provided and used at medical facilities for patients with possible or confirmed COVID-19. Refer to the IPCG (Annex VI) for more detail on isolation room requirements. 	Approved engineering designs.	During detail design period – prior to works commencing - once	<p>MHMS and related department at national and provincial levels (implementation)</p> <p>WB E&S Risk Management Team (oversight)</p>

Planning and Design Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
Design of waste management facilities are inappropriate, do not allow for the separation of infectious and non-infectious waste increasing the risk of spreading COVID-19.	<p>The following mitigation measures must be undertaken prior to works beginning:</p> <ul style="list-style-type: none"> • Estimate the potential health-care waste streams; • Consider the capacity of existing facilities, and plan to increase capacity, if necessary, through refurbishment, expansion etc.; • Specify that the design of the facility considers the collection, segregation, transport and treatment of the anticipated volumes and types of health-care wastes; • Require that receptacles for waste should be sized appropriately for the waste volumes generated, and colour coded and labelled according to the types of waste to be deposited; • Develop appropriate protocols for the collection of waste and transportation to storage/disposal areas in accordance with WHO guidance; • Design training for staff in the segregation of wastes at the time of use; and • Design of facility will follow guidance from WHO and/or CDC on health-care waste management and infection prevention control and the guidance detailed in the IPCG (Annex VI). 	Approved engineering designs.	During detail design period – prior to works commencing - once	<p>MHMS and related department at national and provincial levels (implementation)</p> <p>WB E&S Risk Management Team (oversight)</p>
Design of refurbished facilities does not consider universal access e.g. women, children, elderly, and users with disabilities.	<ul style="list-style-type: none"> • Consider the need for differentiated access for different users of the facilities in the design. • Undertake consultation meetings in accordance with the Project SEP to identify potential access issues and appropriate mitigation. 	Approved engineering designs; consultation minutes.	During detail design period – prior to works commencing - once	<p>MHMS (implementation)</p> <p>WB E&S Risk Management Team (oversight)</p>

Planning and Design Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
Facilities that are not covered by adequate life and fire safety (L&FS) risk assessment and mitigation measures.	L&FS master planning will be included in the design of the refurbished facilities in line with GIIP and national legal requirements. MHMS will ensure that all national legal L&FS requirements are met, upon completion of the installation. The facilities should be provided with Fire Detection and Alarm; Means of Egress; Fire Control and Suppression; Smoke Control.	Approved engineering designs with L&FS measures clearly marked.	During detail design period – prior to works commencing - once	MHMS and related department at national and provincial levels (implementation) WB E&S Risk Management Team (oversight)
Facilities to be renovated/refurbished may contain asbestos, lead from lead paints, synthetic mineral fibre (SMF), ozone depleting substances (from old air conditioning units) and polychlorinated biphenyls (PCBs).	Building inspection(s) that identifies whether asbestos or other hazardous materials are present prior to renovations/refurbishments commencing.	Hazardous material assessment.	During detail design period – prior to works commencing - once	MHMS (implementation) WB E&S Risk Management Team (oversight)
NMS design does not adequately provide for pharmaceutical or chemical storage and disposal.	Medical Store design should be developed for proper chemical handling, storage and disposal. At a minimum, the following mitigation measures must be undertaken prior to works beginning: <ul style="list-style-type: none"> Estimate the potential amounts of chemicals and chemical wastes to be stored and disposed of at the refurbished Medical Store; Develop a simple waste measurement and tracking system for operation that measures the amount of waste produced and disposed of. This will ensure that waste types and amounts are tracked and recorded to make sure that the Medical Store has defined options for waste disposal at the time of operation commencement. Specify that the design of the Medical Store considers the safe handling, collection, segregation, and storage of the anticipated amounts and types of chemicals and chemical wastes in accordance with the 	Approved engineering designs.	During detail design period – prior to works commencing - once	MHMS (implementation) WB E&S Risk Management Team (oversight)

Planning and Design Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
	<p>substances material safety data sheet(s) (MSDS(s)), Solomon Islands law, and GIIP such as ISO standards on the handling and storage of chemicals from the ISO 14001 Documentation Toolkit; and</p> <ul style="list-style-type: none"> Consider the capacity of the existing Medical Store, and plan to increase capacity for chemical and chemical waste collection, separation, separation and disposal, if necessary, through the refurbishment. 			
Design and siting of incinerators and ash pit(s) are inappropriate and leads to air, land and/or water pollution.	<p>Design and siting of incinerators and ash pit(s) are to be in accordance with the ESMP, Solomon Islands law, and GIIP.</p> <p>Ash pits are to be located away from water bodies and sensitive receptors.</p>	Approved engineering designs.	During detail design period – prior to installation commencing - once	<p>MHMS (implementation)</p> <p>WB E&S Risk Management Team (oversight)</p>
Inadequate construction workforce size and/or insufficient accommodations.	<p>The following mitigation measures must be undertaken prior to works beginning:</p> <ul style="list-style-type: none"> Identify numbers and types of workers; Identify how long workers will be needed for; Ensure adequate accommodation and implement measures to minimize cross infection; and Use the Project LMP to screen risks and identify further mitigation measures. 	Number and types of workers identified in bidding documents; evidence of risk screening.	During detail design period – prior to works commencing - once	<p>MHMS (implementation)</p> <p>WB E&S Risk Management Team (oversight)</p>

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
Air quality, noise, and vibration generated from minor civil works	<p>The contractor(s) is responsible for compliance with all relevant national legislation and international standards with respect to noise and vibration and ambient air quality.</p> <p><u>Noise and vibration:</u></p> <p>The contractor(s) undertaking works shall implement the following at a minimum:</p> <ul style="list-style-type: none"> • Plan activities in consultation with communities so that noisiest activities are restricted to being undertaken during periods that will result in least disturbance; • Noise levels should be maintained within the national permissible limits/standards; • If necessary, use temporary noise-control methods such as fences, barriers or deflectors (such as muffling devices for combustion engines) and select equipment with lower sound power levels where possible; • Minimize transportation of demolition waste and construction materials through community areas during regular working time; • Maintain a buffer zone (such as open spaces, row of trees or vegetated areas) between the project site and surrounding areas if possible, to lessen the impact of noise; and • Noise impacts should not exceed 55 dB(A) for residential; institutional, or educational receptors during the daytime (07:00 – 22:00) and 45 dB(A) during the Night-time (22:00 – 07:00) and for industrial or commercial receptors should not exceed 70 dB(A) at anytime or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site. <p><u>Air Quality:</u></p> <p>The contractor(s) undertaking works shall implement dust suppression measures (e.g. covering of material stockpiles, etc.) as required. At a minimum the following is required:</p>	Designated stockpile areas approved; dust plumes; complaints register; vehicle and plant maintenance records.	Weekly inspections throughout construction period.	<p>Contractor(s) (implementation)</p> <p>PMU E&S Specialists (oversight)</p>

Renovation / Refurbishment / Installation Stage																
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities												
	<ul style="list-style-type: none">Materials used shall be covered and secured properly during transportation to prevent scattering of soil, sand, materials, or generating dust;Keep stockpiles of aggregate materials covered to avoid suspension or dispersal of fine soil particles during windy days or disturbance from stray animals;Minimize dust from exposed work sites and stockpiles by applying water on the ground regularly;No burning of site clearance debris (trees, undergrowth) or construction waste materials;Hydrocarbons shall not be used as a method of dust control;Immediately re-vegetate and/or stabilize exposed areas (if required); andAmbient air quality should not exceed relevant national air quality guidelines/standards or the current WHO Ambient Air Quality Guidelines: <table><tr><th colspan="3">WHO Ambient Air Quality Guidelines</th></tr><tr><th></th><th>Averaging Period</th><th>Guideline value in $\mu\text{g}/\text{m}^3$</th></tr><tr><td>Particulate Matter PM₁₀</td><td>1-year 24-hour</td><td>20 50</td></tr><tr><td>Particulate Matter PM_{2.5}</td><td>1-year 24-hour</td><td>10 25</td></tr></table>	WHO Ambient Air Quality Guidelines				Averaging Period	Guideline value in $\mu\text{g}/\text{m}^3$	Particulate Matter PM ₁₀	1-year 24-hour	20 50	Particulate Matter PM _{2.5}	1-year 24-hour	10 25			
WHO Ambient Air Quality Guidelines																
	Averaging Period	Guideline value in $\mu\text{g}/\text{m}^3$														
Particulate Matter PM ₁₀	1-year 24-hour	20 50														
Particulate Matter PM _{2.5}	1-year 24-hour	10 25														

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
Soil erosion and uncontrolled sediment causing negative impacts to surface or groundwater.	<p>The contractor(s) undertaking works shall implement the following at a minimum:</p> <ul style="list-style-type: none"> • Implement suitable project design (e.g., establish appropriate erosion and sediment control measures) to minimize soil erosion and identify and protect receiving water courses and bodies; • Scheduling to avoid heavy rainfall periods; and • Use mulch, grasses or compacted soil to stabilize exposed areas promptly. 	On-site sediment control measures; records of water quality monitoring (visual); revegetation.	Weekly inspections throughout construction period.	<p>Contractor(s) (implementation)</p> <p>PMU E&S Specialists (oversight)</p>
Resource efficiency issues, including materials supply and extraction of raw materials.	<p>The contractor(s) undertaking works shall at a minimum:</p> <ul style="list-style-type: none"> • Estimate the quantities of raw materials needed for the minor civil works; • Source raw materials and construction materials locally and from licenced/permitted facilities only; and • Use recycled or renewable building materials (e.g. timber) where possible. 	Contract for local materials.	Prior to works commencing and then throughout construction as required	<p>Contractor(s) (implementation)</p> <p>PMU E&S Specialists (oversight)</p>
Impacts on local communities from traffic obstruction, congestion, and traffic and road safety.	<p>The contractor(s) undertaking works shall implement the following at a minimum:</p> <ul style="list-style-type: none"> • Construction and establishment of haul roads shall be kept to a minimum; • Communicate traffic management plans – including traffic volumes, schedules, road closures and community safety measures – to project stakeholders and local communities. • Minimise the extent of traffic and construction impacts on adjacent villages and other residential areas where possible; and • All traffic signs used for the warning or direction of traffic at road works sites shall comply with appropriate traffic regulations. Homemade signs shall not be used. • Implement dust suppression measures. 	Traffic management plan included in the Contractor(s) H&S Management Plan; traffic control measures implemented; signage and barriers installed as required; complaints register.	Weekly inspections throughout construction period.	<p>Contractor(s) (implementation)</p> <p>PMU E&S Specialists (oversight)</p>

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
Damage to cultural heritage.	The contractor(s) shall have a Chance-Finds Procedure in place prior to any physical works beginning. Chance Finds Procedure is available in Annex III.	Chance-Finds Procedure in place; complaints register.	Prior to works commencing and then maintained throughout construction.	Contractor(s) Site Engineer (implementation) PMU E&S Specialists (oversight)
Land and/or water pollution from waste generated by demolition debris, construction materials, and/or workers (solid, hazardous, and wastewater)	<p>The contractor(s) undertaking works shall implement the following at a minimum:</p> <ul style="list-style-type: none"> • Develop and follow a site-specific WMP (separation of waste streams, storage, provision of bins, site clean-up, bin clean-out schedule, etc.). The WMP must be developed and submitted to the PMU E&S Specialists for approval prior to any physical works commencing; • The WMP must include the principles of the Waste Hierarchy (Reduce, Reuse, Recycle, Residual Disposal) as outlined in the National Waste Management and Pollution Control Strategy 2017-2026. The following methods for waste reduction and recycling should be utilized: <ul style="list-style-type: none"> ○ Minimise waste production by reusing existing structures; initially remove materials by hand e.g. wooden floorboards, to avoid damage and excess waste; separating materials (metal, timber etc.) and storing them in neat piles to avoid cross contamination; ensuring safe and dry storage of salvaged items; placing clear signage on all waste separation and collection areas; ○ Recyclable materials such as packaging material etc., shall be segregated and collected on-site from other waste sources for reuse or recycle (sale); ○ Remove scrap metal, such as roofing materials and iron rebar from concrete, for reuse off-site or metal recycling where practicable. Steel off-cuts can be recovered and sold as scrap metal; 	Contractor's WMP; sanitation facilities maintained onsite; waste and recycling records; worker training records.	Weekly inspections throughout construction period.	Contractor(s) (implementation) PMU E&S Specialists (oversight)

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
	<ul style="list-style-type: none"> ○ Timber can be resold for utilisation as fuel (non-treated) or for repairing houses in villages or outer island communities (treated); ○ On-site and off-site transportation of waste should be conducted to prevent or minimize spills, releases, and exposures to employees and the public; ● Use litter bins, containers and waste collection facilities at all places during works; ● Store solid waste temporarily on site in a designated place prior to off-site transportation and disposal through a licenced waste collector; ● Dispose of waste only at designated place identified and approved by local authority. Open burning or burial of solid waste on the construction site shall not be allowed. It is prohibited for the contractor(s) to dispose of any debris or construction material/paint in environmentally sensitive areas (including watercourses); ● Provide adequate portable sanitation facilities serving all workers at all construction sites; ● Ensure onsite worker sanitation facilities be properly operated and maintained to collect and dispose of wastewater; ● Minimize hazardous waste generation by ensuring hazardous waste is not co-mingled with non-hazardous waste. Collect, transport and disposal of hazardous waste to licenced/permitted hazardous waste sites only following good international industry practice (GIIP) for the waste being handled; and ● Design training for staff in the segregation of wastes. 			
Land and/or water pollution from use and storage of hazardous substances e.g. minor spills from fuel, oils, lubricants.	<p>The contractor(s) undertaking works shall implement the following at a minimum in accordance with relevant Solomon Islands laws and GIIP such as the JFC EHS Guideline: Hazardous Materials Management:</p> <ul style="list-style-type: none"> ● Using impervious surfaces for refuelling areas and other fluid transfer areas; 	Secured storage areas and secondary containment; spill kit and worker training records; records	Weekly inspections throughout construction period.	Contractor(s) (implementation) PMU E&S Specialists (oversight)

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
	<ul style="list-style-type: none"> Ensure that refuelling and maintenance facilities are not located, or that activities do not take place, within 30 m of a watercourse, or in ecologically sensitive areas. If a 30m limit is impracticable then a lesser limit may be adopted provided approval is obtained. On no account shall the limit be less than 10 m; Providing adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids. If the secondary containment used is bunding, then the area should also be lined and covered; Ensure that vehicles and plant are not stored within 30 m of a watercourse, or in ecologically sensitive areas, overnight or when not in use; Regular checks for leaking oil or fuel from machinery undertaken. Any leaks are promptly repaired and/or parts replaced within two days as part of maintenance of vehicles and equipment; Training workers on the correct transfer and handling of fuels and chemicals and the response to spills; and Spill kit, appropriate to the hazardous materials being used, to be kept on-site and workers to be trained in its deployment. 	of safety briefings; vehicle and plant maintenance records.		
Land and/or water pollution from hazardous wastes such as asbestos, lead paints, SMF, ozone depleting substances (from old air conditioning units) and PCBs that may be present in demolition or refurbishment debris.	<p>The contractor(s) undertaking works shall be required to do the following at a minimum:</p> <ul style="list-style-type: none"> Hazardous material management procedure detailed in WMP(s) to be developed during project by the contractor in accordance with GIIP. WMP(s) must be submitted to the PMU E&S Specialists for approval prior to any physical works commencing; Asbestos containing materials managed in accordance with GIIP such as WBG guidelines on asbestos management. GIIP for asbestos includes: i) Requirements for contractors and stipulations of clauses in the tendering documents; ii) Risk assessment – determining the content of asbestos and risks of exposure incurred by workers, to assess them and to take the necessary precautions; iii) Notification to the occupational 	Hazardous material management procedure as part of Contractor's WMP; record of building inspection; hazardous waste records; worker training records.	Procedure prepared prior to works commencing and then weekly inspections throughout construction period.	Contractor(s) (implementation) PMU E&S Specialists (oversight)

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
	<p>health and safety authority responsible for the work site; iv) Work plan with working instructions - lay down the technical and personal protective measures to be taken in the work plan; v) Training of project stakeholders and training of contractor and workers; vi) Transport, storage and disposal of asbestos (agreements with component bodies for transportation and disposal);</p> <ul style="list-style-type: none"> • Safe removal of any asbestos-containing materials or other toxic substances shall be performed and disposed of by specially trained workers in line with the WBG guidelines on asbestos management; • Removal personnel will have proper training prior to removal or repair of asbestos containing materials; • All asbestos waste and products containing asbestos is to be buried at an appropriate landfill and not to be tampered or broken down to ensure no fibres are airborne. Disposal of waste containing asbestos should be agreed with ECD; and • No asbestos containing materials shall be used for construction works. 			
Occupational Health and Safety (OHS) risks for workers from minor civil works.	<p>The contractor(s) undertaking works shall comply with all national and good practice regulations and GIIP regarding workers' safety, such as OHS section of the IFC EHS Guidelines on Construction and Decommissioning, and implement the following at a minimum:</p> <ul style="list-style-type: none"> • Complete different levels of risk assessment, i.e. from whole Job Safety Analysis down to the personal level, to identify any potential hazards, rank the risks, and identify ways to eliminate, control or minimize the hazards. Develop and follow a site-specific health and safety (H&S) management plan that is compliant with the ESMF and World Bank Environment and Health and Safety Guidelines (EHSs). H&S management plan(s) must be submitted to the PMU E&S Specialists for approval prior to any physical works commencing; • Appoint a health and safety officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the site; 	Contractors Health and Safety plan(s); Emergency Action Plan; workers allocated and wearing PPE; first aid kits in vehicles and at work sites; worker training records; complaints record; accident/incidents register.	Weekly inspections throughout construction period.	Contractor(s) (implementation) PMU E&S Specialists (oversight)

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
	<ul style="list-style-type: none"> • Prepare and implement a simple action plan to cope with risk and emergency (e.g., fire, storm surge, cyclone, COVID-19 outbreak); • Have or receive minimum required training on occupational safety regulations and use of PPE; • Undertake training of staff to meet standards for the proper operation and use of equipment; • Training of workers in lifting and materials handling techniques in renovation / refurbishing projects, including the placement of weight limits above which mechanical assists or two-person lifts are necessary; • Training and use of temporary fall prevention devices, such as rails or other barriers able to support a weight of 200 pounds, when working at heights equal or greater than two meters (e.g. on scaffolding); • Use of control zones and safety monitoring systems to warn workers of their proximity to fall hazard zones, as well as securing, marking, and labeling covers for openings in floors, roofs, or walking surfaces; • Take protective measures to prevent accidents such as: <ul style="list-style-type: none"> ○ implementing good house-keeping practices, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths. ○ Locating electrical cords and ropes in common areas and marked corridors. ○ Planning and segregating the location of vehicle traffic, machine operation, and walking areas, and controlling vehicle traffic through the use of one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic. ○ Ensuring moving equipment is outfitted with audible back-up alarms. ○ Use of temporary fall protection measures in scaffolds and out edges of elevated work surfaces, such as handrails and toe boards 			

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
	<p>to prevent materials from being dislodged.</p> <ul style="list-style-type: none"> • Provide PPE and other safety measures as appropriate during works such as safety glasses with side shields, face shields, hard hats, hi-vis vests and safety shoes with non-slip soles, first aid kits, restricted access zones, warning signs, overhead protection against falling debris; • Refer any grievances received by the community or local businesses to the local PMU ESHS&CE Specialist who will coordinate the GM; and • Provide project workers with accessible means to raise workplace concerns (refer to Project LMP, Annex VII). 			
Issues related to inappropriate worker accommodations such as close working and poor living conditions which may create conditions for the easy transmission of COVID-19 and the infection of large numbers of people.	<p>The contractor(s) undertaking works shall comply with all national and good practice regulations regarding workers' safety and the LMP for the Project and implement the following at a minimum:</p> <ul style="list-style-type: none"> • Appoint a senior person, e.g. the health and safety officer, as the focal point to deal with COVID-19 issues; • Prepare a detailed profile of the project work force, key work activities, schedule for carrying out such activities, different durations of contract and rotations. This should include a breakdown of workers who reside at home (i.e. workers from the community), workers who lodge within the local community and workers in on-site accommodation; • All construction facilities should establish hand hygiene programmes. Frequent and proper hand washing is one of the most important measures that can be used to prevent infection by the COVID-19 virus. • Wash stations should be provided regularly throughout site, with a supply of clean water, liquid soap and paper towels (for hand drying), with a closed waste bin (for used paper towels) that is regularly emptied. Wash stations should be provided wherever there is a toilet, canteen/food and drinking water, sleeping accommodations, at waste stations, at the entry/exit of the site, and other communal facilities. Where wash stations cannot be provided, alcohol-based hand rub should be provided. 	Hand hygiene stations; cleaning records; COVID-19 plan; worker training records; complaints records; accidents/incidents register.	Weekly inspections throughout construction period.	<p>Contractor(s) (implementation)</p> <p>PMU E&S Specialists (oversight)</p>

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
	<ul style="list-style-type: none"> Undertake regular cleaning of the construction site and accommodation with neutral detergent and water. Worker accommodation that meets or exceeds IFC/EBRD worker accommodation requirements (e.g. in terms of floor type, proximity/no of workers, no 'hot bedding', drinking water, washing, bathroom facilities etc.). Accommodation maintained in clean and hygienic condition to minimize spread of infection; If a worker is diagnosed with COVID-19, follow the Consolidated National Preparedness and Response Plan for COVID-19; and Undertaking health awareness and education initiatives with construction workers e.g. providing information on COVID-19 symptoms, transition paths, good hand hygiene, physical distancing etc. 			
Workers do not receive the care needed if infected with COVID-19.	Contractors should ensure that contracted workers have medical insurance, covering treatment of COVID-19.	Medical Insurance Records.	Prior to works commencing and then monitored throughout construction as required.	Contractor(s) (implementation) PMU E&S Specialists (oversight)
Health and safety risks for community, health care workers, patients and their relatives from minor civil works.	<p>The contractor(s) undertaking works shall implement the following at a minimum:</p> <ul style="list-style-type: none"> Develop and follow a site-specific health and safety (H&S) management plan that is compliant with the ESMF and World Bank Environment and Health and Safety Guidelines (EHSGs) and which includes health and safety measures for the community. H&S management plan(s) must be submitted to the PMU E&S Specialists for approval prior to any physical works commencing; A Traffic Management Plan must be included in the H&S Management Plan; 	Contractor's Health and Safety plan which includes a Traffic Management Plan; signage and traffic control measures; site barriers such as fencing; records of consultations;	Weekly inspections throughout construction period.	Contractor(s) (implementation) PMU E&S Specialists (oversight)

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
	<ul style="list-style-type: none"> Comply with all national and good practice regulations regarding workers' safety and the Project's LMP; Take protective measures to prevent accidents such as: <ul style="list-style-type: none"> Barriers to prevent unauthorised access to worksites. Implementing good house-keeping practices to eliminate the hazard where possible, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths. Planning and segregating the location of vehicle traffic, machine operation, and walking areas, and controlling vehicle traffic through the use of one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic. Ensuring moving equipment is outfitted with audible back-up alarms. Provide safe access routes and other safety measures as appropriate during works such first aid kits, restricted access zones, warning signs, covering openings to small confined spaces, overhead protection against falling debris and barricaded exclusion areas for drop zones (e.g. when working at heights), lighting system to protect community against construction risks; Deliver and store oxygen in accordance with WHO advice Oxygen sources and distribution for COVID-19 treatment centres, if relevant; Communicate risks and community safety mitigation measures to project stakeholders and communities; and Grievance mechanism (GM) developed and operational in accordance with the Project SEP. 	complaints records; accident/incidents register.		
Increase in sexual exploitation and abuse/	<p>The Contractor(s) should at a minimum:</p> <ul style="list-style-type: none"> Comply with all relevant national laws and legislations. 	Contractor's Health and Safety	Weekly inspections	Contractor(s) (implementation)

Renovation / Refurbishment / Installation Stage				
Risks and Impacts	Mitigation Measures	Monitoring - Verification	Monitoring - Frequency	Responsibilities
harassment (SEA/H) related to project workforce	<ul style="list-style-type: none"> • Include SEA/H requirements in the site-specific H&S management plan including aspects relating to preventing GBV and SEA/H and zero tolerance for these behaviours. • Ensure that workers are well briefed on the GBV and SEA/H requirements in the H&S management plan. • Provide separate facilities for female and male workers. • Refer to the Project LMP for further mitigation measures. 	Management plan which includes SEA/H requirements; Agreed Code of Ethics and Professional Conduct; worker training records; complaints record.	throughout construction period.	PMU E&S Specialists (oversight)
Workers are underaged.	Child labour or forced labour is absolutely prohibited in the project.	Records of workers by age; complaints record.	Weekly inspections throughout construction period.	Contractor(s) (implementation) PMU E&S Specialists (oversight)

Annex III. Chance Finds Procedure

Cultural heritage encompasses tangible and intangible heritage which may be recognized and valued at a local, regional, national or global level. Tangible cultural heritage, which includes movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Tangible cultural heritage may be located in urban or rural settings, and may be above or below land or under the water. Intangible cultural heritage, which includes practices, representations, expressions, knowledge, skills—as well as the instruments, objects, artefacts and cultural spaces associated therewith— that communities and groups recognize as part of their cultural heritage, as transmitted from generation to generation and constantly recreated by them in response to their environment, their interaction with nature and their history.

The list of negative activity attributes which would make an activity ineligible for support includes any activity that would adversely impact cultural heritage assets. In the event that during minor civil works sites of cultural value are found, the following procedures for identification, protection from theft, and treatment of discovered artefacts should be followed and included in standard bidding documents.

Chance find procedures will be used as follows:

- (a) Stop the earthworks, construction or land clearing activities in the area of the chance find;
- (b) Delineate the discovered site or area;
- (c) Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the relevant Ministry take over;
- (d) Notify the supervisory Engineer who in turn will notify the responsible local authorities and the relevant Ministry immediately;
- (e) Responsible local authorities and the relevant Ministry would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures;
- (f) Decisions on how to handle the finding shall be taken by the responsible authorities and the relevant Ministry;
- (g) Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the relevant Ministry; and
- (h) Construction work could resume only after permission is given from the responsible local authorities and the relevant Ministry concerning safeguard of the heritage.

These procedures must be referred to as standard provisions in construction contracts. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered are observed.

Relevant findings will be recorded in World Bank Supervision Reports and Implementation Completion Reports will assess the overall effectiveness of the project's cultural heritage mitigation, management, and activities.

Annex IV. Screening Form for Potential Environmental and Social Issues

This form is to be used by the PMU E&S Specialists to for screen potential environmental and social risks and impacts of a proposed project activity not pre-screened in Chapter 5 of the ESMF e.g. for additional financing activities. The purpose of screening is to (i) determine whether activities are eligible to be financed, and likely to have potential negative environmental and social risks and impacts; and (ii) identify appropriate mitigation measures for activities with adverse risks or impacts. The screening will help the PMU E&S Specialists in identifying the relevant Environmental and Social Standards (ESS), establishing an appropriate E&S risk rating for these activities and specifying the type of environmental and social assessment required, including specific instruments/plans.

This form is for all ‘other’ activities not already pre-screened in Chapter 5 the ESMF e.g. additional financing activities such as vaccine deployment. Before screening, also check that the activity is not listed in Ineligible Activity List (Chapter 6, Table 11 in the ESMF).

Use of this form will allow the PMU E&S Specialists to form an initial view of the potential risks and impacts of a project activity. ***It is not a substitute for project-specific E&S assessments or specific mitigation plans.***

The completed forms will be signed and kept in the Project ESF file and included in the ESF implementation progress report to be submitted to World Bank (WB) per the schedule as agreed with WB.

Activity Name	
Activity Location	
Activity Proponent	
Estimated Investment	
Start/Completion Date	

Questions	Answer		ESS relevance	Due diligence / Actions
	Yes	no		
Does the activity involve civil works including new construction, expansion, upgrading or rehabilitation of health-care facilities and/or waste management facilities? Could climate change or extreme weather adversely impact the project?			ESS1	Activity ESIA/ESMP. (new construction), CoESP (minor civil works), Construction/Renovation H&S and WMP, Project LMP, SEP & GM
Does the activity involve land acquisition and/or restrictions on land use?			ESS5	If yes, this activity is ineligible for project financing
Does the activity involve acquisition of assets for quarantine, isolation or medical treatment purposes?			ESS5	If yes, this activity is ineligible for project financing
Is the activity associated with any external waste management facilities such as a sanitary landfill, incinerator, or wastewater treatment plant for health-care waste disposal?			ESS3	Activity ESMP, MHMS IPCG, Project SEP, GM & LMP
Is there a sound regulatory framework and institutional capacity in place for health-care facility infection control and health-care waste management?			ESS1	Activity ESMP, MHMS IPCG, Project SEP & GM
Does the activity have an adequate system in place (capacity, processes and management) to address waste?				MHMS IPCG and/or activity WMP, Project SEP & GM
Does the activity involve recruitment of workers including direct, contracted, primary supply, and/or community workers?			ESS2	Project LMP, SEP & GM

Does the activity have appropriate OHS procedures in place, and an adequate supply of PPE (where necessary)?				Activity H&S Plan. Project LMP
Does the activity have a GM in place, to which all workers have access, designed to respond quickly and effectively?				Project GM
Does the activity involve transboundary transportation (including Potentially infected specimens may be transported from health-care facilities to testing laboratories, and transboundary) of specimen, samples, infectious and hazardous materials?			ESS3	Activity IPC&WMP, Project SEP & GM. Transport should be performed in accordance with WHO interim guidelines on specimen collection and shipment
Does the activity involve use of security or military personnel during construction and/or operation of health-care facilities and related activities?			ESS4	Follow WB Technical Note: Use of Military Forces to Assist in Covid-19 Operations Suggestions on how to Mitigate Risks. Project SEP & GM
Is the activity located within or in the vicinity of any ecologically sensitive areas?			ESS6	If yes, this activity is ineligible for project financing
Are there any indigenous groups (meeting specified ESS7 criteria) present in the activity area and are they likely to be affected by the proposed activity negatively or positively?			ESS7	SEP incorporating provisions for IPs
Is the activity located within or in the vicinity of any known cultural heritage sites?			ESS8	If yes, this activity is ineligible for project financing
Does the activity area present considerable Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA) risk?			ESS1	Project LMP, SEP & GM
Does the subproject carry risk that disadvantaged and vulnerable groups may have inequitable access to project benefits?			ESS1	Activity ESIA/ESMP, Project SEP & GM

Is there any territorial dispute between two or more countries in the activity and its ancillary aspects and related activities?			<i>OP7.60 Projects in Disputed Areas</i>	If yes, this activity is ineligible for project financing
Will the activity and any related activities involve the use or potential pollution of, or be located in international waterways ³⁹ ?			<i>OP7.50 Projects on International Waterways</i>	If yes, this activity is ineligible for project financing
Will the activity be classified as “High” risk pursuant to the World Bank's Environment and Social Standard 1 (ESS1) of the Environment and Social Framework (ESF) and based on this screening process?			ESS1	If yes, this activity is ineligible for project financing

Conclusions:

1. Proposed Environmental and Social Risk Ratings (High, Substantial, Moderate or Low). Provide Justifications.

2. E&S Management Plans/ Instruments to follow.

Remarks.....
.....

Sign by: Activities owner:

Position:Date

Sign by:

Position:Date:.....

³⁹ International waterways include any river, canal, lake or similar body of water that forms a boundary between, or any river or surface water that flows through two or more states.

Annex V. Environmental and Social Management Plan (ESMP) Template

An Environmental and social management plan (ESMP) is an instrument that details (i) the measures to be taken during the implementation and operation of an activity to eliminate or offset adverse environmental and social impacts, or to reduce them to acceptable levels; and (ii) the actions needed to implement these measures.

The PMU E&S Specialists may need to develop an Environmental and Social Management Plan (ESMP) for the incinerators, and / or proposed project activities not pre-screened in Chapter 5 of the ESMF e.g. for additional financing activities such as vaccine deployment, setting out how the environmental and social risks and impacts will be managed through the project lifecycle.

Any ESMP prepared for Project activities should be prepared with regards to the MHMS Infection Prevention Control Guidelines (IPCG) and the following project documents:

- Environmental and Social Management Framework (ESMF)
- Labour Management Procedure (LMP)
- Stakeholder Engagement Plan (SEP)
- Project Operational Manual (POM)

If a PER/EIS are determined during project implementation to be required by ECD for the incinerator(s), the requirements of the PER/EIS can be incorporated into the ESMP to be prepared in accordance with the ESF.

This ESMP template, taken from the World Bank ESMF template for COVID-19 response, includes several matrices identifying key risks and setting out suggested E&S mitigation measures. If required, the PMU E&S Specialists can use these matrices to assist in identifying risks and possible mitigations.

The ESMP should also include other key elements relevant to delivery of the project, such as institutional arrangements, plans for capacity building and training plan, and background information. The PMU E&S Specialists may incorporate relevant sections of the ESMF and supporting documents into the ESMP, with necessary updates.

The matrices illustrate the importance of considering lifecycle management of E&S risks, including during the different phases of the project: planning and design, construction, operations and decommissioning.

The issues and risks identified in the matrix are based on current COVID-19 responses and experience of other World Bank financed healthcare sector projects. The PMU E&S Specialists should review and add to them during the environmental and social assessment of a project activity.

The WBG EHS Guidelines, WHO technical guidance documents and other GIIPs set out in detail many mitigation measures and good practices and can be used by the PMU E&S Specialists to develop the ESMP. Proper stakeholder engagement should be conducted in determining the mitigation measures, including close involvement of medical and healthcare waste management professionals.

The ESMP should be incorporated into the contractors bidding document(s) and/or contract(s).

Table 1 - Environmental and Social Risks and Mitigation Measures during Planning and Designing Stage

Key Activities	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Monitoring: Verification & Frequency	Responsibilities	Timeline	Budget
Identify the type, location and scale of healthcare facilities (HCF) or facilities to be used for deployment of vaccines, including whether the operations of the facilities could be adversely impacted by climate change or extreme weather						
Identify the need for new construction, expansion, upgrading and/or rehabilitation						
Identify the needs for ancillary works and associated facilities, such as access roads, construction materials, supplies of water and power, sewage system						
Identify the needs for acquisition of land and assets (e.g. acquiring existing assets such as hostel, stadium to hold potential patients)						
Identify onsite and offsite waste management facilities, and waste transportation routes and service providers	Inadequate facilities and processes for treatment of waste	<ul style="list-style-type: none"> ➤ Estimate potential waste streams, including sharps and vaccine program wastes ➤ Consider the capacity of existing facilities, and plan to increase capacity, if necessary, through construction, expansion etc. 				

		<ul style="list-style-type: none"> ➤ Specify that the design of the facility considers the collection, segregation, transport and treatment of the anticipated volumes and types of healthcare wastes ➤ Require that receptacles for waste should be sized appropriately for the waste volumes generated, and color coded and labeled according to the types of waste to be deposited. <p>Develop appropriate protocols for the collection of waste and transportation to storage/disposal areas in accordance with WHO guidance. Design training for staff in the segregation of wastes at the time of use</p>				
Identify needs for transboundary movement of samples, vaccines, specimen, reagent, and hazardous materials		Transport should be performed in accordance with WHO interim guidelines on specimen collection and shipment				
Identify needs for workforce and type of project workers		<ul style="list-style-type: none"> ➤ Identify numbers and types of workers ➤ Consider accommodation and measures to minimize cross infection ➤ Use the Project LMP to identify possible mitigation measures 				
Identify needs for using security personnel during construction and/or operation of HCF		Follow WB Technical Note: Use of Military Forces to Assist in Covid-19 Operations Suggestions on how to Mitigate Risks & SEP				

HCF design – general	<ul style="list-style-type: none"> - Structural life and fire safety risk; - Functional layout and engineering control for nosocomial infection 					
HCF design - considerations for differentiated treatment for groups of higher sensitivity or vulnerable (the elderly, those with preexisting conditions, or the very young) and those with disabilities	Some groups may have difficulty accessing health facilities					
Design of facility should reflect specific treatment requirements, including triage, isolation or quarantine		<ul style="list-style-type: none"> ➤ The design, set up and management of will take into account the advice provided by WHO guidance for Severe Acute Respiratory Infections Treatment Center. ➤ Hand washing facilities should be provided at the entrances to health care facilities in line with WHO Recommendations to Member States to Improve Hygiene Practices. ➤ Isolation rooms should be provided and used at medical facilities for patients with possible or confirmed COVID-19. ➤ Isolation rooms should: <ul style="list-style-type: none"> ✓ be single rooms with attached bathrooms (or with a dedicated commode); 				

		<ul style="list-style-type: none"> ✓ ideally be under negative pressure (neutral pressure may be used, but positive pressure rooms should be avoided) ✓ be sited away from busy areas or close to vulnerable or high-risk patients, to minimize chances of infection spread; ✓ have dedicated equipment (for example blood pressure machine, peak flow meter and stethoscope) ✓ have signs on doors to control entry to the room, with the door kept closed; ✓ have an ante-room for staff to put on and take off PPE and to wash/decontaminate before and after providing treatment. 				
Design to consider mortuary arrangements	Insufficient capacity Spread of infection	<ul style="list-style-type: none"> ➤ Include adequate mortuary arrangements in the design ➤ See WHO Infection Prevention and Control for the safe management of a dead body in the context of COVID-19) 				
Identify the needs for an effective communication campaign on vaccination, including tailored outreach to different groups (including disadvantaged and vulnerable groups), with different partners						

Table 2 - Environmental and Social Risks and Mitigation Measures during Construction Stage

Activities	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Monitoring: Verification & Frequency	Responsibilities	Timeline	Budget
Clearing of vegetation and trees; Construction activities near ecologically sensitive areas/spots	- Impacts on natural habitats, ecological resources and biodiversity					
General construction activities Foundation excavation; borehole digging	- Impacts on soils and groundwater; - Geological risks					
General construction activities	- Resource efficiency issues, including raw materials, water and energy use; - Materials supply					
General construction activities – general pollution management	- Construction solid waste; - Construction wastewater; - Noise; - Vibration; - Dust; - Air emissions from construction equipment					
General construction activities – hazardous waste management	- Fuel, oils, lubricant					
General construction	- Workers coming from infected areas	- Refer to Project LMP. - Consider ways to minimize/control movement				

activities – Labor issues	<ul style="list-style-type: none"> - Co-workers becoming infected - Workers introducing infection into community/general public 	<p>in and out of construction areas/site.</p> <ul style="list-style-type: none"> - If workers are accommodated on site require them to minimize contact with people outside the construction area/site or prohibit them from leaving the area/site for the duration of their contract - Implement procedures to confirm workers are fit for work before they start work, paying special to workers with underlying health issues or who may be otherwise at risk - Check and record temperatures of workers and other people entering the construction area/site or require self-reporting prior to or on entering - Provide daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures. - Require workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor if they have symptoms or are feeling unwell - Prevent a worker from an affected area or who has been in contact with an 				
---------------------------	---	--	--	--	--	--

		<p>infected person from entering the construction area/site for 14 days</p> <ul style="list-style-type: none"> - Preventing a sick worker from entering the construction area/site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days 				
General construction activities – Occupational Health and Safety (OHS)						
General construction activities – traffic and road safety						
General construction activities – security personnel						
General construction activities – land and asset	Acquisition of land and assets (Note: no private land acquisition is allowed under the project. In case there is a need for tribal land there is an option of Land Commitment letter).					
General construction activities	GBV/SEA issues	Follow LMP				
General construction	Cultural heritage	Chance-finds procedure (Annex III)				

activities – cultural heritage						
General construction activities – emergency preparedness and response		Emergency Response Plan				
Construction activities related to <i>onsite</i> waste management facilities, including temporary storage, incinerator, sewerage system and wastewater treatment works						
Construction activities related to demolition of existing structures or facilities (if needed)						
<i>To be expanded</i>						

Table 3 - Environmental and Social Risks and Mitigation Measures during Operational Stage

Activities	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Monitoring: Verification & Frequency	Responsibilities	Timeline	Budget
General HCF operation – Environment	General wastes, wastewater and air emissions	Activity WMP				
General HCF operation – OHS issues	<ul style="list-style-type: none"> - Physical hazards; - Electrical and explosive hazards; - Life and Fire safety, and extreme weather; - Chemical use; - Ergonomic hazard; - Radioactive hazard 	Activity OHS Plan				
HCF operation – Labor issue		Project LMP				
HCF operation - considerations for differentiated treatment for groups with different needs (e.g. the elderly, those with preexisting conditions, the very young, people with disabilities)						
HCF operation – cleaning		<ul style="list-style-type: none"> • Provide cleaning staff with adequate cleaning equipment, materials and disinfectant. • Review general cleaning systems, training cleaning staff on appropriate cleaning procedures and appropriate frequency in high use or high-risk areas. 				

		<ul style="list-style-type: none"> Where cleaners will be required to clean areas that have been or are suspected to have been contaminated with COVID-19, provide appropriate PPE: gowns or aprons, gloves, eye protection (masks, goggles or face screens) and boots or closed work shoes. If appropriate PPE is not available, provide best available alternatives. Train cleaners in proper hygiene (including handwashing) prior to, during and after conducting cleaning activities; how to safely use PPE (where required); in waste control (including for used PPE and cleaning materials). 				
HCF operation - Infection control and waste management plan		Refer to MHMS IPCG				
Mass vaccination program involving deployment of vaccines from many facilities (not just HCF), vehicles and locations	<p>Mass vaccination provides a vector for the spread of disease</p> <p>Vaccination causes adverse reaction in some individuals</p>	<p>Develop infection control and waste management plan for vaccination program to consider the use of non-HCF for deployment</p> <p>Screen patients for contraindications prior to administration of vaccine</p>				
Waste minimization, reuse and recycling	Use of incinerators results in emission of dioxins, furans and particulate matter	➤ Manage waste in accordance the waste hierarchy (Reduce, Reuse, Recycle, Residual Disposal).				

		<ul style="list-style-type: none"> ➤ If small-scale incineration is the only option, this should be done using best practices, and plans should be in place to transition to alternative treatment as soon as practicable (such as steam treatment prior to disposal with sterile/non-infectious shredded waste and disposed of in suitable waste facilities) ➤ Do not use single-chamber, drum and brick incinerators ➤ If small-scale incinerators are used, adopt best practices to minimize operational impacts. 				
Procurement, delivery and set up of equipment for the storage and handling of vaccines and associated medical equipment	Surfaces of imported materials may be contaminated and handling and processing may result in spread of COVID-19.	<p>Technical specifications for procuring equipment should require good hygiene practices in line with WHO technical guidance to be observed when preparing the procured goods.</p> <p>Check national and WHO technical guidance for latest information regarding transmission of COVID on packaging prior to finalization of working protocols at facilities receiving procured goods and update working methods as necessary.</p>				
Transport of goods or supplies, including the delivery, storage and handling of vaccine, specimen, samples, reagents,	COVID-19 is spread by drivers during the transport and distribution of goods or supplies.	Good hygiene and cleaning protocols should be applied. During the transport, truck drivers should be required to wash hands frequently and /or be provided				

pharmaceuticals and medical supplies	Traffic accidents occur during transportation of goods	with hand sanitizer, and taught how to use it. Measures to minimize impacts during transportation, including hazardous materials can be found in the EHSGs.				
Waste segregation, packaging, color coding and labeling						
Onsite collection and transport						
Waste storage						
Onsite waste treatment and disposal						
Waste transportation to and disposal in offsite treatment and disposal facilities						
Transportation and disposal at offsite waste management facilities						
HCF operation – transboundary movement of vaccine, specimen, samples, reagents, medical equipment, and infectious or hazardous materials		Transport should be performed in accordance with WHO interim guidelines on specimen collection and shipment				

Operation of acquired assets for holding potential COVID-19 patients						
Emergency events	<ul style="list-style-type: none"> - Spillage; - Occupational exposure to infectious disease; - Exposure to radiation; - Accidental releases of infectious or hazardous substances to the environment; - Medical equipment failure; - Failure of solid waste and wastewater treatment facilities - Fire; - Other emergent events 	<ul style="list-style-type: none"> ➤ Emergency Response Plan 				
Mortuary arrangements	<ul style="list-style-type: none"> - Arrangements are insufficient - Processes are insufficient 	<ul style="list-style-type: none"> ➤ Implement good infection control practices (see WHO Infection Prevention and Control for the safe management of a dead body in the context of COVID-19) ➤ Use mortuaries and body bags, together with appropriate safeguards during funerals (see WHO Practical considerations and recommendations for religious leaders and faith-based communities in the context of COVID-19) 				

Vaccination campaign - considerations for communication and outreach for disadvantaged and vulnerable groups						
Stakeholder engagement – considerations for simple, accurate, accessible and culturally appropriate information dissemination; combating misinformation; responding to grievances		Project SEP				
Targeting of beneficiaries is not done in a fair, equitable and inclusive manner	Lack of transparency about the vaccination program	Outreach/communication tools to make potential beneficiaries aware of the eligibility criteria, principles and methods used for targeting Grievance Mechanism				
	Poorest / most needy households are left out	See above. Clear, transparent and unambiguous eligibility criteria Use good quality Government data combined with geographical targeting Use local community structures to identify and select beneficiaries, based on inclusive consultations				
	Lack of diversity and inclusion in vaccination	Ensure women participate in the program and, where possible,				

	program, resulting in inadequate benefits for other vulnerable groups	<p>give preference to women within households as transferees</p> <p>Work with community representatives/NGOs so that vulnerable groups such as unaccompanied children, youth, Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) survivors, Indigenous Peoples, LGBTI communities, refugees, internally displaced peoples etc. are included in project activities and benefits</p>				
	SEA/SH increase in project area (e.g. requests for sexual favors to receive vaccinations)	<p>Consultations to discuss process for identifying vaccination prioritization</p> <p>Grievance Mechanism (GM) to be established as soon as possible to handle complaints</p> <p>Provide information to potential beneficiaries on eligibility criteria and GM process via various media (radio, SMS, television, online, posters)</p> <p>Work with local NGOs to provide social services for affected beneficiaries, as well as assistance to register</p>				

Table 4 - Environmental and Social Risks and Mitigation Measures during Decommissioning

Key Activities	Potential E&S Risks and Impacts	Proposed Mitigation Measures	Monitoring – Verification & Frequency	Responsibilities	Timeline	Budget
Decommissioning of interim HCF						
Decommissioning of medical equipment						
Regular decommissioning						
<i>To be expanded</i>						

Annex VI. MHMS Infection Prevention and Control Guidelines (IPCG)



MINISTRY OF HEALTH AND MEDICAL SERVICES

SOLOMON ISLANDS

Infection Prevention and Control Guidelines

July 2020

Table of Contents

FOREWORD	5
ACKNOWLEDGEMENTS	6
LIST OF CONTRIBUTORS AND REVIEWERS.....	7
ABBREVIATIONS.....	8
GLOSSARY	9
CHAPTER 1 INTRODUCTION.....	11
1.1 BACKGROUND	11
1.2 PURPOSE	11
1.3 GUIDELINE USE	11
1.4 GENERAL POLICY STATEMENTS	11
CHAPTER 2 STRUCTURE AND MANAGEMENT OF THE IPC PROGRAM.....	14
2.1 INTRODUCTION	14
2.2 RESPONSIBILITY AND AUTHORITY	14
2.3 IPC COMMITTEE	15
2.4 IPC OFFICER	16
2.5 EDUCATION AND TRAINING OF HEALTHCARE WORKERS, PATIENTS AND VISITORS.....	17
2.5.1 Orientation.....	17
2.5.2 Mandatory annual IPC in-service education.....	17
2.5.3 Patient education.....	17
2.5.4 Visitor education.....	17
2.5.5 Steps to a successful training program	18
CHAPTER 3 INTRODUCTION TO HAI AND IPC.....	19
3.1 THE CHAIN OF INFECTION	19
3.2 IPC PRINCIPLES	20
3.3 COMMON AND IMPORTANT HAI	20
3.3.1 Urinary tract infection (UTI)	22
3.3.2 Surgical site infection (SSI)	23
3.3.3 Healthcare associated pneumonia (HAP)	24
3.3.4 Infections related to use of intravascular devices.....	26
3.4 COMMON PATHOGENS RESPONSIBLE FOR HAI.....	28
3.4.1 Healthcare associated diarrhoea.....	29
3.4.2 Blood borne pathogens	29
3.4.3 Tuberculosis.....	29
CHAPTER 4 STANDARD PRECAUTIONS AND TRANSMISSION BASED PRECAUTIONS	31
4.1 STANDARD PRECAUTIONS	31
4.2 HAND HYGIENE	31
4.2.1 Indications for hand hygiene (HH)	31
4.2.2 Hand hygiene products	33
4.2.3 Hand hygiene techniques.....	34
4.3 RESPIRATORY HYGIENE AND COUGH ETIQUETTE	36
4.4 PERSONAL PROTECTIVE EQUIPMENT (PPE).....	37
4.4.1 Gloves.....	37
4.4.3 Masks, eye protection (face shields/eye goggles).....	37
4.4.4 Fluid resistant gowns, coveralls and aprons.....	39
4.4.5 How to put on and take off PPE	39
4.5 SAFE USE AND DISPOSAL OF SHARPS	40
4.5.1 Responsibility for sharps	40
4.5.2 Sharps containers	40
4.6 ROUTINE ENVIRONMENTAL CLEANING.....	40
4.6.1 Cleaning schedules.....	41
4.6.2 Use of disinfectants.....	41
4.6.3 Colour coding cleaning equipment.....	41
TYPICAL COLOUR CODING FOR EQUIPMENT	42
4.6.4 Important housekeeping practices.....	42
4.6.5 Housekeeping audits and checks.....	42
4.6.6 Cleaning spills of blood and other body fluids	42
4.7 APPROPRIATE HANDLING OF LAUNDRY	43
4.7.1 Using personal protective equipment	43
4.7.2 Collecting and transporting soiled linen.....	43
4.7.3 Sorting soiled linen	43

4.7.4 Laundering linen.....	43
4.7.5 Storing, transporting and distributing clean linen.....	44
4.7.6 Laundry staff	44
4.8 HEALTHCARE WASTE MANAGEMENT	44
4.8.1 CATEGORIES OF HEALTHCARE WASTE.....	44
4.8.2 Colour-coding or labelling containers	45
4.8.3 Safe collection of general waste.....	45
4.8.4 Safe collection and disposal of infectious and/or clinical waste.....	46
4.8.5 Handling healthcare waste bags	47
4.8.6 Scavenging	47
4.8.7 Methods of solid waste disposal.....	47
4.8.9 Garbage storage and disposal	50
4.9 REPROCESSING OF REUSABLE MEDICAL EQUIPMENT AND INSTRUMENTS	51
4.9.1 Cleaning.....	51
4.9.2 Equipment and procedures for cleaning environmental surfaces.....	52
4.9.3 Routine cleaning of used instruments and equipment.....	52
4.9.4 Disinfection.....	52
4.9.5 Sterilisation.....	54
4.10 TRANSMISSION-BASED PRECAUTIONS (TBP)	56
4.10.1 Airborne precautions	56
4.10.2 Droplet precautions	56
4.10.3 Contact precautions	56
4.10.4 Patient placement.....	57
4.10.5 Preparation of the isolation room/ward.....	57
4.10.6 Isolation Area	58
CHAPTER 5 SPECIAL HEALTHCARE AREAS	60
5.1 OPERATING THEATRES.....	60
Minor operation	60
5.1.1 Operating theatre areas	61
5.1.2 Operating theatre environment.....	62
5.1.3 Preparation of the patient.....	62
5.1.4 Preparation of the surgical team	63
5.1.5 Before surgical procedures	67
5.1.6 During surgical procedures	68
5.1.7 Theatre cleaning.....	69
5.1.8 Maintenance staff and other visitors.....	70
5.1.9 Waste	70
5.1.10 Linen	70
5.1.11 Managing TB patients in OT.....	70
5.1.12 After surgical procedures	71
5.2 CLINICAL LABORATORIES.....	71
5.2.1 Routes of Infection in the Clinical Laboratory	71
5.2.2 General laboratory safety.....	72
5.2.3 Hand hygiene	72
5.2.4 Biosafety Practices.....	73
5.2.5 Working with specimens.....	73
5.2.6 Phlebotomy	74
5.2.7 Sputum specimens.....	74
5.2.8 Decontamination and sterilisation.....	74
5.2.9 Disposal containers.....	74
5.2.10 Packaging of specimens and etiologic agents.....	74
5.2.11 Laboratory occupational health	74
5.2.12 Set up of laboratory.....	74
5.3 ANTENATAL AND LABOUR SUITE	75
5.4 IPC IN MORTUARY SETTINGS.....	75
CHAPTER 6 OCCUPATIONAL HEALTH AND SAFETY	77
6.1 INTRODUCTION	77
6.1.1 Employer duties and responsibilities:	77
6.1.2 Healthcare workers should practice the following:.....	78
6.1.3 Pre-employment health evaluations	78
6.1.4 Personnel health and safety education	78
6.1.5 Immunisation.....	79
6.2 HIV	79
6.3 HEPATITIS B VIRUS	79

6.3.1 Hepatitis B immunisation.....	80
6.3.2 Antibody testing.....	80
6.4 HEPATITIS C VIRUS.....	80
6.5 TUBERCULOSIS.....	80
6.6 MENINGOCOCCAL MENINGITIS.....	81
6.7 TETANUS.....	81
6.8 WORK RESTRICTIONS.....	82
6.9 GUIDELINES FOR MANAGING OCCUPATIONAL EXPOSURES TO BLOOD AND BODY SUBSTANCES.....	85
6.9.1 Prevention of occupational exposure.....	85
6.9.2 Definition and reporting of occupational exposure.....	85
6.9.3 Immediate care of the exposed person.....	85
6.9.3 Procedure for reporting occupational exposures.....	86
6.9.5 Medical assessment.....	86
6.9.6 Exposure and source patient.....	87
6.9.7 Risk of HIV and other infections following occupational exposure.....	87
6.9.8 Annual review of personal protection equipment guidelines.....	88
6.9.9 HIV post exposure prophylaxis.....	88
6.9.10 Hepatitis C PEP.....	89
6.9.11 Hepatitis B PEP.....	90
6.9.12 Tetanus PEP.....	91
6.10 IMMUNISATION OF HEALTHCARE WORKERS.....	91
CHAPTER 7 SURVEILLANCE FOR IPC.....	92
7.1 INTRODUCTION.....	92
7.2 OBJECTIVES OF SURVEILLANCE.....	92
7.3 SURVEILLANCE INCLUSIONS.....	93
7.4 NATIONAL IPC SURVEILLANCE.....	93
7.5 HEALTHCARE FACILITY SURVEILLANCE.....	93
7.6 MINIMUM REQUIREMENTS.....	94
7.7 METHODS OF SURVEILLANCE.....	94
7.7.1 Prevalence study.....	94
7.7.2 Incidence study.....	95
7.8 CALCULATING RATES OF HAI.....	95
7.8.1 Organisation for efficient surveillance.....	96
7.8.2 Data collection and analysis.....	96
APPENDIX 1: IPC COMMITTEE TERMS OF REFERENCE.....	97
APPENDIX 2: IPC OFFICER POSITION DESCRIPTION.....	98
APPENDIX 3: MY 5 MOMENTS. FOCUS ON CARING FOR A PATIENT WITH A URINARY CATHETER.....	99
APPENDIX 4: SURGICAL SAFETY CHECKLIST.....	100
APPENDIX 5: MY 5 MOMENTS. FOCUS ON CARING FOR A PATIENT WITH AN ETT.....	101
APPENDIX 6: MY 5 MOMENTS. FOCUS ON CARING FOR A PATIENT WITH A CENTRAL VENOUS CATHETER.....	102
APPENDIX 7: MY 5 MOMENTS. FOCUS ON CARING FOR A PATIENT WITH A PERIPHERAL VENOUS CATHETER.....	103
APPENDIX 8: HOW TO HAND WASH.....	104
APPENDIX 9: HOW TO HAND RUB.....	105
APPENDIX 10: HOW TO PUT ON/TAKE OFF PPE.....	106
APPENDIX 11: RECOMMENDED CLEANING SCHEDULE.....	107
APPENDIX 12: REPORTING AND MANAGEMENT OF OCCUPATIONAL EXPOSURES.....	109
REFERENCES.....	113

Foreword

To meet the highest standards of good Infection Prevention and Control will be challenging and will not be achieved overnight. It requires cooperation from many disciplines, Nationals, provinces and each health facilities and health care facilities. Priorities of these guidelines will agreed and introduced in a stepwise fashion to ensure a cycle of continues quality improvement.

It is important that all individuals adapt a positive attitude and play an active role in ensuring infection prevention and control standards and practice become embedded in our Health care systems in line with the Role Delineation Policy, that such noncompliance with the established standards is automatically identified and rectified.

These Infection Prevention guidelines bring to the health care, a new beginning and I asked that all of us to support subsequent to implementation.

Finally, would like to thank all for the continuations supports to compile this Guideline s and especially for the Technical Assistant that rendered by WHO to Ministry of Health and Medical Services.

Acknowledgements

The National Infection Prevention and Control is a land mark in the development of this field within the Health Care systems in Solomon Islands. The Influence of the Infection Prevention and Control on safe guards the staff and patients cannot be overstated.

These guidelines are the product of the hard work, consultation and collaboration between the Ministry of Health and Public Health Emergency and surveillance unit, and the WHO supporting with the Technical assistance from the Griffith University, Australia. The considerations and validations to develop and write these guidelines was appreciated by the Government of Solomon Islands through the Ministry of Health and Medicals services.

There will be challenges to implement ahead but the MHMS remains hopeful that team work will prevail this Infection Prevention and Control guidelines.

Finally, the MHMS expresses its appreciation to all other individuals and institutions who continue to work tirelessly towards improving the **SAFE** delivery of the Health Care Services to the people of Solomon Islands.

List of Contributors and Reviewers

These IPC Guidelines have been commissioned by the World Health Organization (WHO) in collaboration with the Ministry of Health and Medical Services (MHMS) of the Solomon Islands. From January – March 2019 a short-term consultancy was deployed to undertake a national review of IPC capacity and the national IPC guidelines which had not been reviewed since 2004. These guidelines have been reviewed to ensure consistency with best practice, available evidence and international standards. The overall process was led by Dr Peta-Anne Zimmerman (Griffith University Graduate Infection Prevention and Control Program) under the direction of the national lead for IPC in the Solomon Islands.

Individual chapter reviewers are listed below:

CHAPTERS	Griffith University/WHO	MHMS
Chapter 1 INTRODUCTION	Peta-Anne Zimmerman	MHMS PHESU
Chapter 2 STRUCTURE AND MANAGEMENT OF AN IPC PROGRAM	Peta-Anne Zimmerman	MHMS PHESU
Chapter 3 INTRODUCTION TO HAI AND IPC	Peta-Anne Zimmerman	MHMS PHESU
Chapter 4 STANDARD AND TRANSMISSION BASED PRECAUTIONS	Peta-Anne Zimmerman	MHMS PHESU
Chapter 5 SPECIAL HEALTHCARE AREAS	Peta-Anne Zimmerman	MHMS PHESU
Chapter 6 OCCUPATIONAL HEALTH AND SAFETY	Peta-Anne Zimmerman	MHMS PHESU
Chapter 7 SURVEILLANCE FOR IPC	Peta-Anne Zimmerman	MHMS PHESU

Abbreviations

ABHR	alcohol-based hand rub
AMR	antimicrobial resistance
ANTT	aseptic non touch technique
BCG	Bacille Calmette–Guerin
BSI	bloodstream infection
CAP	community acquired pneumonia
CDC	Centers for Disease Control and Prevention
COVID 19	Coronavirus disease, SARS-COV-2
ESBL	extended spectrum beta-lactamase
HAI	healthcare associated infection
HAP	healthcare associated pneumonia
HBV	hepatitis B virus
HCF	healthcare facility
HCV	hepatitis C virus
HCW	healthcare worker(s)
HH	hand hygiene
HIV	human immunodeficiency virus
HLD	high level disinfection
IPC	infection prevention and control
MDR-TB	multi-drug resistant tuberculosis
MHMS	Ministry of Health and Medical Services
MRO	multi-resistant organism
MRSA	methicillin resistant <i>Staphylococcus aureus</i>
OT	operating theatre(s)
PPE	personal protective equipment
SOP	standard operating procedure(s)
SPC	Secretariat of the Pacific Community
SSI	surgical site infection
TB	tuberculosis
UTI	urinary tract infection
VAP	ventilator associated pneumonia
WHO	World Health Organization
XDR-TB	extensively-drug resistant TB

Glossary

Airborne transmission:	Transfer of particles containing infectious agents that are disseminated in the air. Microorganisms carried this way can be widely dispersed via air currents and may remain infectious in the environment for long periods before being inhaled by or deposited onto the susceptible host.
Alcohol hand rub:	A waterless alcohol-based product appropriate for rapid hand decontamination between patient contacts. It is recommended for use when hands are not visibly soiled or contaminated with blood and body fluids.
Avian influenza:	Avian influenza is an infectious disease of birds and is caused by type A strains of the influenza virus.
Contact transmission:	<p>The transmission of infectious agents can be divided into two subgroups: direct contact transmission and indirect contact transmission:</p> <ul style="list-style-type: none">• Direct contact transmission involves direct physical transfer of micro-organisms from an infected or colonised person to a susceptible host.• Indirect contact transmission involves a susceptible person coming in contact with a contaminated (usually inanimate) object, such as a contaminated instrument or piece of equipment.
Decontamination:	Cleaning an object by either chemical or physical means to reduce the number of micro-organisms on it.
Droplet transmission:	Transfer of infectious agents in the droplets that are generated during coughing, sneezing or talking, and during the performance of certain clinical procedures such as suctioning and bronchoscopy.
Disinfection:	A process that kills or destroys most disease-producing organisms, but rarely kills spores. Disinfectants are used on inanimate objects as opposed to antiseptics, which are used on living tissue.
Hand hygiene:	Refers to hand washing with soap and water, use of alcohol hand rub and antiseptic solutions.
Healthcare associated infection:	An infection that is acquired during hospital admission as a result of health care interventions.
N95 Mask:	A disposable filter mask designed specifically to protect the wearer from exposure to airborne (small particle) infectious diseases such as TB by sealing tightly to the face. It has the capacity to filter 95% of airborne infectious particles from the air.
Occupational exposure:	<p>An incident that occurs during the course of a person's employment and involves contact with blood or body substances. Occupational exposure includes:</p> <ul style="list-style-type: none">• percutaneous injuries or cuts caused by used instruments, such as needles or scalpel blades, and involving blood or other body substances;• contamination of fresh cuts or abrasions with blood or other body substances; and• contamination of the eyes or other mucous surfaces with blood or other body substances.
Personal protective equipment:	Gloves, masks, eye protection, gown, caps and aprons worn to protect the wearer from contact with infectious agents.
Surgical mask:	A disposable mask designed to protect the wearer against splashes of bodily fluids, and sprays and droplets generated by coughing and sneezing.
Sterilisation:	A process that destroys all forms of microbial life, including bacteria, viruses, spores and fungi. This method is used for all items that contact normally sterile areas of the body.
Standard precautions:	Precautionary measures designed to reduce the risk of transmission of micro-organisms from both recognised and unrecognised sources of infection in hospitals. Standard precautions involve safe work practices and include the

following: hand hygiene, respiratory hygiene/cough etiquette, personal protective equipment, appropriate handling of laundry and appropriate handling of used patient equipment. Standard precautions should be used in all health care interactions.

Sharps:

Needles, intravenous spikes, lancets, broken ampoules, scalpel blades and any other sharp object that is capable of causing an injury.

Transmission based precautions:

Precautions designed for use in addition to standard precautions with patients who are diagnosed with, or are suspected to have, a specific infectious pathogen whose transmission cannot be prevented through standard precautions alone. There are three types of transmission-based precautions: airborne precautions, droplet precautions, and contact precautions.

Chapter 1 INTRODUCTION

1.1. Background

Infection prevention and control (IPC) has an integral role in the provision of a safe healthcare environment for both patients and healthcare workers (HCWs) across the continuum of care. Lack of adherence to safe practices or inadvertent exposure to pathogens, including human immunodeficiency virus (HIV), in the healthcare environment can lead to significant morbidity and mortality in patients and HCWs alike. A safe working environment in the healthcare setting includes the provision of a safe physical environment, the use of safe clinical practices, the availability of adequate resources, the provision of safe equipment and consumable items, and a culture of safety for all. Safety in healthcare also includes mechanisms for reporting events that result from an unsafe environment or practice.

Infection prevention and control, particularly in healthcare facilities, is a critical element in interrupting the transmission of priority infectious diseases at all levels of healthcare provision. Communication, accessibility of expertise, and technical advice are recognised as areas in need of improvement in facilitating infection control response to infectious disease threats.

1.2. Purpose

The overall purpose of these guidelines is to provide guidance on IPC standards for all levels of health service provision within the Solomon Islands. These guidelines are based upon the World Health Organization (WHO) Core Components of Infection Prevention and Control, Sierra Leone National IPC Guidelines, the previous MHMS Solomon Islands IPC Guidelines, and the Secretariat of the Pacific Community (SPC) Infection Prevention and Control Guidelines.

1.3. Guideline use

These national guidelines are generic and should be used in every healthcare facility. As with any generic guidelines, these must be adapted to suit the local situation, whether at a national or local healthcare facility. This should be done in collaboration with the relevant IPC focal point, at the provincial or national level. Under the direction of the National IPC Focal Point, who is tasked with overseeing the development of IPC infrastructure and culture in the Solomon Islands, the Public Health Emergency and Surveillance (National IPC Unit) will be responsible for the development and dissemination (and subsequent review) of guidelines and Standard Operating Procedures (SOPs) for IPC practices. These guidelines and SOPs will be reviewed and updated every three years, to reflect changes in epidemiology, evidence, risks, best practices, and available resources.

To aid translation of the guidelines into practice, a number of conditions are important for healthcare facility leaders and managers as well as policy-leaders:

1. **Infrastructure/system change:** access to the right equipment and supplies, and an environment that is designed and planned to facilitate the guideline recommendations.
2. **Training and education:** a program of routine training, education, and periodic retraining for ALL personnel responsible for IPC (ALL HCWs).
3. **Monitoring, evaluation and feedback:** a program of regular supervision and feedback is in place in relation to the guidelines recommendations including a surveillance program.
4. **Awareness raising/promotion:** the practices described in the guidelines are reinforced through awareness raising (such as posters displayed in clinical settings).
5. **Safety culture:** managers and leaders AT EVERY LEVEL of healthcare service delivery show their visible support for the National IPC Guidelines' recommendations to help foster, develop and reinforce a culture of patient and HCW safety and IPC.

1.4. General policy statements

Summary of the problem:

Healthcare associated infections are a significant threat to patient and HCW safety in the Solomon Islands, and there is a need to improve health outcomes, prevent future outbreaks, and establish a culture of safety in the delivery of healthcare.

Available evidence:

Situation analysis performed by external consultants highlighted clear vulnerabilities in all levels of healthcare delivery in the Solomon Islands, which relate to IPC infrastructure and practice that contribute to the ongoing threat to the health and safety of patients and HCWs, including the threat of HAIs.

Policy direction:

- The MHMS of Solomon Islands have prioritised a series of actions to address the deficits in IPC across the entire health system with the aim of improving the safety of patients and HCWs.
- Patient and HCW safety can be greatly enhanced through the implementation of simple measures such as improved hygiene conditions, appropriate management of potentially infectious patients including use and consistent availability of personal protective equipment (PPE), improved healthcare waste management and the safe use and disposal of single use/single patient use equipment, injection safety and hand hygiene.
- The National IPC Guidelines, containing recommended instructions and practices for patient and HCW safety, are an important component of a comprehensive national IPC strategy. The WHO Core Components for Infection Prevention and Control¹ describe eight features of such programs that are considered essential and these are presented in Table 1.
- The National IPC Guidelines have been co-developed and updated by the National IPC Focal point in collaboration with WHO, with review and approval by the Ministry of Health and Medical Services.
- The Guidelines will be made readily available for HCWs, patients and communities and will be updated regularly and supported by summary and other documents
- Emphasis will be placed on maximising the dissemination and implementation of the Guidelines across all levels of the healthcare system.

Table 1: WHO Core Components of Infection Prevention and Control Programs (2016)

Category	Component
IPC Programs	An IPC program with a dedicated, trained team should be in place In each acute health care facility for the purpose of preventing HAI and combating anti-microbial resistance (AMR) through IPC good practices. Stand-alone, active national IPC programs with clearly defined objectives, functions and activities for the purpose of preventing HAI and combating AMR through IPC good practices should be established. National IPC programs should be linked to other relevant national programs and professional organizations.
Evidence-based guidelines	Evidence-based guidelines should be developed and implemented for the purpose of reducing HAI and AMR. Education and training of the relevant health care workers on guideline recommendations and monitoring of adherence with guideline recommendations should be undertaken to achieve successful implementation.
Education and training	At the facility level, IPC education should be in place for all health care workers by utilizing team and task-based strategies that are participatory and include bedside and simulation training to reduce the risk of HAI and AMR. The national IPC program should support education and training of the health workforce as one of its core functions
Surveillance	Facility-based HAI surveillance should be performed to guide IPC interventions and detect outbreaks, including AMR surveillance with timely feedback of results to health care workers and stakeholders and through national networks. National HAI surveillance programs and networks that include mechanisms for timely data feedback and with the potential to be used for benchmarking purposes should be established to reduce HAI and AMR.
Multimodal strategies	At the facility level, IPC activities should be implemented using multimodal strategies to improve practices and reduce HAI and AMR.

	National IPC programs should coordinate and facilitate the implementation of IPC activities through multimodal strategies at the national or sub-national level.
Monitoring, audit and feedback	<p>Regular monitoring/audit and timely feedback of health care practices should be undertaken according to IPC standards to prevent and control HAIs and AMR at the health care facility level. Feedback should be provided to all audited persons and relevant staff.</p> <p>A national IPC monitoring and evaluation program should be established to assess the extent to which standards are being met and activities are being performed according to the program's goals and objectives. Hand hygiene monitoring with feedback should be considered as a key performance indicator at the national level.</p>
Workload, staffing and bed occupancy	<p>In order to reduce the risk of HAI and the spread of AMR, the following should be addressed:</p> <ol style="list-style-type: none"> 1. bed occupancy should not exceed the standard capacity of the facility; 2. health care worker staffing levels should be adequately assigned according to patient workload.
Built environment, material and equipment	At the facility level, patient care activities should be undertaken in a clean and/or hygienic environment that facilitates practices related to the prevention and control of HAI, as well as AMR, including all elements around the WASH infrastructure and services and the availability of appropriate IPC materials and equipment. At the facility level, materials and equipment to perform appropriate hand hygiene should be readily available at the point of care.

Chapter 2 STRUCTURE AND MANAGEMENT OF THE IPC PROGRAM

2.1. Introduction

An infection control program is a set of organised activities designed related for the prevention and control of infectious diseases and HAIs in the healthcare environment. An IPC program can be organised at all levels of healthcare delivery.

Infection prevention and control programs have proven to be successful in lowering the incidence and spread of infectious diseases provided the programs are comprehensive, and include surveillance and prevention activities and staff training. However, it is imperative that a governance structure at national level is established to regulate national standards and to promote and effectively implement standards for infection prevention and control.

The purposes of an IPC program are to:

- To prevent the transmission of HAIs between patients, healthcare workers and visitors
- To prepare healthcare facilities to detect early outbreaks of HAIs and respond promptly and effectively manage such situations
- To be prepared to manage and respond to epidemics of emerging infectious diseases in the community and healthcare facilities
- To work with community health colleagues to better coordinate and respond to large scale epidemic, and
- To prevent the transmission of multidrug resistant organisms.

2.2. Responsibility and authority

The MHMS has the responsibility for ensuring that the healthcare workforce, patients, and the community are protected from HAIs. In recognition of the need for IPC strengthening in all levels of health service delivery, private, and faith-based the MHMS is committed to:

- Developing national IPC guidelines, policies, and standard operating procedures (SOPs)
- Establishing and supporting the MHMS IPC unit and IPC focal persons at the national, provincial, and healthcare facility level
- Establishing a system for monitoring, evaluating, and reporting key IPC indicators
- Instituting the governance structure within which these units and personnel will operate, as defined in the National IPC Policy document

The MHMS provides guidance on the institution of IPC programs at all MHMS healthcare facilities by outlining roles, responsibilities, reporting, and accountability processes at each level of the health care system.

It is essential that health authorities and leaders support and promote the IPC program within all levels of healthcare delivery through the following strategies:

- Ensure that IPC officers are adequately resourced through appropriate provision of a work space, computer and internet access
- Ensure microbiology laboratory support to work with the IPC officer and to use microbiology data for IPC surveillance and early detection of HAIs
- Regularly monitor and evaluate compliance with IPC standards and program interventions
- Endorse the role of the IPC officer
- Attend and participate in IPC committee meetings
- By having responsibility for IPC incorporated into job descriptions of all HCWs
- Ensuring that there is senior Medical Practitioner participation in the IPC program and IPC committee meetings
- Ensure that IPC key performance indicators are incorporated into the healthcare facility business plan

2.3. IPC Committee

Responsibility for coordinating, monitoring and evaluating the IPC program is delegated by the hospital or healthcare facility management to a group of relevant staff who form an IPC committee. An IPC committee should be formed at all hospitals, as well as at the national level.

The purpose of the infection control committee is to:

- Provide a strategy for the implementation (including unplanned events, such as outbreaks) and improvement of the IPC program to management
- Monitor the implementation of IPC policies
- Develop policies, guidelines and procedures relating to IPC and ensuring their currency and accessibility to staff
- Review problems that may cause transmission of infection, and identify areas for intervention by using surveillance and other data
- Assess and promote improved practice at all levels of the healthcare facility
- Ensure and monitor appropriate staff training in IPC and safety management, provision of safety materials such as personal protective equipment and products
- Ensure that there is a defined program for HAI surveillance that includes collection, analysis and reporting back of data to departments and clinicians
- Ensure that reports on the occurrence of HAI are received and that actions resulting from these reports are determined and monitored
- Provide guidance, advice and support to the IPC officer/team, and
- Ensure that appropriate resources are consistently available, used efficiently and cost effective

Members of the committee should include staff from a variety of departments. Membership must include, but not be limited to:

- The Head of the Hospital or Healthcare facility or his/her designate
- The senior administrative officer who is in a position to allocate necessary resources etc
- IPC Officer/team
- One or more senior medical officers
- Midwife or doctor working in obstetrics
- Housekeeper
- Operating room staff responsible for sterilisation
- Clinical Microbiologist or microbiology technician or laboratory personnel
- Pharmacist
- Chair of the AMR Committee

The IPC committee should not have more than five to ten members or it becomes unmanageable. However, specialists from various departments (for example, the pharmacist or laundry manager) can be called to meetings when a problem arises in their department, or when they can offer specialised information.

The IPC committee should meet on a regular basis (at least every two months) to discuss infection prevention activities, and to solve problems. In the event of a critical incident or outbreak situation, the committee should be able to convene promptly.

The committee should establish and document “terms of reference” and have these approved by an appropriate authority, such as a senior healthcare administrator or director of health services. Appendix 1 provides a generic Terms of Reference.

The committee should appoint a secretary and keep records of its activities. An agenda should be prepared and distributed prior to each meeting. Minutes of the previous meeting should be distributed with the agenda.

The agenda should include a:

- review of monitoring and surveillance activities
- report on actions taken on problems identified at the last meeting
- report on training activities and needs
- list of new problems, and
- set of recommendations for change, if needed, and a list of who will be responsible

For each agenda item, a designated person should be responsible for preparing a report, and for applying the recommendations for change. At each meeting, the designated person (or people) should report on progress made toward specific goals.

Meeting minutes should adopt a consistent format such as the one below.

- | | |
|-----------------------------------|--|
| 1. Present: | <i>List all those present at the meeting</i> |
| 2. Apologies: | <i>List apologies received</i> |
| 3. Minutes of meeting: | <i>Confirmation of the minutes of the previous meeting as a true and correct record of proceedings. (Once confirmed, minutes should be signed off by the Chairperson.)</i> |
| 4. Matters arising: | <i>Discussion on any matters arising from previous minutes</i> |
| 5. Reports: | <i>Consideration of reports as circulated or presented to meeting</i> |
| 6. General business: | <i>New business as listed on the agenda or any other matters raised at the meeting</i> |
| 7. Date and time of next meeting: | <i>Enter the agreed upon meeting date and time</i> |
| 8. Meeting closed: | <i>Note the time the meeting closed</i> |
| 9. Signature block: | <i>For the Chairperson to sign once minutes have been confirmed</i> |

Meeting minutes should include the following information:

- A brief (few sentences) summary of each agenda item's discussion
- Recommendations of tasks or actions to solve a problem (e.g. training program, buying equipment, making posters)
- The name of the person to be responsible for applying the changes recommended, and the date (deadline) by which the person or task group should have carried out the assigned task
- The results of the actions taken to solve a problem

Other information to note includes: Was the goal accomplished? If there were problems, were they identified and solved? How were problems solved (e.g. staff were trained in infection control procedures, supplies were purchased)?

Keeping a record of this information will make it easier to solve a similar problem later. Minutes should be written as soon as possible after the meeting and distributed amongst members and appropriate clinical governance groups. The committee secretary should maintain the master set of minutes.

The IPC committee should decide how IPC practices can be applied based on the amount of available equipment. It is important to make decisions that are practical and standard.

Good communication and exchange of ideas with staff can improve work habits and attitudes. Staff should be informed about the IPC committee and the purpose of the program. Healthcare service management should share ideas and materials with staff, and be ready to listen to their perspective. Good communication at all staff levels is the key to a successful IPC program.

A work plan for the IPC program, via the IPC committee should identify key priorities for the period (3 months, 6 months, 9 months, 12 month) of the program – such as:

- Priorities for policy development
- Priorities for SOP development
- Priorities for training
- Priorities for surveillance
- Systems for documenting and recording
- Systems for monitoring implementation of agreed priorities
- Systems for identifying and addressing blocks to implementation with clear action plan for resolution
- Individuals responsible for delivering each aspect of the work program

2.4. IPC Officer

Each hospital or healthcare facility should have a designated person responsible for implementing IPC policies and activities, and developing methods for reviewing practices to minimise the transmission and incidence of infection. This person may be a nurse but may also be any other person with knowledge of infections (e.g. laboratory staff, medical officer). Ideally, this person would have received specialist training in IPC.

The IPC officer must be a member of the IPC committee. The IPC officer's role is to work with all departments in the implementation of the IPC program.

The IPC officer's responsibilities are to:

- Coordinate, conduct and record training activities
- Carry out HAI surveillance activities
- Develop and disseminate IPC policies and SOPs
- Observe IPC practices and make suggestions for improvement
- Help identify problems and assist in problem-solving, and
- Report to the IPC committee at every meeting.

It is generally recommended that there be one full-time equivalent infection control nurse per 125 hospital beds (see sample position description in Appendix 2).

2.5. Education and training of healthcare workers, patients and visitors

An IPC program can be successful only when everyone is involved. People are usually willing to change bad habits to good ones when they understand the reasons and the importance of each procedure. Therefore, all levels of healthcare delivery must plan frequent in-service education programs for staff, patients and visitors. In-service training is an ongoing process. In-service training should be used to teach good practices, change bad habits, and demonstrate new equipment or procedures.

Every level of staff (i.e. nurses, doctors, housekeepers, cleaners, students) need to learn the importance of IPC. Even workers who have little contact with patients, such as pharmacy or kitchen staff, should be included. All staff have a responsibility in preventing infections in the healthcare facility.

All HCWs should:

- understand how infection spreads in the healthcare facility
- know the important role each staff member plays in preventing infection, and
- be able to describe or demonstrate various methods of preventing the spread of microorganisms, such as hand hygiene.

The training program should be made as interesting as possible by using discussion, audio-visual aids, posters, role playing and games. The following program should be established.

2.5.1. Orientation

IPC Orientation is a basic program for all new staff, and should include the principles and methods of preventing the spread of infection within staff members' unit or department. The new employee should know their responsibility in the prevention of infection.

2.5.2. Mandatory annual IPC in-service education

A program of frequent in-service education should be planned for all staff, beginning as soon as the infection control guidelines are introduced. Regularly scheduled in-service education workshops can be used to identify and solve problems, introduce new techniques, and provide general reminders about the importance of safe practices to prevent the spread of microorganisms.

2.5.3. Patient education

It is the HCW's responsibility to instruct patients about their role in the prevention of infection or the spread of infection. For example, a HCW may teach patients with respiratory illnesses to cough into a handkerchief/tissue, or teach patients with enteric disease to thoroughly wash their hands before and after using the toilet, or teach a patient with a wound to keep it clean and dry.

2.5.4. Visitor education

Visitors should be made aware of the risks they pose by spitting in halls, using toilets improperly and not washing hands, crowding around patients, and handling intravenous sets, catheters and other patient care equipment. Multi-modal methods should be used to give one-on-one education in order to increase visitors' knowledge about infection prevention. An excellent time to educate visitors is when they are waiting in the hospital or clinic. For example, infection prevention information can be provided using posters or a TV screen (if available).

2.5.5. Steps to a successful training program

In-service education programs can be short, simple and interesting. In addition, HCWs can be a role model for other staff and patients. Staff and others should be reminded to wash their hands frequently, and perform tasks correctly. A training program should:

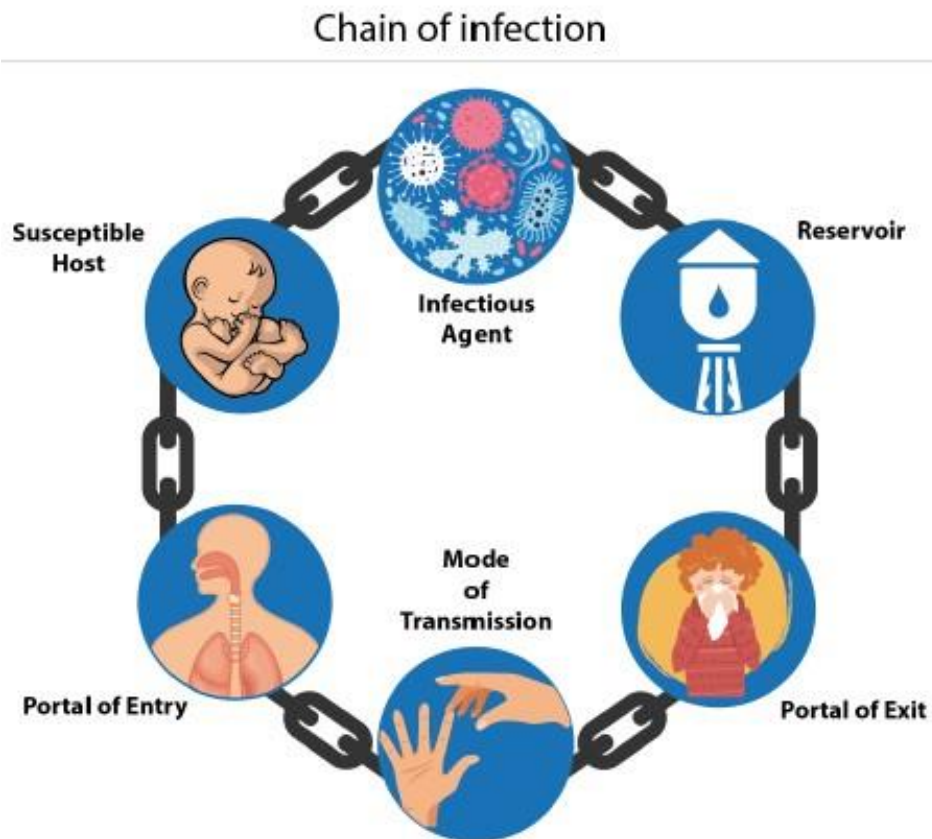
- Clearly identify the group that is being trained (e.g. nurses, community health workers, cleaners, laboratory technicians)
- Be carefully planned. It will be necessary to decide on:
 - **what** will be taught
 - **how** it will be taught (what teaching aids and supplies are needed) o **when** it will be taught (making use of a schedule), and
 - **where** it will be taught (e.g. in a classroom, on the ward)
- Describe clearly the tasks that staff need to learn at the beginning of the session
- Determine what they know before you start (it may be more or less than you expect)
- Be realistic: train people to use facilities that are available
- Give necessary information about the reason for certain procedures and about the consequences of not carrying them out (e.g. infection or even death)
- Make learning interesting by:
 - encouraging discussion
 - linking information about caring for patients and cleanliness in healthcare facilities with local tradition and beliefs, and
 - using teaching aids such as posters, field trips, role playing, and audio-visual aids
- Select a teaching method that is best for the specific audience
- Provide information, examples and training skills
- Teach skills using practice session of tasks
- Use case presentations to identify problems, and exchange ideas on how to better handle a given situation
- Give learners feedback on their practice (in a respectful way) so they will know how well they are doing
- Evaluate the training by watching learners do the tasks on the job or issue a survey, and
- Use the results of the evaluation to improve training

Chapter 3 INTRODUCTION TO HAI AND IPC

3.1. The Chain of Infection

In order for an infectious agent to successfully spread from one host to another, several conditions must be met. This is referred to as the chain of infection. If this 'chain' is broken at any stage, the infection cannot spread and becomes contained. We will use the basic human flu (influenza) as an example in this interactive below to explain the chain of infection.

Figure 1: Chain of Infection



Infectious agent

First there must be something that causes the disease. The flu is caused by an influenza virus.

Reservoir

A reservoir is the place the organism is found and sustained. This can be an animal or it can be something in the environment such as water, food and soil. Humans, birds and pigs serve as reservoirs for the influenza virus.

Portal of exit

The infectious agent must then be able to leave the reservoir. Infected humans shed the virus through respiratory mucus, particularly through sneezing and coughing.

Mode of transmission

Following its exit from the reservoir, the infectious agent must be able to transmit to the host and survive the journey. Influenza virus can survive in bodily fluids for a limited time, and typically is transmitted via contact, and especially inhalation. After sneezing or coughing, infected respiratory fluids can either be directly inhaled by a nearby human (inhalation) or land somewhere which then comes into contact with another person's eyes, nose or mouth e.g. tissue (contact).

Infectious agents can be spread in five main ways:

1. Contact (direct and indirect)

Direct skin to skin contact with contaminated bodily fluids can lead to transmission and subsequent infection. Contact can also be indirect, when infectious particles are able to survive on a nonliving object (fomite) for a period of time, such as a door handle or a used tissue.

2. Inoculation (bloodborne)

A type of contact transmission, this involves direct or indirect blood to blood contact. Often this occurs through sharing needles, or through cuts and other skin openings.

3. Ingestion

Also a type of contact transmission, the consumption of contaminated food and drink can lead to infection. If the infectious agent survives the digestion process, it can enter the body via the mucous membranes lining the gut. The infectious agent then replicates and exits via faeces.

4. Inhalation (droplet and airborne)

Infectious agents can cross the mucous membranes lining the respiratory system, and are shed from the host through respiratory mucous (a type of bodily fluid) expelled via sneezing, coughing, talking and even simple breathing. Larger infectious agents are transmitted via large, heavy drops of mucous (droplets) and can travel ~ 3 feet (91cm) from the infected person. Smaller infectious agents (<5 microns in size) can attach to dust particles and become airborne, travelling extreme distances via air currents.

5. Trans-placental

Trans-placental infections are those that are transmitted from the mother to her embryo or foetus via the placenta. The mother acts as the reservoir and the embryo is the susceptible host.

Portal of entry

Infectious agents gain entry into the host either through openings in the skin (e.g. cuts), or via mucous membranes lining the wall of the respiratory, gastrointestinal and genitourinary tracts. Infectious agents access the respiratory tract via the eyes, nose and mouth.

Susceptible host

In order to cause disease in the new host, this host must be susceptible to the disease. For example, the host can be naturally immune to the infectious agent, or be rendered immune via vaccination.

- Babies are vulnerable to infection because it takes a few months for their immune system to fully develop.
- As people age their immune systems change, so the elderly may fight infection less quickly and less effectively.

3.2. IPC Principles

Infection prevention and control strategies within healthcare are designed to break the chain of infection. These interventions are often targeted at specific links of the transmission chain.

The basic set of IPC strategies that should be implemented in healthcare facilities (HCFs) at all times are known as “standard precautions.” These evidence-based practices are designed to protect HCWs and also prevent transmission of infections among patients. Standard precautions include hand hygiene, use of personal protective equipment, practising appropriate respiratory hygiene, safe use and disposal of sharps, appropriate decontamination of medical equipment, laundry and environment and waste management. For certain infectious diseases e.g. those considered highly transmissible and/or caused by epidemiologically important pathogens. An additional set of IPC interventions known as “transmission based precautions” are implemented to prevent the spread of the disease. These interventions are specific to the mode of transmission of the disease. Contact precautions are implemented to prevent transmission of diseases that are spread via contact with infectious material. Droplet precautions are used to prevent transmission of diseases that are spread via contaminated respiratory droplets. Airborne precautions are implemented to prevent transmission of diseases that can spread through aerosolized particles.

3.3. Common and Important HAI

The healthcare environment includes people, instruments, equipment, and surfaces such as floors and furniture. The environment also includes waste disposal and water supply. Cleanliness of this environment can help to make the health care facility a safe and comfortable place for the patient. In addition, proper care of the hospital environment can prevent HAI infection.

A HAI is one that the patient did not have when he or she was admitted to the healthcare service. For example, a patient may come to the hospital to have an operation. After the operation, the patient's surgical wound begins to produce pus or other signs and symptoms of infection. This infection is a HAI, because there was no infection before the operation. Other types of nosocomial infections include urinary tract infection, pneumonia, bloodstream infection (septicaemia), gastro-intestinal and skin infections.

Healthcare associated infections also occur in HCW, relatives and visitors who have close contact with patients or with patients' body fluids, such as blood, vaginal secretions, urine and faeces. For example, a patient's blood may be infected with HIV and a HCW may get HIV infection if he or she is injured with a needle, which has just been used on an HIV-infected patient.

Preventing HAI is important because they:

- result in pain, discomfort and even death
- increase the time the patient has to stay in hospital
- keep the patient from working
- are expensive because money is required for medicines and equipment.

Healthcare associated infections can be classified as either endogenous (also known as self-infection) or exogenous (also known as cross-infection) infections. Infection prevention and control interventions differ between the two categories.

Endogenous infection

Many microorganisms that cause HAIs come from the patient's own body (the term Normal flora/endogenous flora is used to describe this). For example, bacteria normally present in the colon can gain entry to the urinary tract and cause urinary tract infections. Endogenous infections are difficult to prevent by conventional measures since the microorganism causing the infection comes directly from the patient. However, they can be controlled by helping to protect the resistance of the person to infection (e.g. mobilising the patient, providing adequate nutrition, or avoiding the use of urinary catheters and intravenous catheters if possible, promoting patient hand hygiene after defecation and before eating and before touching wounds/skin breaks).

Exogenous infection

Exogenous infection is a result from the transfer of microorganisms to the patient or HCW from an external reservoir. For example, microorganisms can be transferred through direct contact with contaminated hands of HCWs and other patients (cross-contamination), contaminated instruments and needles, or the environment greatly reduce the frequency of cross contamination between patients and HCWs and thus reduce the incidence of infection. As with endogenous infection, measures to protect a person's natural resistance to infection can also help to reduce the likelihood of infection if cross transmission does occur.

Infection prevention and control is important in HCFs because on-going cross transmission can result in certain types of microorganisms becoming established (resident) in the HCF with the potential for antimicrobial resistance to occur.

There are four major types of HAI, all related to invasive or surgical procedures: urinary tract infection (UTI), surgical-site infection (SSI), healthcare associated pneumonia (HAP), and blood stream infection (BSI). This chapter provides background information and prevention advice on those four and in addition a number of other significant or common infections that may be transmitted in a HCF.

For all of the HAIs addressed in this chapter the following preconditions for prevention should be addressed by HCF leaders and managers, informed by the evidence based information provided:

1. Infrastructure/system change: access to the right equipment, supplies and ban environment that facilitates the right actions for patient and health worker safety
2. Training and education: a program of routine training and education for all relevant HCWs that is in line with the recommendations presented in this chapter
3. Monitoring, evaluation and feedback: a program of regular monitoring and feedback is in place
4. Awareness raising/promotion: the practices described in the chapter are reinforced through awareness raising such as use of posters referenced in the chapter, displayed at the point of care
5. Safety culture: managers and leaders at every level of the HCF show their visible support for IPC to help develop and reinforce a culture of patient safety

3.3.1. Urinary tract infection (UTI)

Urinary tract infection is one of the most common HAIs. Preventing UTI is a major factor in decreasing the overall incidence of HAIs in HCFs. Healthcare-associated UTIs are frequently related to urinary catheterization. Many patients with a urinary catheter develop bacteriuria (bacteria in the urine) because the catheter creates a pathway for bacteria to enter the bladder. However, it is important to make the distinction between bacteriuria and an actual urinary tract infection. Patients should not be considered to have a catheter related urinary tract infection and should not receive antimicrobial treatment solely because the urine is discoloured, has an odour, or because the laboratory has cultured bacteria from the urine. Unless the patient has clinical features of infection (e.g. fever, rigors, other systemic features) they should not be considered to have catheter related UTI. See Appendix 3 for hand hygiene “Focus on caring for a patient with a urinary catheter”.

Factors that can lead to bacteriuria and may lead to UTIs include:

- Urinary catheterization which creates a pathway that allows for endogenous transfer of microorganisms (e.g. bacteria from the patient's GI tract can be transmitted to the urinary tract)
- Passage of organisms from the urine bag to the bladder (retrograde contamination) can occur in patients with indwelling catheters
- Some microorganisms that can grow on the outside or inside of the catheter's tubing and in the urine itself
- Handling of the urinary catheter and urine bag by HCWs

Reducing healthcare associated UTI:

- Introducing an indwelling urinary catheter should be done only when necessary and no other options are effective. It is particularly important to limit the duration of catheterization as much as possible
- Following appropriate procedures for inserting and removing urinary catheters will also reduce the risk of UTI
- Consider other methods for managing urinary tract problems that do not require the use of an indwelling catheter
- Ensure that only properly trained persons insert and maintain catheters
- Minimise the duration of catheterisation

Insertion procedure for urinary catheter:

- Explain the procedure to the patient and get his / her consent
- It is recommended that during the procedure an assistant is available
- Before inserting a urinary catheter, all of the following materials should be available at the point of care: a sterile indwelling urinary catheter, a sterile drape, a sterile syringe filled with sterile water for blowing up the balloon, clean examination gloves, sterile gloves, antiseptic solution (2 % aqueous chlorhexidine gluconate or 10 % povidone-iodine), a sterile gauze or sponge-holding forceps, and a single use lubricant
- Lubricant is not really necessary; in case you decide to use be sure it is single use
- Practice aseptic non touch technique (ANTT)
- Perform hand hygiene and put on clean examination gloves
- Clean with soap and water and rinse the urethral area and external genitals carefully and thoroughly
- Separate and hold the labia apart or hold the head of penis with the non-dominant hand and prepare the urethral area with the antiseptic solution using a sterile gauze or a sponge forceps with sterile gauze
- Perform hand hygiene and put on a pair of sterile gloves
- Grasp the catheter about 5 centimetres from the catheter tip with the dominant hand and place the other end in the urine collection bag
- Gently insert the catheter until urine flows then for a further 5 cm. Inflate the balloon. Record the volume required to inflate the balloon, the same volume should be removed when the balloon is deflated for removal
- Do not use undue force. In the event of pain, blood or resistance during insertion stop the procedure
- If the catheter is indwelling, pull it out gently to feel resistance, and secure the indwelling catheter properly to the thigh. For in and out catheterization, allow the urine to slowly drain into the collection bag, then gently remove the catheter
- Dispose of waste appropriately
- Remove gloves and practice hand hygiene

Removal procedure for urinary catheter:

- Indwelling urinary catheters should be removed as soon as possible to reduce the risk of UTI
- Before removing the catheter, ensure that a new pair of clean examination gloves, a syringe is in the point of care
- Practice hand hygiene Put on clean examination gloves
- Empty the catheter balloon using a syringe, compare the volume removed to that inserted, it should be the same
- Swab the urethra two times with an antiseptic solution using sponge forceps with sterile gauze
- Gently remove the catheter
- Dispose of all waste appropriately
- Remove gloves and practice hand hygiene

Catheter maintenance:

- Daily cleaning of the peri-urethral area
- Do not rest the bag on the floor
- Urine flow through the catheter should be checked several times a day to ensure that the catheter is not blocked (no dependent loops or kinking of the catheter tubing)
- Avoid raising the collection bag above the level of the bladder. If it becomes necessary to raise the bag above the level of the patient's bladder during transfer of the patient to a bed or stretcher, clamp the tubing
- Before the patient stands up, drain all urine from the tubing into the bag
- Remove the urine after performing hand hygiene and while wearing clean examination gloves
- To avoid contamination, the collection bag should be emptied in a clean fresh vessel, do not permit the tip touch the urine vessel
- For samples collection aspirate the urine from the needleless sampling port with a sterile needle
- Unless obstruction is anticipated bladder irrigation is not recommended
- The catheter collection closed system should remain always closed. Unless absolutely necessary open systems can be open
- In open system replace bags when needed
- Clamping catheters prior to removal is not necessary
- Daily review of urinary catheter necessity and remove as soon as indicated preferably within 24 hours

3.3.2. Surgical site infection (SSI)

Surgical site infections are often the result of contamination during the surgical procedure or contamination of the surgical wound after the procedure. SSIs are very common HAIs and often require additional surgical procedures to treat the infection.

The following factors predispose a patient to development of a SSI:

- Obesity
- Infection at another body site at the time of surgery
- Immunosuppression
- Malnutrition and anaemia
- Old age and chronic diseases such as diabetes and malignancy

Reducing SSI risk for patients:

- Avoid prolonged preoperative hospitalization and recommend ambulatory surgery as often as possible
- Avoid preoperative hair removal. If hair must be removed, clip it with scissors or electric clippers just before the surgery. Do not shave using a razor blade (shaving has been attributed to microscopic cuts in the skin that later serve as foci for bacterial multiplication)
- In the surgical room prepare a wide area around the proposed incision site with antiseptic solution (2% alcohol chlorhexidine is generally appropriate)
- Practice good surgical techniques that minimize tissue trauma, control bleeding, eliminate dead space, use minimal sutures, and maintain adequate blood supply and oxygenation
- Keep the duration of surgical procedures as short as possible. The rate of infection doubles with each hour of surgery
- Discharge patients promptly after surgery

It is important to note that applying topical antibiotic ointments on closed skin incisions does not decrease the risk of SSI. Additionally, healthy tissue growth is damaged when dry gauze is removed from surgical wounds. Moisten the dry gauze with sterile normal saline solution before removing it

Antimicrobial prophylaxis to reduce risk of SSI:

- The administration of systemic antimicrobial agents immediately before surgery can reduce the incidence of SSI after certain operations. The benefits, however, must be weighed against the risks of toxic and allergic reactions, the emergence of resistant bacteria, drug interactions, super infection, and cost. In general, antimicrobial prophylaxis is recommended for procedures with significant risk of infection (for example, surgery that involves entering the colon). The prophylactic antimicrobial drug(s) should be directed against the most likely infecting organisms.
- To help reduce the development of antimicrobial resistance to drugs used for surgical prophylaxis, it is recommended that:
 - Antimicrobial agents with a moderately long half-life should be used
 - Antimicrobial agents with an appropriate spectrum of activity should be used
 - The antimicrobial agent(s) used prophylactically differ from any agents used for a period of time just before surgery, as anti-microbial-resistant bacteria may have developed
 - Selection of antimicrobial agent(s) for surgical prophylaxis should take account of local/national data on antimicrobial resistance where this is available
- Each HCF should have a clear written policy of antimicrobial prophylaxis in surgery that specifies for which types of surgery and which patient categories antimicrobial prophylaxis is required, the agent(s) to be used, the dose, the route of administration, the interval before surgery and an alternative regimen for patients with a history of adverse reaction to the primary regimen
- Agents commonly used for abdominal surgery are co-amoxiclav (amoxicillin/clavulanic acid), the combination of cefotaxime and metronidazole, or for those with a history of immediate hypersensitivity to beta-lactam antimicrobial agents, the combination of ciprofloxacin and metronidazole. All of these agents are included in the WHO Model List of Essential Medicines 17th List (2011) available at http://whqlibdoc.who.int/hq/2011/a95053_eng.pdf
- In most instances, a single IV dose of an antimicrobial administered 60 minutes or less before the skin incision provides adequate levels of antimicrobial within the tissues throughout the operation. If surgery is prolonged (more than four hours), if major blood loss occurs, or if an antimicrobial with a short half-life is used, one or more additional doses should be given during the procedure
- Use the WHO Surgical Safety Checklist (Appendix 4)

3.3.3. Healthcare associated pneumonia (HAP)

Healthcare associated pneumonia (HAP) is a common HAI with a significant risk of a fatal outcome. Most of these infections occur by aspiration of bacteria growing in the back of the throat or in the stomach. Pneumonia associated with mechanical ventilation may be referred to as ventilator associated pneumonia (VAP). The range of microorganisms associated with HAP/VAP is much wider than is the case for community acquired pneumonia (CAP) and many of these microorganisms are much more likely to be resistant to antimicrobials. Therefore HAP/VAP may be much harder to treat effectively with antimicrobial agents than CAP.

Intubation and mechanical ventilation greatly increase the risk of pneumonia in the following ways:

- They block the normal body defence mechanisms—coughing, sneezing, and the gag reflex
- They prevent the washing action of the cilia and mucus-secreting cells that line the upper respiratory system
- They provide a direct pathway for microorganisms to get into the lungs

Other procedures that could increase the risk of pneumonia include oxygen therapy, intermittent positive pressure ventilation (IPPV) treatment, and endotracheal suctioning. The combination of severe illness, the presence of multiple invasive devices (intravenous catheters, urinary catheters, and mechanical ventilators), and frequent contact with the hands of HCWs often leads to cross-contamination and patient infection. See Appendix 5 for hand hygiene “Focus on caring for a patient with an endotracheal tube”.

Risk factors for HAP:

- Old age (over 70)
- Chronic lung disease
- Severe head injuries with loss of consciousness
- Severe medical conditions, such as end-stage renal disease and liver cirrhosis
- Cigarette smoking
- Alcoholism
- Obesity
- Major cardiovascular or pulmonary surgery
- Endotracheal intubation and mechanical ventilation
- Prolonged confinement to bed
- Immune deficiency states
- Diabetes

Reducing the risk of HAP – Preoperative pulmonary care

- Limit the use of narcotics although not to a degree that will compromise appropriate pain relief
- Adhere to standard precautions to maximize prevention of cross-transmission of microorganisms
- Additionally, patients should be educated about the following postoperative practices that can prevent development of healthcare-associated pneumonia:
 - Deep breathing
 - Moving in bed
 - Frequent coughing
- Early ambulation

Reducing the risk of HAP – Prevention of complications from equipment/devices

To reduce the risk of contamination and possible infection from mechanical respirators and other equipment follow these guidelines:

- Use mechanical ventilation only when necessary
- Implement a comprehensive oropharyngeal cleaning this includes suctioning to avoid draining past the tube and consider decontamination program for all patients at high risk for VAP
- If reusable breathing circuits are used, they must be cleaned and appropriately sterilized between patients according to the manufacturers guidance. Disposable (single patient use) breathing circuits eliminate this risk of cross-transmission but are expensive.
- Breathing circuits intended for single patient use are not suitable for cleaning, decontamination and reuse
- Respiratory equipment such as oxygen tubing, nasal prongs, nebulisers, masks are intended for single patient use and are not suitable for cleaning, decontamination and reuse
- Disinfect or sterilize resuscitation devices, such as Ambu bags, promptly according to the manufactures guidelines

To minimise cross-contamination when suctioning patients on ventilators, follow these guidelines:

- Practice hand hygiene
- Wear sterile examination gloves, a mask, and protective eyewear
- Use only sterile fluid to clear a catheter that you're using to suction secretions from the patient's lower respiratory tract if you are planning to reinsert it into the ET tube
- Discard waste appropriately
- Decontaminate and clean suction catheters and then disinfect them with high-level steam
- Remove gloves immediately after therapy and practice hand hygiene

Reducing the risk of HAP – Preventing gastric reflux

Follow these practices to reduce the risk of gastric reflux, which can lead to HAP:

- Avoid prolonged use of nasal gastric tubes for feeding
- Feed small, frequent amounts rather than large amounts at one time
- Elevate the head (30-45 degrees), if not contraindicated so that the patient is in a semi sitting position
- Ensure patients stop taking solid foods 4-6 hours prior to general anaesthetic

Reducing the risk of HAP – Post-operative management

Surgical units should have effective plans for post-operative management that include the following the guidelines:

- Provide adequate pain control for patient comfort and to facilitate movement and encourage deep breathing/coughing
- Move and exercise patients daily to prevent skin breakdown and pressure sores
- Encourage deep breathing/coughing in the immediate postoperative period and for the next few days
- Encourage early mobilization of patients
- Ensure adequate nutrition

3.3.4 Infections related to use of intravascular devices

Intravascular devices inserted into the venous or arterial bloodstream penetrate the normal skin defence mechanism and provide a route for microorganisms to enter the bloodstream from one or more of the following:

- Any contamination of the device at the time of insertion
- Subsequent contamination of the device or attachments
- Pathogens on the skin surrounding the insertion site

Intravascular device related infection may be localised skin and soft tissue infection at the site of the intravascular device (exit site infection, phlebitis). Localised infection is typically associated with *Staphylococcus aureus*. The infection may extend to cause extensive skin and soft tissue infection of the limb and can progress to bloodstream infection. Intravascular devices may also be associated with bloodstream infection with little or no evidence of infection at the catheter site. *Staphylococcus aureus* is again the most common associated organism. For these reasons intravascular catheter related infection should be considered in any patient who develops a new onset blood stream infection with an intravascular device in situ, particularly if there is no other obvious site of infection (e.g. pneumonia). Where available a sample for blood culture should be taken using appropriate precautions to aid in diagnosis of patients with suspected severe intravascular catheter related infection. One of the most important principles of safe management of intravascular catheter related infection is early removal of the catheter. Antimicrobial treatment is unlikely to be effective if the catheter remains in place.

Risk factors associated with infections related to the use of intravascular catheters:

- Inadequate adherence to hand hygiene during insertion and care of the device
- Immunosuppression
- Cracks in infusion bottles and punctures in plastic containers, allowing for contamination of substance being infused
- Contaminated infusion fluid or additives
- Leaky intravenous administration sets with multiple connections
- Non sterile preparation of intravenous infusion fluid
- Non sterile preparation of skin before inserting the device
- Multiple changes of intravenous fluid containers while using the same IV administration set
- Multiple injections and irrigations of the system
- Central venous pressure measurement apparatus

Reducing the risk of HAI due to intravascular catheters

The following practices should help reduce the risk of infection and see Appendix 6 and 7 “Focus on caring for a patient with a central venous catheter” and “Focus on caring for a patient with a peripheral venous catheter”:

- Avoid intravascular catheterisation when possible
- Practice hand hygiene and put on clean sterile gloves when inserting and handling intravenous catheters
- If the site for inserting the catheter is dirty, wash it with soap and clean water and dry it before applying the skin antiseptic
- Allow the skin antiseptic solution to dry after applying before inserting the intravascular catheter
- Follow Aseptic Non Touch Technique (ANTT) in insertion and care of intravascular lines

- the device in place by attachment to the skin. Ideally use transparent, adherent dressings to allow easy inspection of the site later
- Dressings can be left in place for up to 72 hours if they are kept dry. Change the dressing immediately if it be-comes wet, soiled, or loose
- If dressings are removed to inspect the site discard the removed dressing appropriately and use a new dressing
- If there is resistance to withdrawal of blood or injection of drugs through an intravascular catheter do not use force. The catheter is likely to need replacement
- Check at least daily if the patient has pain or discomfort at the site of the intravenous line. If palpating the cannula site daily for tenderness be careful to practice hand hygiene, wear sterile gloves and avoid touching the puncture site. Inspect the insertion site if the patient develops tenderness or fever
- For peripheral IV lines avoid using the lower limbs if possible as these are more likely to become infected
- Routine change of intravascular catheters after 72 hours is not necessary provided that there is no evidence of infection and there is no resistance to injection or fluid administration
- Because straight and butterfly needles frequently infiltrate, do not use them with solutions that could cause tissue necrosis

For inserting central venous catheters:

- Avoid use of central venous catheter unless it is essential
- Avoid using the femoral or jugular sites for adults (if possible)
- Central venous catheters should only be inserted by those with substantial experience in the procedure or by those in training under direct supervision of a person with substantial experience. Infection is more likely if inexperienced HCWs insert the catheter
- Wash the catheter insertion site with soap and clean water and dry it before applying the skin antiseptic
- Prepare the skin using alcoholic 2 % chlorhexidine gluconate or 60 % to 90 % alcohol and allow to dry
- Perform hand hygiene and use ANTT/maximal sterile barrier precautions (i.e., surgical mask, cap, gown, sterile gloves) and sterile full body drape on the patient
- Put on sterile gloves, face shield and gown before inserting central venous catheter
- Handle and maintain central lines appropriately
- Comply with hand hygiene requirements
- Scrub the access port or hub immediately prior to each use with an appropriate antiseptic (e.g., alcoholic chlorhexidine, povidone iodine, an iodophor, or 70% alcohol)
- Access catheters only with sterile devices
- Replace dressings that are wet, soiled, or dislodged
- Perform dressing changes under aseptic technique using clean or sterile gloves

Changing fluids and infusion sets

Follow these guidelines for changing fluids and infusion sets:

- Change infusion bottles or plastic bags with parenteral solutions every 24 hours
- Change infusion bottles or plastic bags with lipid emulsion given alone within 12 hours
- Change infusion sets whenever they are damaged/contaminated and after 96 hours routinely
- If the tubing becomes disconnected, wipe the hub of the cannula with 60 % to 90 % alcohol and connect a new infusion set
- Replace tubing that is used to administer blood products or lipid emulsions within 24 hours

Inserting and maintaining peripheral IV lines

Follow these practices to reduce the risk of infection when inserting and maintaining peripheral intravascular catheters:

- Avoid use of intravascular catheters unless essential. Consider the use of oral re-hydration fluid to replace fluids unless the patient is severely dehydrated or vomiting.
- Practice hand hygiene and wear sterile single-use examination gloves
- Cleanse the insertion site with antiseptic solution using a circular motion outward from the insertion site (or follow manufacture's recommendation for cleansing site) and allow the antiseptic solution to dry

Removal of peripheral IV lines

Follow these practices to reduce the risk of infection when removing peripheral IV lines:

- Practice hand hygiene

- Put on sterile examination gloves
- Check the patient's hand or wrist for phlebitis or evidence of infection. If phlebitis is associated with other signs of infection, such as fever or pus coming from the exit site, this is classified as a clinical exit-site infection
- Carefully remove the needle or the plastic catheter with one hand and with the other hand cover the insertion site with sterile gauze
- Press the insertion site firmly for about a minute and cover it with a sterile bandage
- Dispose of waste appropriately, remove gloves, and practice hand hygiene
- If clinical exit site infection is present, assess whether or not it requires antimicrobial treatment
- Document clinical observations of IV site (ex. Intact without signs/symptoms of infection, warm, erythema, pus etc) in patient record

3.4. Common pathogens responsible for HAI

3.4.1. Healthcare associated diarrhoea

Diarrhoea is generally defined as passage of three or more liquid stools in 24 hours. In some cases, however the abrupt onset of illness with passage of a single liquid stool leaves little doubt that the patient will meet the definition of diarrhoea soon afterwards and it is sensible to consider that the patient has diarrhoea.

New onset passage of loose stool in patients admitted to HCF is common. It is not always caused by infection although this should be considered as likely in most cases.

Causes of food and water borne infectious diarrhoea which are important in the community (rotavirus, campylobacter, salmonella, cholera) can also be introduced into a HCF by patients and staff if the water supply is not safe; if food is not properly prepared, stored and served; if infected staff come to work while they have diarrhoea; or if infected people visit relatives. Once introduced to the hospital, diarrhoeal infection may be spread through person-to-person transmission.

Factors that put patients at particular risk for healthcare associated diarrhoea include the following:

- Antimicrobial administration (especially for *C. difficile* associated diarrhoea)
- Sharing space with a patient who has infectious diarrhoea
- Occupying space previously occupied by a patient with infectious diarrhoea
- Immunosuppression
- Decreased gastric acidity (for example in patients taking drugs to suppress gastric acid)
- Unhygienic shared toilet facilities
- Inadequate hand hygiene by patients and staff at the correct moments

Prevention of healthcare associated diarrhoea can be achieved by:

- Practice appropriate hand hygiene
- Single room isolation, cohorting in a separate space or keeping distance between patients should be practiced for all patients with diarrhoea even if the diarrhoea is considered to be non-infectious. This is because patients with diarrhoea are highly likely to contaminate their environment with their colonic bacteria. These bacteria may include antimicrobial resistant bacteria that could cause infection in other vulnerable patients
- Ensure that all patients admitted with diarrhoea or who develop diarrhoea in the HCF are kept in separate space and use separate washing and toilet facilities if at all possible (i.e. isolation)
- If a separate space is not possible, consider how to help the patients with diarrhoea keep some distance from other patients
- Immediately clean and then disinfect all soiled articles and environment
- Ensure that bedpans and bathroom equipment that are regularly handled by patients and staff are clean at all times and disinfected when appropriate
- Wear utility or heavy-duty gloves before sorting out linen, and bundle soiled linen to prevent leakage
- Ensure that staff with diarrhoea are not engaged in patient care or food preparation and serving until at least 24 hours after diarrhoea has resolved

3.4.2. Blood borne pathogens

Blood-borne transmission of viral infection is a recognised risk to both healthcare workers and the patients in their care. In health care, transmission of blood-borne viruses may occur by injection, infusion, transplantation, unsterile equipment, or other accidental injury/penetration. The risk of transmission of

infections can be reduced by eliminating hazards, providing and using engineering controls, avoiding unsafe practices, using personal protective equipment, immunisation, and post-exposure prophylaxis.

Hepatitis B virus (HBV), Hepatitis C virus (HCV) and HIV virus are important blood-borne pathogens that can be transmitted in the health care setting through administration of blood and blood products, use of contaminated needles or sharps injuries.

3.4.3. Tuberculosis

Tuberculosis (TB) is a bacterial infection caused mainly by the species *Mycobacterium tuberculosis*. Transmission is through the airborne route when someone with active disease (untreated smear-positive) coughs, talks, sneezes, or spits. The bacteria can then be inhaled into the lung by people nearby. Only patients who develop lung disease generate the aerosols that allow for airborne spread of TB. Patients with TB at sites other than the lung (e.g. bone or kidney) generally do not transmit infection. Tuberculosis is usually identified by laboratory examination of a sputum sample.

Follow these procedures for patients who are suspected of having TB:

- Initial evaluation and testing is best done on an outpatient basis if possible
- Collect a sample of sputum for smear examination as a matter of urgency. Where available rapid molecular testing may be preferred
- Disposable, non-transparent sputum cups with lids should be used for sample collection
- Perform a chest X-ray to aid diagnosis when available
- Initiation of effective treatment rapidly reduces the risk of infection from infected patients
- All HCFs should be assessed to identify areas where TB transmission can occur
- Adequacy of airflow and natural light should be determined
- In areas where airflow by cross-ventilation is inadequate, extractor fans should be installed
- Natural light should be increased where necessary
- Patients who are coughing in the outpatient clinic or emergency department should wait outside if possible, or in a well-ventilated area. Signs reminding patients about respiratory hygiene precautions, such as the use of tissues when coughing should be displayed prominently
- Patients suspected of having TB should be examined in a well-ventilated area
- The patient should wear a surgical mask if possible
- HCWs treating patients with TB should wear a mask, ideally a fitted respiratory protection mask. Work in the patient area should be planned so as to be performed as efficiently as possible to limit time spent there
- If a patient who is suspected of having TB is admitted to an inpatient ward, they should be placed in either a separate, well-lit, and well-ventilated room or with additional patients suspected of having TB in a cohort area of the ward
- Patients with multi-drug resistant (MDR) or extensively drug resistant (XDR) TB should be nursed in isolation
- The sputum smear result/molecular test result should be returned to HCWs on the inpatient ward within 24 hours so that the patient can be treated as soon as possible
- Supplies of respiratory protection (N95 or equivalent) masks may be limited. If so, they should be conserved for high-risk situations such as when performing or assisting with bronchoscopy, endotracheal intubation, suctioning, or autopsy of TB cases
- When the patient needs to move within the hospital, he or she should wear a mask. Inform staff in the area or ward to which the patient is taken or transferred so that they can implement effective IPC measures
- For patients on TB treatment, delay any operative procedures until the patient is no longer infectious if it is safe to do so [TB-infected patients who have received adequate treatment for 2 to 3 weeks, have responded to the treatment, and have had three consecutive negative smear examinations from sputum taken on 3 separate days are no longer infectious]. It will take about 2 months for most infectious TB patients to become non-infectious. This is more complex however in situations where MDR and XDR TB are common, as standard initial therapy is generally ineffective for these patients
- If emergency surgery is required, it should be planned to minimise risk of occupational exposure. Numbers of HCWs in the operating room should be minimised and respiratory protection masks should be worn as appropriate

- Every patient that is confirmed to have TB via laboratory smear should be informed of their positive result
- It is a public health requirement under the National Public Health Act that diagnosed cases of every form of TB should be reported to the Ministry of Health using the relevant TB notification form(s)
- Contact tracing for screening should be performed and the patient should be monitored to ensure full compliance with treatment

Chapter 4: STANDARD PRECAUTIONS AND TRANSMISSION BASED PRECAUTIONS

4.1. Standard Precautions

It is essential that all HCW's apply standard precautions at all times to protect themselves and patients because:

- People may be infectious before they show signs and symptoms or laboratory test confirmation
- There is an increased risk of transmission of infection with specific procedures
- People are at risk of acquiring infectious agents present in the environmental surroundings including surfaces or from equipment

Standard precautions should be used for all patients, regardless of their diagnosis or presumed infection status and is used in handling all blood including dried blood, all body fluids, secretions and excretions (excluding sweat) regardless of whether or not they contain visible blood, non-intact skin and mucous membranes.

Standard precautions involve safe work practices and include the following:

- Hand hygiene
- Respiratory hygiene/cough etiquette
- Personal protective equipment (PPE)
- Safe use and disposal of sharps
- Routine environmental cleaning
- Appropriate handling of laundry
- Healthcare waste management
- Reprocessing of reusable medical equipment and instruments

4.2. Hand hygiene

The most common mode of transmission of any infectious agents is via the hands of staff and patients. Bacteria are present on the hands most of the time and are categorised into two, namely the:

- **Resident flora** - resides on the surface of the skin and
- **Transient flora** - acquired from the HCW's during contact with patients and contaminated environmental surfaces within the patient surrounding. The transient organism survives and multiplies on the skins surface and can easily be removed by frequent hand hygiene. Transient organisms are most often associated with HAI's.

Several studies have highlighted that HCW's hands contaminated with transient organisms have been responsible for outbreaks of MRSA and other multi-resistant gram negative organisms in the neonatal intensive care unit and adult intensive care units. In addition, hands can be contaminated with the Influenza virus through contact with secretions and contaminated environmental surfaces and can lead to cross infection.

4.2.1. Indications for hand hygiene (HH)

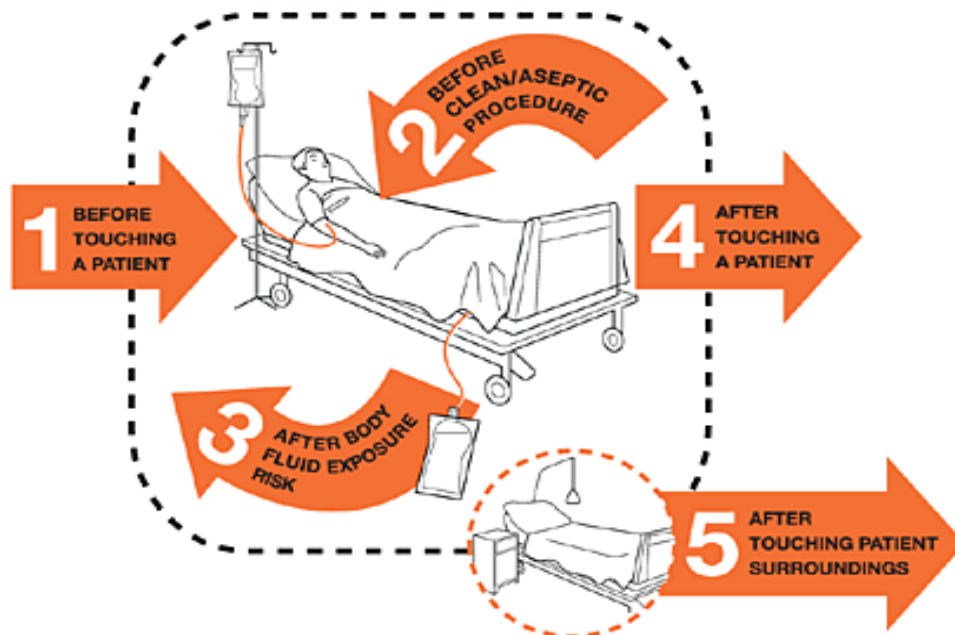
Hand hygiene (HH) is mandatory and is the single most important measure to prevent and minimise the spread of infection within hospital environments.

The main purpose of hand hygiene is to prevent the spread of infection by removing visible soil and micro-organisms (transient microorganisms) carried on the hands of both staff and patients, and includes both hand washing with soap or antimicrobial soap and water, and alcohol-based hand rub (ABHR) products (gels, rinses, foams) that do not require the use of water.

To ensure proper hand hygiene, soap must be rubbed on all surfaces of both hands followed by rinsing with running water and drying by a single use hand towel or cloth, or ABHR is applied to all surfaces of the hands.

The five (5) moments for Hand Hygiene (Figure 1) developed by the World Health Organisation is strongly recommended in clinical settings and is applicable to all healthcare facilities including general and primary health care.

Figure 1: The Five (5) moments for Hand Hygiene



Note: HH should also be done before and after removal of gloves.

Other Examples of when to perform hand hygiene

- Before and after eating or preparing to serve or handle food.
- Before administering medications to a patient
- When hands become visibly soiled
- After using the toilet
- After removing gloves
- Before and after leaving work
- Before and after using computer keyboards especially in the clinical environment
- After wiping mouth and nose secretions
- Entering and when leaving the patient environment especially during an outbreak of an infectious agent
- After handling laundry and equipment

A culture of hand hygiene should be encouraged not only among healthcare staff but also in patients and visitors to a facility and the general community at large.

Compliance with hand hygiene is usually sub-optimal. Reasons for poor compliance include:

- lack of appropriate equipment
- low staff to patient ratios
- allergies to hand hygiene products
- insufficient knowledge among staff of risks and procedures
- time required
- casual attitude among staff towards infection control

Note: HCW's must maintain short clean finger nails and must not wear nail polish or artificial nails when at work.

4.2.2. Hand hygiene products

Hand hygiene includes both hand washing with soap or antimicrobial soap and water, and the use of alcohol-based hand rub products (gels, rinses, foams) that do not require the use of water. Water alone is not suitable for cleaning soiled hands, soap must be used with water for effective hand washing.

Hand drying is an essential part of hand washing. Ideally hands should be dried with a single use paper towel or cloth towel that are able to dry hands as quickly as paper towels. The reuse of cloth hand towels should be avoided because of the risk of cross contamination.

Alcohol-based hand rubs

According to the WHO ABHR preparations contain either ethanol, isopropanol or the combination of two of these products (60% v/v n-propanol is approximately equivalent to 70% v/v isopropanol and to 80% v/v ethanol). Most studies have highlighted that an alcohol based hand rub preparation of at least 70% isopropanol, 0.5% chlorohexidine and a skin emollient is effective against HAI's.

The efficacy of alcohol based hand rub depends on appropriate usage which includes:

- Type of alcohol used
- Whether hands were wet when alcohol was used (hands should be dry before use of ABHR)
- Volume of alcohol used. (ideal volume is unknown, however if hands dry before 10 -15 seconds after being rubbed then it is likely that insufficient volume of alcohol was used)
- Hands that are visibly soiled (if hands are visibly soiled, wash first with soap and water)

Local Production of ABHR

Alcohol-based hand rubs can easily be prepared locally by a hospital pharmacy and is suitable for use in low-and middle-income countries or remote areas where there is a lack of sinks and other HH needs like hand towels, liquid soap and clean running water. ABHR is highly effective and inactivates a wide range of harmful microorganisms on the hands.

WHO recommendation of two (2) formulations for local production:

Formulation 1

To produce **final concentrations** for ethanol 80% v/v, glycerol 1.45% and hydrogen peroxide ($H^2 O^2$) 0.125% v/v.

Pour into a 1000ml graduated flask:

- a. ethanol 96% v/v – 833.3ml
- b. $H^2 O^2$ 3% v/v – 41.7 ml
- c. glycerol 98% - 14.5 ml

Top up flask to 1000ml with distilled or cool boiled water and shake gently to mix contents.

Formulation 2

To produce **final concentrations** for isopropyl alcohol 75% v/v, glycerol 1.45% and hydrogen peroxide ($H^2 O^2$) 0.125% v/v.

Pour into a 1000ml graduated flask:

- a. isopropyl alcohol (with a purity 99.8 % – 751.5ml
- b. $H^2 O^2$ 3% v/v – 41.7 ml
- c. glycerol 98% - 14.5 ml

Top up flask to 1000ml with distilled or cool boiled water and shake gently to mix contents.

Note:

- Hydrogen peroxide is added to eliminate contaminating spores in the bulk solution.
- Glycerol is a humectant or emollient added for (skin care) to increase the acceptability of use.
- Bottles should be labelled to include:
 - Date of manufacture
 - Composition: ethanol, glycerol, and hydrogen peroxide
 - WHO recommended hand rub formulation
 - For external use only

- Avoid contact with eyes
- Keep out of reach from children
- Use: apply a small amount of ABHR and cover all the surfaces of the hands, rub until dry.
- Keep away from flame and heat.

Soap and water

Soaps are more commonly available in the form of being bar soaps and liquid cakes, the use of plain soap preparations and water act by removing microorganisms but have no antimicrobial activity. If bar soaps are used, it is important to ensure that it placed on a well-drained holder and should not be immersed in liquid. It is preferable to use liquid soap preparations.

Hand hygiene with plain soap and water is indicated for removing certain organisms like *C. difficile* and *non-enveloped viruses* such as norovirus. Alcohol-based hand rub is effective at removing vegetative forms of *C. difficile* but is not effective at removing spores.

Soap and water can still be used even where there is no piped water. If piped water is not available, you use one of the following methods:

1. A bucket with a tap at the base
2. A pitcher or a jug to pour water over hands with the help of an assistant

4.2.3. Hand hygiene techniques

There are three (3) types of hand hygiene techniques

- *Social or routine hand wash*
- *Aseptic or clinical hand wash*
- *Surgical*

Social or routine HH

Hands and wrists are washed for 40–60 seconds *with plain liquid or bar soap to remove dirt, soil and other organic substances from hands and transient microorganisms*. Hands are then dried with a paper towel or, if unavailable, a single-use hand towel. This type of hand hygiene is suitable for all routine procedures. Refer to Figure 2 and Appendix 8 “How to Hand Wash”.

Routine social HH with ABHR

Many studies have stated that ABHR are more effective than hand washing with soap and water. However, HH must be performed with soap and water when there is *Clostridium difficile* or norovirus suspected or known to be present.

How to use ABHR:

- apply about 3 ml of the product to the palm of one hand and rub hands together covering all surfaces of the hands and fingers until hands are dry about 20–30 seconds; if hands are dry in 10–15 seconds, not enough hand rub was used. Follow “How to Hand rub” in Appendix 9
- HH with ABHR can be used according to the indications for 5 moments for HH

Aseptic clinical hand hygiene

Aseptic clinical HH is undertaken to remove or destroy transient micro-organisms and inhibit the growth of resident microorganisms. This should be carried out prior to any procedures that involve contact with the mucous membrane, non-intact skin or invasive medical device e.g. insertion of central venous line

The HH procedure can be carried out in one of two ways:

- by washing hands and forearms with antimicrobial soap (chlorhexidine gluconate 2% soap) and water, for 40–60 seconds and dried with a hand towel
- use ABHR for 20–30 seconds. This is appropriate for hands that are not soiled with protein matter or fat, or otherwise visibly dirty.

Note: Immersing hands in bowls of antiseptics is not recommended.

Surgical hand antisepsis

Surgical hand antisepsis removes or destroys transient micro-organisms and reduces the resident flora. Hands and forearms are washed thoroughly with an antiseptic soap for a minimum of 3–5 minutes. Hands are dried using a sterile towel. This should be carried out before all invasive procedures.

The most commonly used products for surgical hand antisepsis are povidone iodine or chlorhexidine containing soaps.

Figure 2: Steps for hand-washing



Many studies discourage the use of surgical hand brush because there is no additional microbial effect. However, use of disposable sponges is recommended.

Note: The 1st scrub of the day is five (5) minutes.

Steps before starting surgical hand preparation:

- Keep finger nails short
- Do not wear nail polish or artificial nails
- Remove all jewellery
- Wash hands with non-medicated soap before entering the operating room
- Clean subungual areas with the nail file

Protocol for surgical scrub with antimicrobial soap:

- Start timing, scrub each side of each side, between the fingers, and the back and front of the hand for two (2) minutes
- Scrub the arms keeping the hand higher than the arms at all times
- Wash each side of the arm from wrist to elbow for one (1) minute
- Repeat the process on the other hand and arm keeping the hand higher than the arms at all times. If the hand touches anything at any time the procedure should be lengthened by one (1) minute for the contaminated area
- Rinse hands and arm passing them under water in one direction only, from finger tips to elbows. Do not move the arm backwards and forwards under water
- Proceed to the operating room with hands above the elbows
- Do not splash water on surgical attire or scrubs
- Hands and arms should be dried using a sterile towel and aseptic technique before donning gown and sterile gloves

Surgical hand preparation with ABHR

Several long acting (chlorhexidine gluconate or quaternary compounds) ABHR's are licensed for the commercial market. Surgical hand antisepsis using commercially prepared ABHR requires three (3) minutes contact time. However, manufacturer instructions should be followed.

4.3. Respiratory hygiene and cough etiquette

Respiratory hygiene and cough etiquette procedures should be applied as a standard infection control precaution at all times by all patients with respiratory symptoms (e.g. coughing, sneezing).

People with respiratory infections should be educated to:

- cover their mouth and nose with a tissue when coughing, and dispose of used tissue in waste and/or garbage containers. If no tissues are available, cough or sneeze into the inner elbow rather than the hands then wash immediately
- spit into tissue if spitting is necessary and dispose of tissue into waste and/or garbage bag
- perform hand HH (use an ABHR or wash hands with soap and water) each time after contact with respiratory secretions
- wear a mask (if available) if you are coughing in order to protect other people in the waiting area
- keep contaminated hands away from the mucous membranes of the eyes and nose

Healthcare facilities should promote respiratory hygiene and cough etiquette by:

- ensuring that appropriate materials are available for patients to adhere to respiratory hygiene and cough etiquette
- promoting the use of disposable tissues (if available) as opposed to using handkerchiefs
- making masks available in waiting areas to reduce the risk of infection transmission
- making hand hygiene (e.g. dispensers of alcohol-based hand rubs) with instructions on how to use it available in waiting areas during an influenza outbreak
- educating patients, family members, and visitors on the importance of covering their mouths and noses with a tissue to help prevent the transmission of influenza and other respiratory viruses
- making appropriate garbage bins (pedal operated) or open bins available in waiting areas for disposal of used tissues
- posting signs requesting that patients and family members with acute febrile respiratory illness use respiratory hygiene and cough etiquette
- ensuring that all staff have access to and are trained in using personal protective equipment

4.4. Personal protective equipment (PPE)

Personal protective equipment is an important component in the prevention and control of, and exposure to, infectious diseases. Personal protective equipment is a set of barriers or equipment used to protect the mucous membranes (eyes, nose mouth), airway, skin and clothing from infectious agents.

Depending on circumstances, PPE is part of Standard Precautions and includes: surgical mask or NIOSH-certified N95 particulate respirator masks, eye shields or eye goggles, water proof gowns/aprons and coveralls, shoe covers, head covers, rubber boots (gum boots). PPE cannot be used on its own and must be used simultaneously with standard and transmission-based precautions. It is important to use PPE effectively, correctly and at all times where contact with blood, body substances, excretions and secretions may occur.

The selection of PPE is based on the assessment of:

- Risk of transmission of the infectious agent/microorganism to the patient and HCW
- The risk of contamination of the HCW's skin and clothing by the patient's blood and body substances in consideration of the type of patient interaction and procedure;
- Type of known or possible infectious agent in consideration of:
 - The local context, current epidemiology
 - What is happening in your area, city, other countries
 - An outbreak??
- Likely modes of transmission of the infectious agent

The use of comprehensive PPE is mandatory if direct, close contact with patients suffering from highly pathogenic airborne and droplet viruses is anticipated. Careful removal of PPE is also very important and healthcare workers should receive training in how to put on and remove PPE. Additional specialised training should be obtained prior to working with highly pathogenic organisms.

Personal protective equipment should be worn in a protected environment (e.g. isolation room, operating room etc.) and should not be worn outside that area. Personal protective equipment must be removed before leaving the protected area. This applies to the Operating Room (OR) area as well, OR attire should not be worn outside (i.e. other areas of the hospital).

4.4.1. Gloves

Gloves can protect staff and patients from infectious agents like MRO's and is an essential component of Standard and Contact precautions. Gloves are used to protect HCW's hands against contamination and should be worn by all HCW's when touching blood, body substances secretions, excretions and contaminated equipment or surfaces.

When to change gloves:

- Hand hygiene should be performed before and after removal of gloves
- Between care/treatment of patients (to prevent cross transmission of infection)
- When performing separate procedures on the same patient
- As soon as they are torn or punctured
- Before touching non-contaminated items and environmental surfaces

4.4.2. Masks, eye protection (face shields/eye goggles)

Masks, eye protection and face shields should be worn to protect mucous membranes of the eyes, nose and mouth which are portals of entry for infectious agents during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions or excretions.

Face and eye protection is an essential component of Airborne and Droplet precautions.

Note: Surgical masks can be used by patients who are coughing to prevent transmission of infectious agents.

When masks are worn ensure that:

- It is changed when it becomes wet (it is no longer effective when wet);
- Do not reuse mask once it is removed;
- Do not allow the mask to hang on the neck;

- Do not touch the front of the mask while it is in use;
- Perform HH after removal of a used mask.
- The front of the mask is considered contaminated.

Table 1: Types and indications of use for gloves

Glove type	Indication	Examples
Non-sterile examination gloves	<ul style="list-style-type: none"> • risk of exposure to blood, body substances, secretions, excretions • contact with contaminated equipment or surfaces • contact with the mucous membranes and non-intact skin • risk of transmission of infectious agents to the patient • if the integrity of the skin of the HCW's hands is compromised. 	<ul style="list-style-type: none"> • Venepuncture • vaginal examination • nasogastric tube insertion • rectal examination • emptying urine bags • minor dressings (cuts) • saliva in dental procedures
Sterile gloves	<ul style="list-style-type: none"> • any surgical invasive procedures where aseptic condition must be maintained 	<ul style="list-style-type: none"> • vaginal delivery • insertion of central line etc. • preparation of chemotherapy drugs and total parental nutrition • radiological procedures etc. • lumbar puncture
Nitrile gloves (is resistant to chemicals and disinfectants such as chlorine and glutaraldehyde)	<ul style="list-style-type: none"> • preferable for clinical procedures requiring more patient contact • alternative for latex sensitivity or allergy 	<ul style="list-style-type: none"> • recommended for clinical care with Filovirus because it is resistant to chemicals and disinfectants such as chlorine and glutaraldehyde
Reusable utility/household gloves	Used in non-clinical activities	<ul style="list-style-type: none"> • cleaning reprocessing equipment in the central sterile department • contaminated equipment • cleaning contaminated surfaces etc.

Table 2: Types of mask and indications

Surgical mask indications	N95 or P2 particulate respirator mask indications
<ul style="list-style-type: none"> • Procedures that generate large droplets of secretions and excretions. • Procedures that require aseptic techniques to protect the patient from infectious agents • Droplet infections e.g. influenza virus 	<ul style="list-style-type: none"> • Airborne precautions e.g TB • Procedures that generate aerosols of particles of known or suspected infectious agents. <p>Not all N95 particulate respirator masks are fluid resistant, only N95 respirators labelled Surgical respirators are tested for fluid resistance.</p>

Considerations for eye protection:

- According to WHO both face shields and goggles are considered to be equally effective, therefore either device can be selected on personal preference
- Fogging can affect both eye shields and goggles, but is less with eye shields, in hot and humid climates fogging can affect visibility and the ability of the HCW to provide patient care. Therefore, it is advisable to use goggles with some form of ventilation
- Face shields provide a wider range of view of the patient and enhances more patient interaction
- Reusable eye shields and goggles should be cleaned with detergent and water or disinfected using the manufactures instructions
- The front of the eye shield/goggle is considered contaminated.

4.4.3. Fluid resistant gowns, coveralls and aprons

According to the WHO Guide on PPE in the context of Filovirus, coveralls and gowns are equally acceptable as there is a lack of comparative evidence to show if one is more effective than the other. Gowns are easier to put on and take off and are more familiar to HCW's. In addition, in hot and humid climates like the Pacific, heat and humid stress is less with gowns.

- Fluid resistant gowns/coveralls and aprons prevent contamination of infectious agents on clothing and skin during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions or excretions
- Clean, non-sterile gown is adequate to protect clothing for procedures that are likely to generate splashes or sprays of blood, body substances
- A fluid resistant long sleeve gown and apron or coverall is strongly recommended to mitigate against the risk of infectious blood and body substances, secretions or excretions that could penetrate the underlying clothes or skin with potential to subsequently, unknowingly transmit the infectious agent via the hands to the mucous membranes of the eyes, nose or mouth
- Aprons are usually worn over a gown or coverall to protect against splashing of blood, body substances excretions or secretions
- Disposable plastic aprons can be worn for contact precautions to protect against transmission of MROs or other contact infectious agents
- Removal of gowns/aprons should be done before leaving patient area to prevent contamination of the environment

Head cover

This is worn to protect the head, neck and hair from contamination of infectious agents and the possibility of unknowingly transmitting the infectious agent via the hands to the mucous membranes of the eyes, nose or mouth.

Shoe cover and boots are highly recommended when caring for patients with confirmed or unknown infectious agent that has rapid fatality with a high mortality rate like the Ebola virus. In this situation, boots are preferred because it is easier to clean and disinfect.

Shoe covers are worn over closed shoes to facilitate against decontamination.

4.4.4. How to put on and take off PPE

PPE must be worn including head cover and water resistant boots, PPE must cover the mucosae - eyes, mouth and nose from the contaminated droplets and fluid including the skin and hair to ensure protection against contamination of infectious agents and the possibility of unknowingly transmitting the infectious agent via the hands to the mucous membranes of the eyes, nose or mouth. See Appendix 10 for "How to put on and take off PPE".

Before donning PPE:

- HCW's must be trained and competent in PPE donning and doffing procedures before attending to patients in isolation
- It is essential to have a trained observer or 'buddy' to supervise the donning and doffing procedure, to ensure that the correct steps are followed during the process
- Before donning PPE all jewellery, watch, pen and mobile phone should be removed from the pocket
- Protocols for donning and doffing PPE procedures should be available in the donning and doffing area should be strictly followed to prevent missing a step
- There should be appropriate separate places designated for donning and doffing PPE
- Ensure that there is a mirror available, this is helpful in adjusting the PPE and to check that the PPE is placed on correctly and during the removal of PPE

When donning PPE:

- PPE must be put on using the correct order according to the donning procedure which ideally should be placed in the area, this is because once the HCW enters the patient zone, the PPE cannot be adjusted
- The observer or buddy should check the integrity of the PPE to ensure a good fit.

When wearing PPE during patient care

- Do not touch the eye protection (face shield/goggle) or mask
- Keep hands away from face
- Limit touching surfaces, no sitting, running or leaning against the wall
- PPE cannot be adjusted during this time
- If there is a partial or total breach e.g. gloves torn, or insect entered the goggle, the HCW must immediately leave the patient environment to the doffing area to remove PPE under the supervision of the trained observer or buddy

When removing PPE

- This must be done in the designated doffing area under the supervision of the observer/buddy
- The buddy must guide the HCW through the correct steps for doffing PPE, slowly to avoid self-exposure
- Discard PPE in the appropriate designated container
- Perform HH

4.5. Safe use and disposal of sharps

The most common way in which HCWs are at risk to HIV, hepatitis C and hepatitis B viruses at the workplace is through accidental injury with sharp objects. The potential for transmission of blood borne diseases is greatest when needles and other sharp instruments or devices are used. Special care should be taken to prevent injuries when cleaning reusable sharp instruments and disposing of sharps.

4.5.1 Responsibility for sharps

All HCWs who use sharps are responsible for their safe disposal into “sharps containers”.

Safe practices when handling sharps include the following:

- Sharps should not be passed by hand between a health care worker and any other person; a puncture resistant tray or kidney dish must be used to transfer sharps
- Needles should never be recapped
- Do not bend needles, lancets or other sharp after use
- Sharps should never be forced into a sharps container

Cleaning staff should not be required to clean up loose sharps. Loose sharps should be notified to the on-duty medical supervisor so that HCWs can dispose of sharps properly. This will also serve to encourage proper disposal of sharps in the first place.

4.5.2 Sharps containers

Official sharps containers should be ordered well in advance of their anticipated need to prevent shortages. If absolutely necessary, a puncture-proof container can be made from thick plastic, cardboard or metal. Use locally available items such as a heavy plastic bottle or a milk tin if there are no special sharps containers available.

- Dispose of all sharp objects in puncture-proof containers which must be labelled “sharps”
- The container should have an opening that is wide enough to allow the sharps to be dropped into it
- The container should never be overfilled and should be replaced when it is three-quarters full. When it is three-quarters full, close the lid or cover with tape
- Sharps containers should be placed as close as practical to the point of use. For example, containers should be placed on the medicine trolley, and in the treatment or immunisation room
- Sharps containers should not be placed in a place where they are easily accessible to children
- Sharps containers should be incinerated and then buried. They should not be disposed of in a regular municipal waste facility

4.6. Routine environmental cleaning

Infectious agents present in the hospital environment can be transmitted to patients via the hands of staff when they have contact through contaminated equipment or the environment. Therefore, frequent environmental cleaning reduces the number of micro-organisms and is a vital component of standard precautions.

Cleaning refers to the use of mechanical action, water and detergent followed by rinsing and drying with the aim of removing organic matter and soils from the environmental surface. Routine environmental cleaning prevents microorganisms from multiplying on clean dry surfaces and also enhances the well-being of patients and staff. Housekeeping staff and HCWs have the responsibility of helping to keep the environment clean and safe, not just for patients but for their colleagues as well; cleaners are an integral part of the healthcare system.

The level of cleaning required in certain areas of a health facility depends on the risk of contamination with infectious agents. For example, the general areas of the hospital will require regular cleaning as opposed to areas like the Isolation units and the Intensive care units where there is a risk of MRO transmission, will require additional levels of cleaning.

4.6.1 Cleaning schedules

In healthcare the recommended cleaning schedules is determined by the risk of transmission of an infection within the environment. The recommended schedules for cleaning includes: frequency and methods and are divided into two main areas. Refer to Appendix 11 for recommended cleaning schedules.

Minimal hand contact areas e.g. floors, walls ceilings and non-patient areas:

- Require routine cleaning with detergent solution
- Damp mopping is recommended over dry mopping

Frequent hand contact areas or high risk surface areas are in-patient areas e.g. doorknobs, bedrails, bedside table, wall areas around the toilet and bathroom. These areas:

- Require cleaning with detergent solution more frequently than minimal hand contact areas
- When MRO's are suspected or known to be present in an area, routine cleaning should be intensified and is cleaned twice with the 2nd clean to include a disinfectant recommended by the healthcare facility e.g. sodium hypochlorite
- Shared clinical equipment in these areas such as trolleys, knobs of certain machines etc. should be frequently cleaned using detergents

All healthcare facilities should have a cleaning schedule with clear lines of responsibilities for Housekeeping staff and HCWs and should include:

- Rosters
- Frequencies of cleaning required and methods for cleaning
- The products used to clean specific areas with standard operating procedures for mixing solutions
- Clear standard operating procedures on cleaning mops, buckets and other items

4.6.2. Use of disinfectants

When there is a presence of infectious agents e.g. clostridium difficile or MRO patient requiring transmission based precautions, the cleaning schedule and frequency should be intensified to include:

- physical clean with detergent and followed by a disinfectant, this is called a two (2- step clean) or
- physical clean with a two in one (2-in-1step clean) which consist of a combined detergent and disinfectant

Physical (manual) cleaning with detergent solution is the most important step in the cleaning process, sole reliance on using detergent solution or 2-step clean without manual cleaning is not recommended.

Many disinfectants are active against enveloped viruses, such as the COVID-19 virus, including commonly used hospital disinfectants. Currently, WHO recommends using:

- 70% ethyl alcohol to disinfect small areas between uses, such as reusable dedicated equipment (for example, thermometers);
- sodium hypochlorite at 0.1% (1000 ppm) for disinfecting surfaces and 0.5% (5000 ppm) for disinfection of blood or bodily fluids spills in health-care facilities.

Note: Instrument disinfectants should not be used for environmental surface disinfection.

4.6.3. Colour coding cleaning equipment

A standard for colour coding cleaning equipment is the most effective method of restricting equipment to individual areas of health facilities. Equipment may include dry mops, wet mops, mop handles, buckets,

wringer buckets, gloves. All other equipment that would assist in the control of infection should also be colour coded.

Typical colour coding for equipment

Infectious/isolation areas	yellow
Toilets/bathrooms/dirty utility rooms/sluice	red
Food service/preparation areas	green
General cleaning	blue
Operating theatres	white

4.6.4 Important housekeeping practices

Important housekeeping practices include the following.

- Prepare cleaning solutions daily according to facility procedure
- When using neutral detergent, follow dilution instructions. Too much or too little water may not destroy micro-organisms
- Scrubbing with detergent and water is the most effective way to remove dirt and micro-organisms
- Always wash hands after cleaning procedures
- Wear utility gloves to clean contaminated areas such as toilets, spills of blood and body fluids
- Write schedules for all housekeeping personnel for more effective housekeeping practices
- Use a wet cloth or mop for walls and floors. Dry sweeping and dusting spread dust and micro-organisms into the air and onto patients and clean surfaces
- Use separate equipment (e.g. cloth, brushes, buckets) for cleaning contaminated areas such as toilets
- Change solutions when they look dirty
- Wash cleaning cloths and mops daily and dry them in the sun. Soiled cleaning equipment can spread micro-organisms
- Always clean from top to bottom, so that soil and dust that falls on the floor will be cleaned-up last

Note: Avoid soiling clean areas while you are cleaning dirty areas. Do not use disinfectant fogging (fumigation with formalin). Fogging may be toxic (poisonous). Manual cleaning with detergent and water is more effective way to remove micro-organisms from rooms and cabinets.

Note: Always use a different cloth when cleaning floors, bathrooms, and patient items. Establish schedules for cleaning floors, environmental surfaces, sinks and toilet areas.

4.6.5. Housekeeping audits and checks

It is recommended that healthcare facilities have a system to include colour coding, checklists and cleaning manuals to ensure that cleaning standards are met regardless of whether cleaning services are outsourced.

Auditing of cleaning should be carried out on a regular basis and is normally done via visual inspection.

4.6.6. Cleaning spills of blood and other body fluids

The purpose of cleaning up spills of blood and other body fluids is to destroy harmful micro-organisms such as HIV, HCV and HBV.

The items needed for cleaning spills include:

- Neutral detergent
- Cloth or old pieces of linen, paper towel
- Mop

The procedures for cleaning spills are:

1. Wear gloves and other PPE
2. Wipe up spills with a cloth or paper towel and discard in waste bin

3. Mop up remainder of the spill using neutral detergent
4. Follow 2-step clean if infectious agent is a concern

4.7. Appropriate handling of laundry

The objective of the laundry system is to provide a properly designed laundering programme in a safe and sanitary environment, and ensuring the supply of clean and hygienic laundry. Health service managers and staff share the responsibility for achieving this objective.

Health service managers are responsible for providing:

- an appropriate and safe laundry facility;
- standard procedures and guidelines for handling, using and laundering clean and contaminated linen
- training, educating and instructing staff about potential infectious hazards and techniques to prevent the spread of infection

Linen used in healthcare facilities carries many micro-organisms. Used linen that is soiled with blood, urine, faeces or other body substances may be particularly infectious. Processing soiled linen consists of collecting, transporting and sorting the linen before it is washed, followed by storing and distribution.

HCWs are responsible for ensuring that:

- standard precautions apply when handling clean and contaminated linen
- linen is free of foreign matter such as sharps and instruments before it is sent for laundering
- soiled and infectious linen is appropriately treated and handled in accordance with the facility's policies and procedures
- used linen is not sorted in patient care areas

4.7.1 Using personal protective equipment

When collecting, handling, transporting, sorting or washing soiled linen, housekeeping and laundry staff should wear:

- household utility gloves
- closed shoes that protect feet from sharp items and from blood and body fluid spillages
- protective eyewear
- plastic or rubber aprons

4.7.2. Collecting and transporting soiled linen

The following steps should be taken when collecting and transporting soiled linen

- Place used linen in bags or in linen trolleys with lids. If linen is heavily soiled with blood and/or body fluids, it should be placed in a leak-proof bag or a container with a lid
- Handle soiled linen as little as possible and avoid shaking linen to prevent the spread of micro-organisms into the environment and to people
- Linen should not be sorted or washed in patient care areas
- Transport collected soiled linen in trolley carts with lids or covered carts to the laundry processing area once or twice daily
- Transport soiled linen and clean linen separately, using separate trolleys labelled accordingly

4.7.3. Sorting soiled linen

Sorting soiled linen is important because in addition to linen soiled with blood and body fluids, linen from places such as operating theatres, labour wards and other procedural areas sometimes contain sharp instruments and soiled dressings soaked with blood and body fluids. When sorting linen, heavy utility gloves, protective eyewear and plastic aprons should be worn. Any items found during sorting should be disposed of properly.

4.7.4. Laundering linen

The following steps should be taken when laundering soiled linen:

- Separately wash heavily soiled linen from non-soiled linen

- Use the washing machine's time cycle according to the manufacturer's instructions
- Water temperatures should be above 71°C (160°F)
- When wash cycle is completed, linen should be checked for cleanliness and rewashed if still stained or dirty

4.7.5. Storing, transporting and distributing clean linen

The following measures should be taken when storing, transporting and distributing clean linen:

- Store clean linen in clean, dry closed storage cupboards
- Use physical barriers to separate folding and storage room from soiled areas
- Clean and soiled linen should be transported separately in separate trolleys
- Clean linen should be covered during transport to avoid contamination

4.7.6 Laundry staff

Good staff practices help reduce the risk of cross-contamination and prevent injury. Therefore, staff should:

- be adequately trained in standard precautions, including hand washing and the risks involved if undertaking other tasks within the facility (e.g. food preparation, patient care). These activities should never be done in laundry areas
- be educated and trained (and supervised, if appropriate) in the safe use of equipment and machinery, and in safe work practices, including safe manual handling techniques
- wear appropriate protective clothing and wear appropriate gloves when sorting laundry
- not eat or smoke in the laundry area
- not handle linen if they have exfoliative skin conditions (e.g. conditions where skin flakes off), unhealed wounds or rashes, unless appropriate protective measures are adopted (such as covering wounds with bandages)

4.8 Healthcare waste management

Safe waste disposal helps to:

- prevent the spread of infection to healthcare workers who handle the waste, and to the local community
- protect those who handle waste from accidental injury
- prevent open piles of waste that can become breeding ground for flies, other insects and rats, which carry diseases
- prevent build-up of waste, which may pose fire hazards
- provide a pleasant atmosphere (uncollected waste causes foul smells, and is unsightly)

The key to effectively managing healthcare waste is segregation (separation) and identification. Segregation is the responsibility of the waste producer, and should take place as close as possible to where the waste is being generated. Healthcare waste should be categorised and placed into colour-coded bags or bins.

Two important points to remember with regards to waste disposal is that 1) open piles of waste are dangerous, and 2) hospital and health centre wastes should be disposed of in an area with a fence around it. All waste should be incinerated or buried.

4.8.1 Categories of healthcare waste

General waste

General waste includes wastes that do not carry harmful micro-organisms. Examples of general wastes include kitchen refuse, paper waste, boxes, bottles and plastic containers that store products used by the hospital or clinic.

Infectious and/or clinical wastes

Solid and liquid infectious and/or clinical wastes carry harmful micro-organisms and are likely to cause infection among patients, HCWs or people in the community. Infectious wastes may be solid wastes, liquid wastes or laboratory wastes. Examples include used dressings, gauze or other items contaminated with blood, pus, faeces, urine, blood or other body fluids; human tissue; body parts; paper specimen collection cups; pathology samples.

Pathological waste includes human materials removed during surgery, labour or delivery; autopsy; embalming; or biopsy, including body parts and tissues and fetuses; products of spontaneous or induced human abortions, regardless of the period of gestation, including body parts, tissues and fetuses, organs and bulk blood and body fluids. Pathological waste also includes laboratory specimens of blood and tissue after completion of laboratory examination.

Sharps include needles, lancets, hypodermic syringes with attached needles, scalper blades, razor blades, glass pipettes, broken glassware, intravenous spikes, and any other sharp object with the potential to penetrate intact skin

Pharmaceutical and cytotoxic wastes

Pharmaceutical and cytotoxic wastes include expired, unused, split and contaminated pharmaceutical products, drugs and vaccines that are no longer required and need to be disposed of appropriately. This category of waste also includes discarded items used in the handling of pharmaceutical supplies such as bottles and boxes with residues, gloves and masks, connecting tubing and drug vials.

Cytotoxic drugs are also known as anti-neoplastic drugs or cancer chemotherapy drugs. These are highly hazardous wastes that have mutagenic, estrogenic or carcinogenic properties. Cytotoxic wastes include:

- Cytotoxic drugs (e.g. azathioprine, chlorambucil, cisplatin, 5-Fluorouracil, cyclophosphamide, melphalan and methotrexate)
- Vomit, urine or faeces from patients treated with cytotoxic drugs
- Contaminated materials from cytotoxic drug preparation and administration such as syringes and needles, dressing packs and gauge vials

General tips for safe waste disposal

- Use separate marked containers for clinical wastes.
- Use washable waste containers that are strong and will not rust (plastic is best). All waste containers should have lids.
- Do not use waste containers for any other purpose in the hospital or health centre.

4.8.2 Colour-coding or labelling containers

Colour-code or label containers for the following types of waste:

- **Sharps:** Dispose of in puncture-proof containers so they do not cause injury. These items can spread HIV, HCV and HBV. Sharps containers should be colour-coded red or yellow, or at a minimum, have an infectious sharps sticker placed on the container.
- **General:** Collect in separate containers for burning or for collection by the municipal authority for disposal at the landfill. General waste may be collected into black, white or clear coloured plastic bags.
- **Infectious/clinical/pathological:** Collect in separate containers for incineration. Heavy duty yellow or red plastic bags with an infectious logo on them.
- **Cytotoxic/pharmaceutical waste:** Collect in separate containers for incineration. Cytotoxic waste should be colour-coded purple.

4.8.3. Safe collection of general waste

General waste does not carry harmful micro-organisms. Examples of general waste are kitchen refuse, paper waste, boxes, bottles and plastic containers that store products used by the hospital or clinic. To prevent open piles and scattering of rubbish, bins must be placed in places where they are easily accessible. Signs on general waste containers should read: “**GENERAL WASTE NO CONTAMINATED WASTE, NO SHARPS**”.

Procedures for disposing of general waste:

1. Collect waste in leak-proof bins
2. Place bins at convenient locations so that they will be used
3. Encourage patients to use the bins

4. Provide separate containers for non-burnable waste such as bottles and cans
5. Wear thick work gloves when handling and transporting waste. This will help to prevent injury
6. Collect bins daily or more often if needed and carry to waste area for incineration or for collection by municipal authorities. A trolley or wheel-barrow may be used to help transport waste from the hospital to the incinerator
7. Clean up all spills immediately with a broom and shovel, and wash the area with soap and water
8. Wash all rubbish bins with soap and water daily
9. Wash hands after handling rubbish bins

4.8.4. Safe collection and disposal of infectious and/or clinical waste

Infectious and/or clinical waste carries harmful micro-organisms and can cause infection among patients, HCWs or people in the community. Infectious and/or clinical waste is divided into four categories:

- Sharps
- Solid clinical waste
- Liquid clinical waste
- Pathological waste

Examples are used dressings, gauze or other items contaminated with blood, pus, faeces, urine, blood or body fluids; human tissue; body parts; paper specimen collection cups; pathology samples; needles; scalpel blades.

Sharps disposal

Procedures for collecting and disposing of sharps:

1. Wear thick work gloves when transporting sharps containers to the incinerator to prevent injury.
2. Ensure that the sharps container lid is closed or sealed with tape before transporting it to the incinerator site.
3. Collect containers daily, or more often if needed, and carry to incinerator for burning.
4. Wash hands after handling sharps containers.

Solid clinical waste disposal

Examples of solid clinical waste include used dressings, gauze or other items contaminated with blood, pus, faeces or other body fluids; human tissue; body parts; paper specimen collection cups. Proper disposal of solid clinical waste helps to prevent the spread of micro-organisms from contaminated waste to staff, patients and the community. Clinical solid waste should be burned or incinerated.

There should be a separate clinical waste bin with a lid. The bin should be lined with a plastic bag and should have no holes. Bins should be labelled “**CLINICAL WASTE, NO SHARPS**”

Procedures for disposing of solid clinic waste:

1. Place bins in places where they will be used
2. Wear thick gloves when handling and transporting wastes
3. Collect bins daily, or more often if needed, and transport to incinerator for burning
4. Clean up all spills immediately with a broom and shovel, and clean area with a neutral detergent
5. Each day, wash waste bins with soap and water
6. Wash hands after handling waste bins

Liquid clinical waste disposal

Examples of liquid clinical waste include blood, urine, faeces, pus, sputum, spinal and peritoneal fluids, and pathology specimens. Proper disposal of liquid clinical waste helps to prevent the spread of micro-organisms from contaminated liquid waste to staff, patients and the community.

Procedures for the disposal of liquid clinical waste:

1. Wear thick work gloves when handling and transporting wastes
2. Wear eye goggles to protect eyes from splashing
3. Carefully pour blood, urine or other body fluids directly into toilet, utility sink drain. **Avoid splashing**
4. Rinse the sink or toilet carefully and thoroughly with water
5. When stool or sputum is collected in paper specimen cups, treat as clinical solid waste
6. Wash hands after handling liquid waste

Laboratory waste disposal

Examples of laboratory waste include used culture plates, specimen containers and specimens. The proper disposal of laboratory waste helps to prevent the spread of micro-organisms from microbiology laboratory waste and other specimens to staff, patients and the community.

An autoclave or pressure cooker is used to sterilise laboratory waste before disposal into a separate plastic bin with a yellow or red plastic bin liner labelled (in black) "**BIOHAZARD WASTE**".

Procedures for disposing of laboratory waste:

1. Autoclave all petri dishes and test tubes that have been used to grow micro-organisms *before* incineration
2. After sterilising, discard disposable petri dishes and test tubes into a bin marked "**CLINICAL WASTE**"
3. After sterilising, remove the culture media from reusable petri dishes and test tubes and discard into a "**CLINICAL WASTE**" bin
4. Wash and dry reusable petri dishes and test tubes
5. Collect "**CLINICAL WASTE**" bins daily, or more often if needed
6. Each day, wash bins with soap and water
7. Wash hands after handling bins

4.8.5. Handling healthcare waste bags

Procedures for handling healthcare waste bags:

1. Check that waste storage bags and containers are effectively sealed. Bags should be picked up by the neck only. They should be placed down in such a way that they can again be picked up by the neck for further handling. Waste bags should be manually handled as little as possible
2. Bags should not be held against the body nor should collection staff attempt to carry too many bags at a time
3. Avoid letting the bag come into contact with the body when being carried. A needle stick is the most likely hazard to endanger the person collecting the waste bag. Hypodermic needles that are not properly segregated into correct sharps containers can cause this type of injury
4. Sharps have been known to pierce the sides and bottom of polypropylene containers. These containers should be picked up and carried by the handle provided. The other hand should not be used to support the bottom of the container
5. Avoid puncturing or damaging waste bags, and do not throw or drop them
6. Ensure that infectious wastes are not mixed, and that bags are stored in designated storage areas
7. Protective clothing should be worn during all waste handling operations
8. Transport all waste bags directly to the designated central storage for disposal
9. Bags of hazardous healthcare waste and of general waste should not be mixed at any time, but should be segregated throughout handling; hazardous waste should be placed only in specific storage areas. If hazardous waste is accidentally placed in general waste, the entire quantity of waste must be treated as hazardous

4.8.6. Scavenging

Steps must be taken to ensure that scavenging does not take place at the hospital waste storage sites as this could be detrimental to the individual's health. The waste storage shed or area must be kept locked at all times when not attended, and care should be taken to ensure that only properly prepared and non-hazardous waste is disposed of through the municipal garbage disposal system.

4.8.7. Methods of solid waste disposal

Incineration or burning

Incineration is a process of burning wastes at very high temperatures. Incineration requires special equipment and a fuel source such as diesel or gas. Incineration is the best way to destroy contaminated wastes. The advantages of incineration and burning are that micro-organisms are destroyed by the heat, and large amounts of wastes that require considerable space are reduced to ashes.

The hospital incinerator should be housed in a locked enclosure and only used by trained operators. The incinerator must be operated in accordance with the manufacturer's instructions. Incineration equipment must be kept in good working condition and be serviced on a regular basis in accordance with the manufacturer's instructions.

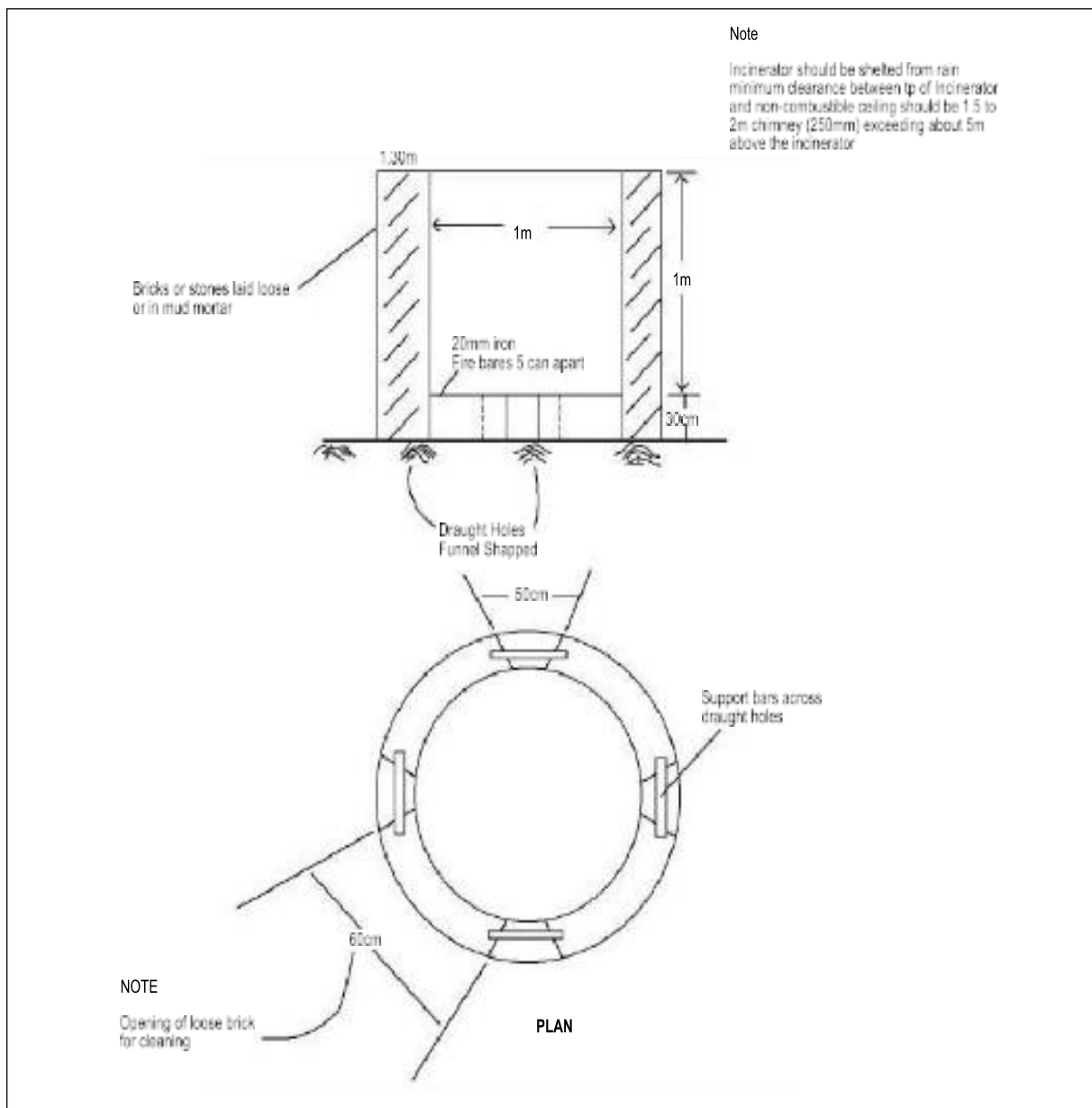
Building and using a simple stove for burning wastes

In situations where incineration equipment is not available, burning can be done in a simple, large stove. Open burning is dangerous; therefore, all waste should be burned or incinerated in special stoves located in enclosed (properly fenced) areas.

Below are basic guidelines for building and using a simple stove for burning waste:

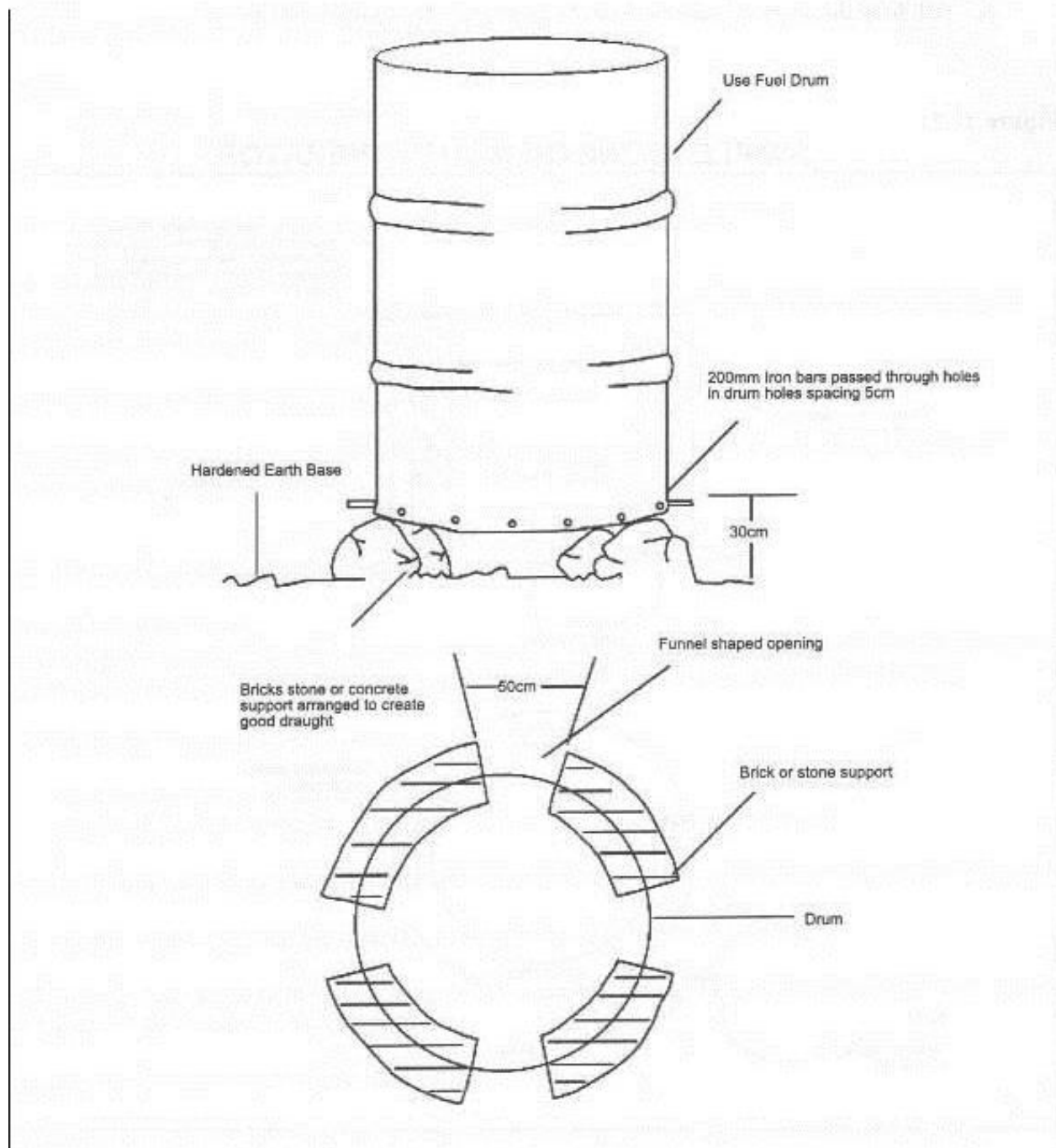
1. Select a site downwind from the healthcare facility
2. Build a simple stove using local materials (mud or stone), or a used oil drum
3. Place the stove on hardened earth or a concrete base
4. Make sure the stove has:
 - Sufficient air inlets underneath to burn well,
 - Loosely placed metal bars to hold wastes and allow ashes to fall below, -
 - Enough space to add waste at the top and to remove ashes from below,
 - Long enough chimney to allow for good draught and removal of smoke.
5. Burn all burnable waste, such as paper and cardboard, as well as dressings and other contaminated wastes
6. If the waste is wet, add kerosene so that a hot fire burns all the waste. Store waste for incineration in covered rubbish bins
7. Ash from the stove or incinerator can be treated as non-contaminated waste. Note, however, that sharps, even after incineration, may be dangerous and should be buried (see below)

Figure 3: Simple stone or mud incinerator



Source: Adapted from Fiji Ministry of Health, Infection control manual for health facilities

Figure 4: Simple oil drum incinerator



Source: Adapted from the Fiji Ministry of Health, Infection control manual for health facilities.

Waste disposal by burying

When clinical and non-clinical wastes cannot be burned or incinerated, waste must be buried. Even if wastes are collected by a city collection system, it is good for healthcare administrators to make sure the waste is disposed of safely. When wastes are buried, certain requirements must be met so that children and animals cannot dig up the waste.

Note: Sharp objects may not be destroyed by burning and may later spread tetanus infection. Dispose of all sharp objects by putting them underground, even after burning.

Procedures for making and using an underground waste disposal site:

1. Select a site that:
 - is at least 50 meters (150 feet) away from any water source, to prevent contamination of the water supply.
 - has proper drainage, is located downhill from any wells, and is free of standing water.
 - is not in an area that floods.
2. Dig a pit 1 meter (3 feet) wide and 2 meters (6 feet) deep. The bottom of the pit should be 2 meters above the water table.
3. Fence in the site to keep animals and children away.
4. Wear heavy gloves when handling waste buckets.
5. Empty buckets of non-burnable waste into the pit every day.
6. Cover the waste with a thin layer of earth each day. The final cover should be 10 centimetres deep.

Note: General waste is the only waste that can be disposed of in a municipal garbage facility (i.e. landfill). It is illegal and dangerous to dispose of other wastes with municipal garbage.

Table 3: Safe waste disposal

	Waste type	Waste bag colour	Disposal
General waste	Kitchen refuse, paper waste, boxes, bottles, plastic containers	black	Local Level Govt Collection/ Incineration
Sharps	Needles, broken or disposal syringes, razors, lancets, scalpel blades	sharps container yellow or red	Incinerate, then bury
Solid infectious and/or clinical waste	Dressings, gauze, or other items contaminated with blood, pus, faeces or other body fluids; human tissue; body parts; paper specimen collection cups	yellow or red	Incinerate
Liquid and clinical waste	Blood, urine, faeces, pus, sputum, spinal and peritoneal fluids, pathology specimens	no bags	Drain fluids into toilet or utility sink; or place in contaminated waste bin, and incinerate
Laboratory waste	Used culture plates, specimen containers, specimens	yellow or red	Sterilise, place in contaminated waste bins, and incinerate
Cytotoxic waste	Cancer treatment drugs and used consumables	Purple	Incinerate
Pharmaceutical waste	Tablets, mixtures and injectables	Yellow	Incinerate

4.8.9. Garbage storage and disposal

Garbage should be removed at least twice daily and no garbage should be left in kitchen areas overnight. Not only are many common pests capable of transmitting infection, but the sight of insects and pests within the hospital environment can be very disturbing to patients, staff and visitors alike. It is, therefore, a basic requirement of the hospital cleaning programme that adequate attention be paid to preventive and protective measures designed to minimise this potential form of cross infection.

In general, six elements are essential in any effective programme for the control of pests in a hospital.

- Thorough, constant cleaning of all potential areas of infestation
- Regular, careful inspections for evidence of pests
- Storage of waste and garbage in water-tight containers
- Thorough cleaning of all garbage containers after use
- Daily removal of all stray garbage not placed in correct receptacles
- Proper storage of all goods and supplies likely to attract pests

4.9. Reprocessing of reusable medical equipment and instruments

Used instruments and equipment can be a reservoir for micro-organisms, and therefore spread infections to patients and staff. Procedures that prevent the spread of infection from reusable instruments and equipment are cleaning, disinfection and sterilisation. Before disinfection and sterilisation can be achieved, however, all instruments must be cleaned and rinsed.

Table 4: Instruments and equipment by application and sterilisation method

Category	Application	Type of processing	Example of items
Critical	Sterile tissues in the body	Sterilisation	Surgical instruments, diagnostic catheters, dental instruments, bronchoscopes, cystoscopes
Semi-critical	Non-sterile tissues in the body	Disinfection	Respiratory therapy equipment, dental impressions and other prosthetic appliances, gastroscopes, colonoscopes, endoscopes
Non-critical	Instruments that come in contact with intact skin	Cleaning	Bedpans, ECG leads, thermometers, stethoscopes, beds, bedside tables

After cleaning, all instruments and other items used to touch tissue beneath the skin (such as during surgery or giving an injection) or to touch mucous membranes (such as during vaginal examination) should be sterilised or undergo high-level disinfection (HLD).

Sterilisation is the safest and most effective method for the final processing of instruments. When sterilisation of equipment is not available or not suitable, HLD is the only acceptable alternative.

Definitions association with cleaning, disinfection and sterilisation	
Cleaning	Physical removal of soil and micro-organisms from the skin and objects with soap and water
Detergent	A cleaning agent available in two forms: liquid or powder
Decontamination	Cleaning an object to reduce the number of micro-organisms on it by either chemical or physical means
Disinfection	A process that kills or destroys most disease producing organisms, but rarely kills spores. Disinfectants are used on inanimate objects as opposed to antiseptics, which are used on living tissue
Sterilisation	A process that destroys all forms of microbial life, including bacteria, viruses, spores and fungi. This method is used for all items that contact normally sterile areas of the body.
Note: Keep used, dirty items separate from clean and sterile ones to prevent cross contamination	

4.9.1. Cleaning

The cleaning process is very important because:

- cleaning with neutral detergent and water removes protein, blood and other body fluids, oils and grease
- disinfection and sterilisation will not destroy micro-organisms trapped in small particles of blood or protein. Thorough cleaning must be done to remove these particles
- when sterilisation facilities (steam heat or hot air oven) are not available, cleaning is the only way to protect patients from pathogenic spores

Choosing a detergent for cleaning instruments and equipment

Using a hospital grade neutral detergent is important for effective cleaning because water alone will not remove protein, oils and grease. Bleach powder without a detergent should not be used. Hand soap should not be used because it is made from fat (lard), and will leave a film or scum on instruments. Micro-organisms can become trapped in the scum, and will not be destroyed during sterilisation or disinfection.

The cleaning solution must be appropriate for the type of equipment or instrument. Enzymes usually Proteases are added to solutions to neutralize the PH solutions to aid in removing organic material such as blood and pus.

Additionally, lipases (enzymes to act on breaking down fats) and amylase enzymes (to act on breaking down starch) is added to solutions.

Note: enzymes are not disinfectants and should be rinsed off instruments.

Do not use abrasive cleaners because they can scratch instruments. Scratches are places where micro-organisms can become trapped, and scratches increase metal corrosion (rusting).

4.9.2. Equipment and procedures for cleaning environmental surfaces

Cleaning environmental surfaces helps destroy and remove soils and micro-organisms, making environmental surfaces such as operating tables or delivery tables safe to use for the next patient.

The items needed to properly clean environmental surfaces include:

- Neutral detergent
- Clean water
- Plastic bucket
- Household gloves

Procedures for cleaning environmental surfaces are as follows.

1. Put on gloves
2. Using a cloth soaked in neutral detergent, wipe metal and plastic surfaces
3. Allow surfaces to air-dry

4.9.3 Routine cleaning of used instruments and equipment

Routine cleaning of instruments and equipment removes many micro-organisms.

The items needed for the routine cleaning of instruments and equipment include:

- Neutral detergent
- Clean water
- Brush
- Gloves (utility gloves are best)

Procedures are as follows.

1. Put on gloves
2. Completely disassemble all items
3. Using detergent and water and brush, completely remove all blood, tissue and dirt. Carefully clean small spaces and teeth of clamps
4. Thoroughly rinse with water, because detergent can interfere with the disinfection or sterilisation process
5. Air-dry equipment as moisture can interfere with the sterilisation or disinfection process
6. Instruments and equipment are now ready for sterilisation or disinfection

4.9.4. Disinfection

Disinfection is a process that inactivates vegetative microorganisms from inanimate objects without ensuring the elimination of bacterial spores.

High-level disinfection

High-level disinfection (HLD) is a liquid chemical agent that eliminate all microorganisms, examples are: glutaraldehyde, formaldehyde, hydrogen peroxide etc.

Points to remember when cleaning instruments and equipment

- Thorough cleaning is the most important step when reprocessing instruments and equipment.
- Wear gloves while cleaning instruments and equipment. Thick household or utility gloves are best because they help to prevent injury from sharp objects.
- Completely disassemble any equipment that can be taken apart, before cleaning (e.g. clamps and scissors).
- Use a brush for cleaning. A small brush (e.g. toothbrush) can be used to carefully clean very small areas where micro-organisms may become trapped (e.g. teeth of clamps, screws and joints).

To make sterilisation or HLD effective:

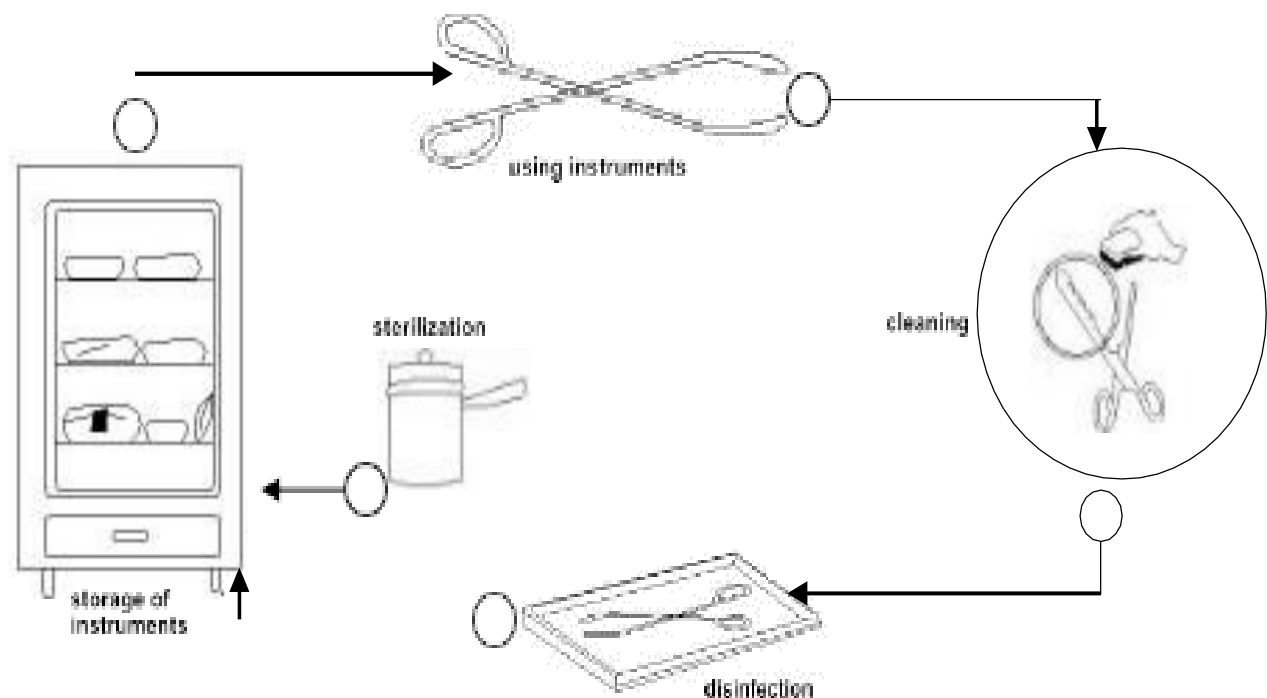
1. Follow instructions carefully
2. Make sure that chemical disinfectant touches all surfaces of the item being processed
3. When using heat, make sure to use the correct temperature, for example if boiling to achieve high level disinfection, instruments should be covered in water with a lid and timing begins for 20 mins when water begins to boil
4. Be sure all items have been thoroughly cleaned and dried

Note: Sterilisation and HLD will not destroy micro-organisms trapped in small particles or blood. Thorough cleaning must be done to remove these particles.

Intermediate level disinfection

Is carried out using chemical agents that eliminate vegetative bacteria and some bacterial spores, e.g. is sodium hypochlorite

Figure 5: Processing instruments



Source: Adapted from the Fiji Ministry of Health, Infection control manual for health facilities.

4.9.5. Sterilisation

Sterilise instruments and other items that come into contact with the bloodstream or tissue beneath the skin (surgical instruments, wound dressings). Sterilisation is the only process that destroys all forms of micro-organisms, including those that cause tetanus and gangrene. (These spore-forming micro-organisms are very hard to kill.)

Sterilisation methods

The most common sterilisation methods in hospitals and clinics are **steam heat** (autoclave or pressure cooker), **dry heat** (hot air oven), and **gas** (ethylene oxide).

Steam sterilisation (autoclave, pressure cooker to be used only if autoclaves are not available) destroys all micro-organisms on objects that are used beneath the skin (e.g. surgical instruments, gloves, needles and syringes), or those that enter sterile areas of the body (e.g. urinary catheters).

The equipment needed to steam sterilise objects include:

- Wrapping material (e.g. cotton cloth, paper)
- Metal instrument trays (with holes in bottom)
- Sterilisation indicator
- Autoclave or pressure cooker
- Heat source (electricity, stove for kerosene)
- Fuel (kerosene, wood)

Procedures for steam sterilisation are as follows.

1. Clean and dry all items to be sterilised
2. Open and separate all items before processing. For example, open all instruments (forceps, clamps), and wrap tubing around a towel or cloth and coil gently
3. Wrap items with double thickness cotton muslin cloth or paper
4. Insert proper sterilisation indicator (e.g. autoclave tape) to show that the article is sterile
5. Load packs and items in steriliser so that steam can move around packs and penetrate all surfaces
6. Sterilise items at the correct temperature and pressure and for the correct amount of time (see below). Begin timing after the desired pressure has been reached (on autoclave, check gauge; on pressure cooker, wait for pressure valve to jiggle)
7. Turn off heat source. Wait 30 minutes for steriliser to cool, then slightly open lid to let steam out
8. Allow packs to dry before you remove them. This takes 20–30 minutes
9. Remove items from steriliser
10. Allow them to cool completely before storage, or use immediately
11. Label the container with the date. Reprocess after expiration

Table 5: Steam sterilisation

Temperature:	121 ^o Centigrade (250 ^o Fahrenheit)
Pressure :	106 kPa
Time :	Unwrapped items: 20 minutes
	Wrapped items: 30 minutes

Additional notes on steam sterilisation.

- **Wrap packs loosely.** Tightly wrapped packs do not allow steam to touch all surfaces of items and equipment. Where steam does not touch, items will not be sterilised
- Items that are not wrapped must be used immediately
- Wait for packs to dry before removing them from the steriliser. Micro-organisms can travel through moisture into the sterile packs
- When using a pressure cooker, all items must be at least 5 cm above the water
- When using drums, tilt them and open the lids to allow air to drain out and to be replaced by steam
- As soon as a drum is opened, all unwrapped items inside become contaminated. Therefore, items should be wrapped even when drums are used

Table 6: Temperature and time for effective dry heat sterilisation

Temperature	Time
170 ^o C (340 ^o F)	60 minutes (1 hour)
160 ^o C (320 ^o F)	120 minutes (2 hours)
150 ^o C (300 ^o F)	150 minutes (2½ hours)
140 ^o C (285 ^o F)	180 minutes (3 hours)
121 ^o C (250 ^o F)	Overnight

Table 7: Sterility tests

Methods		Indicators		
Agent	Means	Physical	Chemical	Bacteriological
Dry heat	Flames	Must be red hot	None	Monthly check: Mix of spore-producing and non-spore producing bacteria
	Hot ovens	Thermometer	Daily check: heat sensitive dyes	
Humid heat (best method for hospitals)	Autoclaves, Pressure cooker (steam under pressure)	Record of: Pressure Temperature Time (duration)	Daily check: heat sensitive dyes for steam saturation	Weekly check: spore test (<i>Bacillus stearothermophilus</i>)
Ethylene oxide	Gas	Is used to sterilise heat sensitive items which cannot withstand temps greater than 60°C	Ethylene gas	Gas indicator.

Note: Sterilisers should be routinely tested to make sure that they are working properly and that instruments and equipment are sterile.

Table 8: Disinfectants and their uses on instruments and equipment

Disinfectant	Time	Purpose	Dilution	Comments
Alcohol 70%	20 minutes	Kills: Gram-positives Gram-negatives TB HIV Hepatitis B Viruses	None	Does not need to be rinsed off
Chlorine solution (1% available chlorine)	Decontamination 10 minutes Disinfection 20 minutes	Kills: Gram-negatives TB Most spores Hepatitis virus HIV Virus	See Note 2	Make a fresh solution every day. Rinse off with distilled water.
Formaldehyde (8%)	20 minutes	Kills: Gram-positives Gram-negatives TB Spores Viruses	1 part formaldehyde + 5 parts water	Prepare fresh solution every 2 weeks Rinse off with distilled water.
Glutaraldehyde CIDEX SPORICIDIN 2%	20 minutes	Kills: Gram-positives Gram-negatives TB Spores Viruses	Read manufacturer's directions	Use in a well-ventilated area. Rinse with distilled water. Expensive. Use only for fibre-optics, endoscopes, bronchoscopes

Note: Gram-positive organisms include *Streptococcus*, *Staphylococcus*, and others. Gram-negative organisms include *Escherichia coli*, *Klebsiella*, *Pseudomonas*, and others. Spores include *Clostridium* (gangrene and tetanus) and others. Viruses include measles, mumps, chickenpox, hepatitis and others.

Note 2: Chlorine disinfectant solution preparation

Best Practices for Environmental Cleaning in Healthcare Facilities in Resource-Limited Settings (Accessed 23 April 2020)

Appendix E – Chlorine disinfectant solution preparation

Example 1 — Using Liquid Bleach

Chlorine in liquid bleach comes in different concentrations. Any concentration can be used to make a dilute chlorine solution by applying the following formula:

$[\% \text{ chlorine in liquid bleach} / \% \text{ chlorine desired}] - 1 = \text{Total parts of water for each part bleach} \ddagger$

† "Parts" can be used for any unit of measure (e.g. ounce, litre or gallon) or any container used for measuring, such as a pitcher.

‡ In countries where French products are available, the amount of active chlorine is usually expressed in degrees chlorum. One degree chlorum is equivalent to 0.3% active chlorine.

Example: To make a 0.5% chlorine solution from 3.5%†‡ bleach:

$[3.5\% / 0.5\%] - 1 = 7 - 1 = 6$ parts water for each part bleach

Therefore, you must add 1 part 3.5% bleach to 6 parts water to make a 0.5% chlorine solution.

Example 2 — Using Bleach Powder

If using bleach powder†, calculate the amount of bleach to be mixed with each litre of water by using the following formula:

† When bleach powder is used; the resulting chlorine solution is likely to be cloudy (milky)

$[\% \text{ chlorine desired} / \% \text{ chlorine in bleach powder}] \times 1\,000 = \text{Grams of bleach powder for each litre of water}$

Example: To make a 0.5% chlorine solution from calcium hypochlorite (bleach) powder containing 35% active chlorine:

$[0.5\%/35\%] \times 1\,000 = 0.0143 \times 1\,000 = 14.3$

Therefore, you must dissolve 14.3 grams of calcium hypochlorite (bleach) powder in each litre of water used to make a 0.5% chlorine solution.

Example 3 — Formula for Making a Dilute Solution from a Concentrated Solution

Total Parts (TP) (H₂O) = $[\% \text{ Concentrate} / \% \text{ Dilute}] - 1$

Example: To make a 0.1% chlorine solution from 5% concentrated solution.

Calculate TP (H₂O) = $[5.0\% / 0.1\%] - 1 = 50 - 1 = 49$

Take 1 part concentrated solution and add to 49 parts boiled (filtered if necessary) water.

(Source: AVSC International (1999). Infection Prevention Curriculum. Teacher's Manual. New York, p.267. Interim Infection Prevention and Control Guidance for Care of Patients with Suspected or Confirmed Filovirus Haemorrhagic Fever in Health-Care Settings, with Focus on Ebola [PDF – 24 pages], p. 24. <https://www.who.int/csr/resources/publications/who-ipc-guidance-ebolafinal-09082014.pdf>)

4.10. Transmission-based precautions (TBP)

Transmission-based precautions are designed for use on patients who are diagnosed with, or suspected to have, a specific infectious pathogen transmitted by contact, airborne or droplet routes. These are used in conjunction with Standard Precautions.

The application and combination of TBP depends on the infectious agent involved. Whether used singularly or in combination they are always used in addition to Standard Precautions. Table 9 provides the recommended TBP to apply for specific infectious agents/diseases.

The combination measures for additional precautions involve the following:

- Continued implementation of standard precautions
- Dedicated patient equipment
- Allocation of single rooms or cohorting of patients with the same infection
- Restricted visitors and transfer of patients
- Enhanced environmental cleaning and use of disinfectant in the patient environment

4.10.1. Airborne precautions

Transmission occurs when HCW's inhale particles containing the infectious agent that are disseminated in the air. Micro-organisms carried this way can be widely dispersed via air currents and can remain infectious in the environment for long periods before being inhaled by or deposited onto the susceptible host.

The following airborne precautions should be implemented:

- Patients should be placed in a negative pressure room with doors closed. If a negative pressure room is unavailable, place in a single room (doors closed) with open windows for natural ventilation, and use a fan (blowing out toward the window) to control the direction of air flow
- Particulate masks (N95) should be worn by HCWs and visitors upon entry into the room in addition to standard precautions
- Patients should be moved as little as possible out of the room, but if movement is necessary, the patient should wear an N95 mask to minimise dispersion of airborne nuclei
- A sign should be placed on the patient's door explaining the necessary precautions

4.10.2. Droplet precautions

Transmission occurs when droplets containing micro-organisms/infectious agents come in contact with HCW's hands and are transferred to the conjunctivae of the eye, nasal mucosa, or mouth of a susceptible person. Droplets distribution is limited by the force of expulsion and gravity (not air movement), usually one metre or less.

The following droplet precautions should be implemented:

- Surgical masks (not N95) should be worn by healthcare workers and visitors upon entry into the room in addition to standard precautions
- Patients should be kept in a single room with the closed door or cohort patients infected with the same infectious agents together in a room with good ventilation
- If the patient is transported out of the room, then they should wear a surgical mask
- A sign should be placed on the patient's door explaining the necessary precautions

4.10.3. Contact precautions

Contact precautions relates to:

- **Direct contact** transmission involves direct physical transfer of micro-organisms from an infected or colonised person to a susceptible host via the contaminated hands and clothing of HCW's
- **Indirect contact** transmission involves a susceptible person coming in contact with a contaminated (usually inanimate) object, such as a contaminated instrument or equipment, e.g. when patient care contaminated equipment/devices are shared between patients.

The following contact precautions should be implemented:

- HCW must wear a clean, non-sterile disposable gown and clean non-sterile gloves when they are in contact with the patient, environmental surfaces and patient care items and equipment in the patient's room in addition to standard precautions
- The patient should be kept in a single room with the closed door or cohort with other patients infected with the same pathogen
- A sign should be placed on the patient's door explaining the necessary precautions

4.10.4. Patient placement

Isolating patients who require TBP is very important in preventing the transmission of infection.

There should be 1–2 meters space between all patient beds to reduce the risk of cross infection. If single rooms are not available, patients with the same pathogen should be kept together in either a room or a ward. The room or ward should be in a well-defined area that is clearly separated from other patient care areas used for uninfected patients.

Other points relevant to patient placement include the following:

- Keep all patient notes and charts (vital signs, fluid balance) outside the room
- Keep doors closed
- Place clear signage outside the room
- Perform HH after leaving the room and after writing in patient charts or notes
- Restrict visitors

4.10.5. Preparation of the isolation room/ward

The goal in preparedness is to create a safe working environment for both clinical and non-clinical staff by ensuring the implementation of standard and transmission based precautions:

- A sign should be placed on the patient's door explaining the necessary precautions
- Remove unnecessary furniture and keep only the necessary furniture that can be easily cleaned
- Stock linen
- Stock hand hygiene products (e.g. liquid soap, alcohol-based products, paper towels)
- PPE should be available
- Sharps container should be placed inside the isolation room
- Garbage bags and bins should be placed in the isolation room
- Trolley to hold PPE Container for collection of used eye shields to be decontaminated.
- Recording sheet should be placed at the entrance of the isolation room so that staff can record the names and contacts of visitors that enter the isolation room so that contact tracing is possible if necessary

The following guidance points could be considered as minimum steps when setting up an isolation room/ward:

- If the room is air-conditioned, ensure 12 air changes/ hour and filtering of exhaust air. A negative pressure in isolation rooms is desirable for patients requiring aerosolization procedures (intubation, suction nebulisation). These rooms may have stand-alone air-conditioning. These areas should not be a part of the central air-conditioning.
- If air-conditioning is not available negative pressure could also be created through putting up 3-4 exhaust fans driving air out of the room or where there is sufficient space, natural ventilation may be followed. Such isolation ward/room should have large windows on opposite walls of the room allowing a natural unidirectional flow and air changes. The principle of natural ventilation is to allow and enhance the flow of outdoor air by natural forces such as wind from one opening to another to achieve the desirable air change per hour
- Ensure adequate supplies of PPE and HH supplies
- Doctors, nurses, non-clinical staff and paramedics posted to the isolation ward need to be dedicated and not to be allowed to work in other patient-care areas and all health staff involved in patient care should be well trained in the use of PPE

- Ensure regular cleaning and proper disinfection of common areas, and adequate hand hygiene by patients, visitors and care givers
- Visitors to the isolation facility should be restricted. For unavoidable entries, they should use PPE according to the hospital guidance, and should be instructed on its proper use and in hand hygiene practices prior to entry into the isolation room/area
- A telephone or other method of communication should be set up in the isolation room/area to enable patients or family members/visitors to communicate with nurses

4.10.6. Isolation Area

The isolation area should have a low risk and high risk zone. The low risk zone should include:

- A “clean” area for health workers to store consumables and supplies of PPE, stationaries, HH and medicine supplies etc
- There should be clear instructions on the flow between areas
- Restriction movement signage
- A dedicated changing space in this area allocated to PUT ON PPE

Patient isolation room or ward area is a high risk zone and should:

- Be well ventilated with an adjoining bathroom and toilet facilities
- Have HH facilities including ABHR
- Have beds separated in distance 1 meter apart (3 feet)
- Have sharps container
- Container for used linen and other contaminated waste
- Avoid sharing of equipment, but if unavoidable, ensure that reusable equipment is disinfected between
- A dedicated area for contaminated disposal of:
 - liquid and solid waste
 - storage of used linen

A dedicated area just outside the isolation room/ward to:

- TAKE OFF PPE, this must be done under the supervision of a trained buddy
- Have supplies for HH
- Have containers for contaminated and reusable PPE
- A container for decontaminating boots if necessary

Figure 6: General principles of an isolation unit

General principles of an isolation unit

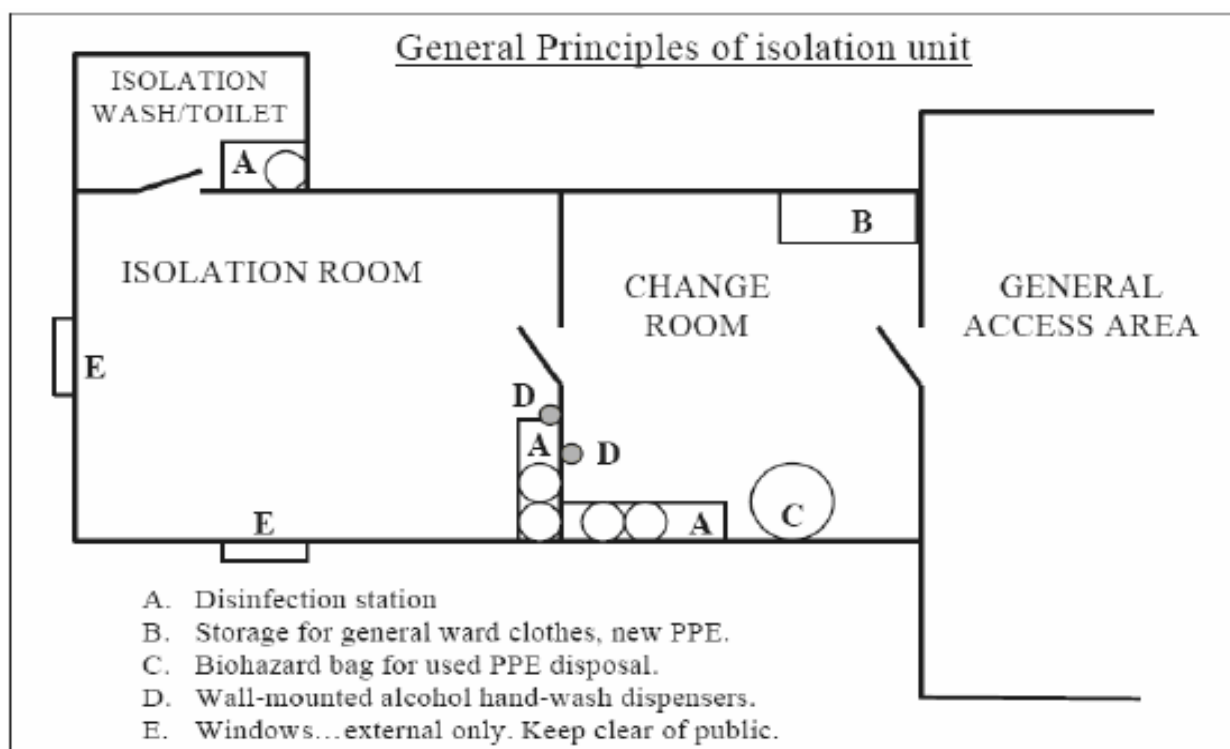


Table 9: Recommended infection control precaution guideline

Isolation Type	Standard precautions	Airborne precautions	Droplet precautions	Contact precautions
Diseases (examples)	All patients All blood, Body Fluids Secretions (except sweat), excretions and contaminated items	<ul style="list-style-type: none"> • TB suspect/confirmed • Measles • Varicella (chicken pox) • SARS • MDR TB • Influenza (when performing procedures that are aerosol generating) • COVID-19 (during aerosolising procedures) 	Haemophilus influenza meningitis/ epiglottitis <i>Neisseria meningitides</i> septicaemia/meningitis diphtheria (pharyngeal) mycoplasma (pneumonia) Pertussis Influenza Parainfluenza Mumps Parvovirus B19 Rubella Pneumonic plague Group A streptococcal infections in infants and young Group A Streptococcal pneumonia, scarlet fever in all groups viral haemorrhagic fever Filovirus disease (Ebola and Marburg) SARS, MERS-CoV COVID 19 Crimean-Congo haemorrhagic fever Lassa fever	<ul style="list-style-type: none"> • Resistant bacteria (MRSA, VRE, <i>C. difficile</i>, RSV) • Herpes simplex (neonatal or mucocutaneous) • Highly contagious skin infections (e.g. scabies, lice, impetigo) • Herpes zoster (shingles), localised and disseminated • Infants/young children (<6 years old), or any patient inconsistent with: <ul style="list-style-type: none"> - Enterovirus - Hepatitis A - Rotaviral enteritis - Shigella, gardia, other forms of gastroenteritis • Viral haemorrhagic fever • Influenza • Norovirus • Ebola/Marburg, Crimean-Congo haemorrhagic fever, Lassa fever • SARS, MERS-CoV
Single room	No	Yes-keep door closed; If unavailable, may cohort with patients with same organism	Yes-keep door closed If unavailable, may cohort with patients with same organism	Use if possible, or cohort with patient with similar condition
Negative pressure room	No	Yes	No	No
Hand Hygiene	Yes	Yes	Yes	Yes
Gloves	For body substances	See standard precautions	Yes	Yes
Gown or coverall	If soiling likely	See standard precautions	Yes	Yes
Apron	Yes	Yes	Yes	Yes
Mask	Protect face if splash likely	Yes (particulate mask N95)	Yes	See standard precautions
Goggles/face shields	Protect face if splash likely	See standard precautions	See standard precautions	See standard precautions
Head cover	Use based on risk of exposure from infectious agent			
Special handling of equipment	Gloves for handling equipment contaminated with blood and body fluids	See standard precautions	See standard precautions	See standard precautions
Transport of patients	Cover all patient's open wounds	Mask for patient; Notify area receiving Patient	Regular mask for patient; Notify area receiving patient	Notify area receiving patient
Room cleaning	Standard cleaning protocol	Enhance additional cleaning with disinfectant depending on micro-organism See infection control nurse	Enhance additional cleaning with disinfectant additional cleaning depending on micro-organism See infection control Nurse	Enhance additional cleaning with disinfectant depending on micro-organism See infection control nurse

4.10.7. COVID 19 TBP

Strategies to prevent or limit transmission of COVID-19 in healthcare settings include the following:

1. Ensuring effective triage, early recognition, and source control (separating and isolating patients with suspected COVID-19).
2. Establishing a COVID-19 case definition on which to base case investigation and clinical management pathways. Develop contact tracing, line lists, patient and healthcare worker COVID-19 surveillance processes.
3. Activation of relevant emergency response committees to ensure a coordinated approach and risk communication.
4. Applying standard precautions for all patients with an emphasis on hand hygiene, correct donning and doffing of PPE, environmental disinfection and waste management processes.
5. Implementing additional precautions (droplet and contact and, whenever applicable, airborne precautions) for suspected cases of COVID-19.
6. Implementing administrative controls to support education, risk communication and resourcing.
7. Using environmental and engineering controls to ensure quarantine and isolation facilities are fit for purpose.

Triage, early recognition, surveillance, case identification and contact tracing

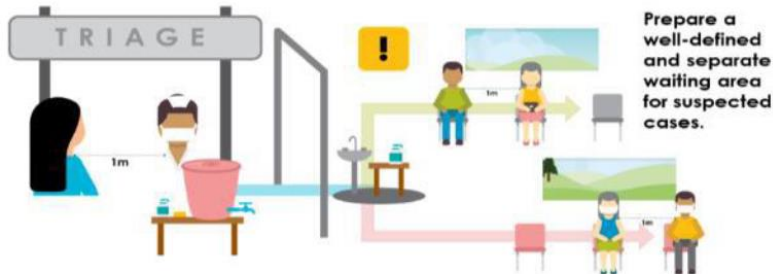
Triage is a system for assessing all patients at presentation facilitating the early recognition of potential COVID-19 cases and the initiation of a rapid response, case investigation and contact tracing processes. Healthcare facilities need pre-triage assessment areas. The area is a filter for patients attending Outpatients Department and Emergency services. The aim is to capture any patients with significant signs and symptoms before entering the facility. These patients need to be assessed separately to the normal clinics and tested. The immediate response will be applying a medical mask to the patient and isolation of patients with suspected or confirmed disease in an area separate from other patients (source control). Decisions as to whether to admit patients or to advise them to self-isolate at home will be a local clinical decision in line with nationally agreed guidelines and protocols, and part of national COVID-19 preparedness and response plans. The pre-triage facility must have appropriate IPC procedures.

To facilitate the early identification and ongoing management of suspected COVID-19 cases, healthcare facilities need to:

- Establish well-equipped COVID-19 triage and screening stations at the entrance to the facility, which are supported by staff trained in the use of screening tools according to the updated case definition. Please refer to the WHO Global Surveillance for human infection with COVID 19 for case definitions.
- Provide healthcare workers (HCWs) with relevant education and training which support early identification and referral of suspected cases.
- Increase surveillance and reporting mechanisms for influenza like illness (ILI) and severe acute respiratory illness (SARI) at both the community clinics and tertiary health service level.
- Ensure adequate resource allocation for case investigation and contact tracing teams.
- Establish a well-equipped triage station at the entrance to the facility, supported by trained staff – see figure 1 below, adhering to IPC procedures.
- Develop country appropriate risk communication tools to display in healthcare and community settings which alert patients of the signs and symptoms of COVID-19 and how to notify healthcare workers.
- Ensure a coordinated approach to communication, reporting and evaluation of the planning and response activities are incorporated into the outbreak/pandemic response plan.

Have a triage station at the healthcare facility entrance, prior to any waiting area, to screen patients for COVID-19. This limits potential infection throughout the health care center.

Post information, like posters and flyers, that remind patients and visitors to practice good respiratory and hand hygiene.



Have alcohol-based hand rub or soap and water handwashing stations readily available for the use of healthcare workers, patients and visitors.

Be alert for anyone that may have symptoms such as cough, fever, shortness of breath, and difficulty breathing.

Source: Papua New Guinea Emergency Preparedness and Response Plan Coronavirus disease 2019 (COVID 2019)

Standard precautions should be practiced for suspected or confirmed COVID-19 patients in accordance with the procedures outlined in Chapter 4. The type of PPE used when caring for people with COVID-19 will vary according to the setting, type of personnel and activity. Healthcare workers involved in the direct care of patients should use gowns, gloves, medical masks and eye protection (goggles, face shields). The diagram below shows a visual guide to safe PPE.

A visual guide to safe PPE



Contact and droplet precautions

- in addition to using standard precautions, all individuals, including family members, visitors and HCWs (healthcare workers), should use contact and droplet precautions before entering the room of suspected or confirmed COVID-19 patients;
- patients should be placed in adequately ventilated single rooms. For general ward rooms with natural ventilation, adequate ventilation is considered to be 60 L/s per patient;
- when single rooms are not available, patients suspected of having COVID-19 should be cohorted;
- all patients' beds should be placed at least 1 metre apart regardless of whether they are suspected to have COVID-19;
- where possible, a team of HCWs should be designated to care exclusively for suspected or confirmed cases to reduce the risk of transmission;
- HCWs are to don appropriate PPE for droplet and contact precautions. The use of boots and coveralls is not required during routine care;
- after patient care, appropriate doffing and disposal of all PPE and hand hygiene should be carried out as per Section 4.2.
- PPE is to be changed between patient care, unless extended use of PPE processes are adopted (Annex 5).
- equipment should be either single-use and disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers). If equipment needs to be shared among patients, clean and disinfect it between use for each individual patient (e.g. by using ethyl alcohol 70%) or another approved disinfectant as per manufacture instructions.
- HCWs should refrain from touching eyes, nose, or mouth with potentially contaminated gloved or bare hands.

Transportation of Patients

- avoid moving and transporting patients out of their room or area unless medically necessary. Use designated portable X-ray equipment, if available, or other designated diagnostic equipment. If transport is required, use predetermined transport routes to minimize exposure for staff, other patients and visitors, and have the patient wear a medical mask.
- ensure that HCWs who are transporting patients perform hand hygiene and wear appropriate PPE as described in this section.
- notify the area receiving the patient of any necessary precautions as early as possible before the patient's arrival.
- routinely clean and disinfect surfaces with which the patient is in contact.

Additional airborne precautions required for aerosol-generating procedures.

Aerosol-generating procedures, such as tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation and bronchoscopy, have been associated with an increased risk of transmission of coronaviruses.

Considerations for performing aerosol-generating procedures:

- identify an adequately ventilated room or designated room or area to conduct aerosol-generating procedures. This may be a room with natural directional ventilation towards the outside of the room to areas of low traffic; in a room with air flow of at least 160 L/s per patient or in negative-pressure rooms with at least 12 air changes per hour and controlled direction of air flow;
- use a certified N95 or P2 respirator mask and conduct seal check, note that facial hair (e.g. a beard) may prevent a proper respirator fit.
- use eye protection (i.e. goggles or a face shield);
- wear a clean, non-sterile, long-sleeved gown and gloves. If gowns are not fluid resistant, HCWs should use a waterproof apron for procedures expected to create high volumes of fluid that might penetrate the gown; and
- limit the number of persons present in the room to the absolute minimum required for the patient's care and support.

Chapter 5: SPECIAL HEALTHCARE AREAS

Some areas of a healthcare facility require very specific Infection Prevention Control measures because of heightened risk of infection or because of the specific nature of the work undertaken.

This section covers:

- Operating theatres
- Laboratories
- Maternity units – labour suites
- Mortuaries

5.1. Operating theatres

Operating theatres should be located away from areas of the healthcare facility that are heavily travelled by staff and patients. Enclose the operating theatre to minimize dust, eliminate insects, and facilitate sterility and an environment conducive to the prevention of patient and healthcare worker infections. Surgical site infections are common and can be prevented based on standards of pre-, intra-, and post-operative care. Healthcare worker infections such as the acquisition of blood borne viruses can be prevented by safe practices in the operating theatre.

The following preconditions for the prevention of healthcare-associated infections (HAI) should be addressed by healthcare facility (HCF) leaders and managers, informed by the evidence-based information provided:

- Infrastructure/system change: access to the right equipment and supplies including PPE, and an operating theatre environment that is designed and planned to facilitate patient and healthcare (HCW) worker safety
- Training and education: a program of routine training and education and periodic retraining for all personnel involved in operating theatre work that is in line with the recommendations presented in this chapter
- Personnel should receive initial and ongoing education and competency validation as applicable to their roles
- Monitoring, evaluation and feedback: a program of regular monitoring, supervision, and feedback is in place
- Awareness raising/promotion: the practices described in the chapter are reinforced through awareness raising (e.g. use of posters displayed in the theatre areas)
- Safety culture: managers and leaders at every level of the HCF show their visible support for operating theatre safety to help develop and reinforce a culture of patient safety
- Policies and procedures should be developed, reviewed periodically, revised as necessary, and readily available in the practice setting

It is essential that the number and flow of visitors, patients, clients and staff should be regulated and kept to absolute minimum in the following areas of HCF:

- Preoperative and Recovery rooms i.e. areas where patients wait and where healthcare workers (HCW) examine and treat patients prior to and after being operated
- Operating theatres
- Procedure rooms where minor operations are performed, including their preoperative and recovery rooms
- Sterile Service Departments or areas designated for the decontamination of surgical instruments
- Storage areas for clean items/equipment and sterile instruments

Other standards are vital for safe operating environments and optimum patient outcomes, these include; PPE, hand decontamination (scrubbing), cleaning schedules, appropriately trained staff, storage and lay up of sterile equipment, ventilation (airflow), designated zones in the OT area, and reporting systems for any incidents.

Minor operation

The following applies to areas where minor medical procedures are performed on patients:

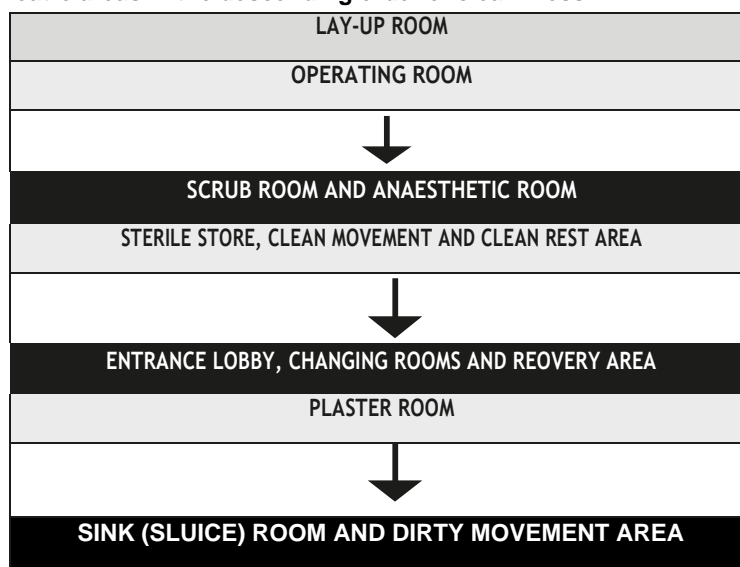
- Permit only the patient and staff performing and assisting with procedures in the procedure room
- The number of trainees should be kept to a maximum of two trainees per room
- Patients should wear clothing provided by the health-care facility if not available they may wear their own clean clothing (freshly laundered)
- Procedures should be performed adhering to the same sterility standards as operating theatres for optimal patient outcome and HCW safety

- Environmental cleanliness and equipment sterility should be ensured (see subsequent sections)

5.1.1. Operating theatre areas

The OT is routinely divided into four designated areas according to its descending order of cleanliness, from clean to dirty.

Figure 1: Operating theatre areas in the descending order of cleanliness



(Source: Damani NN. Manual of Infection Prevention and Control. Oxford: Oxford University Press, 2012.)

The absolute minimum requirement for safe operating is; an area to scrub in preparation for surgery, this should be separated by a partition from the main theatre. The main theatre must be a well-ventilated clean, clutter free, only essential operating and resuscitation equipment, with clear designated areas of work to reduce contamination in critical (clean) areas of the theatre.

There should be clearly demarcated, separate areas for instrument cleaning and sterilization and stored sterile instruments.

Environmental controls and the use of surgical attire increase as staff move from unrestricted areas. Staff with respiratory or skin infections or uncovered open sores should never be allowed to work in any area of the surgical unit.

Table 1: Theatre layout and examples of room locations

Unrestricted	Semi-restricted	Restricted	Dirty
Patient reception This area includes a central control point for designated personnel to monitor the entrance of patients, personnel and materials	The peripheral support areas of the surgical suite	Accessible only through a semi-restricted area Operating theatres	Disposal area All utilised material and linen are gathered, packaged and sent to appropriate areas
Locker rooms Lounges Offices	Clean storage and equipment rooms Scrub area Recovery room	Sterile supply Storage area Linen Anaesthetic workshop	Excised/amputated human parts/organs are gathered, packaged and sent to appropriate area

Operating theatre environment

Ventilation and temperature controls:

- Maintain operating theatres at positive pressure so that air flows from the cleanest areas to the least clean areas
- Maintain positive pressure ventilation with respect to corridors and adjacent areas
- Maintain a good ventilation
- Keep the temperature of the operating theatre between (68°F–75°F [20°C–23°C])
- Design operating theatres to introduce air at the ceiling with the exhaust near the floor
- If the operating theatre is not equipped with a positive-pressure system, focus on less expensive strategies, such as:
 - Keeping doors and windows closed
 - Keeping personnel to a minimum during a procedure and restrict personnel once the operation has started (unless it is absolutely essential)
 - Absolutely minimizing talking, moving, and opening and closing of doors

Cleaning:

- Clean the operating theatre between each patient, and at the beginning and end of each day
 - Always keep operating theatres clean, dry and dust free
 - Avoid unnecessary clutter to aid cleaning
- Do not clean any instruments in the operating theatre after an operation but rather send it to the designated decontamination area or the Sterile Supply Department
- Keep floors smooth, slip resistant and robust enough to withstand frequent washings and harsh cleaning/scrubbing
- Ensure that walls are water-impermeable, scrub able, and resistant to cracks
 - Walls should also be protected from impact by gurneys and other equipment coming to and from the operating theatre department
- Ensure that ceilings in operating theatres are smooth, washable, and made of a solid surface free from cracks and crevices
- Seal all ceiling-mounted lights or fixtures so that dust and contaminants cannot enter through these openings and so that there is no compromise to the ventilation system
- It is permissible to use lay-in ceilings in semi-restricted and unrestricted areas, including recovery and holding areas; however, lay-in ceilings are not permitted in operating theatres
- The theatre should be free of all items other than the equipment necessary to perform the surgical procedures. There should be no clutter

Instrument sterilisation and storage:

The decontamination unit should be one-way flow from dirty to disinfected / sterile. The clean and dirty areas should be clearly demarcated. Decontaminated instruments should be stored in a clean dry area, appropriately packaged and sealed to prevent contamination prior to use.

5.1.3. Preparation of the patient

Surgical antibiotic prophylaxis: It is essential that each healthcare facility develop local surgical antibiotic prophylaxis policy based on international guidelines. Antibiotic prophylaxis should be considered for:

- clean surgery involving the placement of a prosthesis or implant
- clean-contaminated surgery
- contaminated surgery
- surgery on a dirty or infected wound (requires antibiotic treatment in addition to prophylaxis)

The antibiotics selected for prophylaxis must cover the expected pathogens for that operative site. Narrow spectrum, less expensive antibiotics should be the first choice for prophylaxis during surgery. A single dose of intravenous antibiotic with a long enough half-life to achieve activity throughout the operation is recommended and this should be given within 60 minutes before the skin is incised. Prolonging of antibiotic prescription should be avoided during the post-operative period in the absence of an infection.

- *Preoperative shaving:* Hair should not be removed at the operative site unless the presence of hair will interfere with the operation. Preoperative shaving especially with a razor should be avoided because shaving can cause small nicks and breaks, leaving the skin bruised and traumatized, increasing the risk of colonization and infection. If hair is to be removed from the operative site, only the area needing to be incised should be shaved.

If hair removal is necessary, use clippers: use of a razor must be avoided. Removal of hair, if necessary, should be done immediately before surgeons perform the incision, not the night before surgery.

- *Preoperative showers:* It is preferable that the patient has been instructed to shower or bathe the night before an operative procedure.
- Sterile drapes should be applied after proper asepsis which must be maintained throughout the surgical procedure.
- The patient identity (e.g. name and date of birth) and allergy status should be confirmed, along with any other risk factors (e.g. risk of significant bleeding), and the site of the surgery should be marked.

CLASS I/CLEAN:	An infected operative wound in which no inflammation is encountered and the respiratory, alimentary, genital, or uninfected urinary tract is not entered. In addition, clean wounds are primarily closed and, if necessary, drained with closed drainage. Operative incisional wounds that follow non penetrating (blunt) trauma should be included in this category if they meet the criteria.
CLASS II/CLEAN-CONTAMINATED	An operative wound in which the respiratory, alimentary, genital, or urinary tracts are entered under controlled conditions and without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided no evidence of infection or major break in technique is encountered.
CLASS III/CONTAMINATED	Open fresh accidental wounds. In addition, operations with major breaks in sterile technique (e.g. open cardiac massage) or gross spillage from the gastrointestinal tract, and incisions in which acute, no purulent inflammation is encountered are included in this category.
INFECTED	Old traumatic wounds with retained devitalized tissue and those that involve existing clinical infection perforated viscera. This definition suggests that the organisms causing post-operative infection were present in the operative field before the operation

5.1.4. Preparation of the surgical team

It is important to reduce to a minimum the level of resident and transient flora on the hands and forearms prior to performing any surgical procedure. The purpose of antiseptic solutions such as Chlorhexidine gluconate or iodophors is to reduce the microbial load significantly and suppress regrowth for as long as possible thus reducing the risk of contamination at the operating site.

Surgical hand scrub





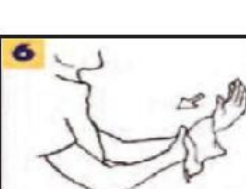

Proper surgical hand scrubbing for 3-5 minutes and the wearing of sterile gloves and a sterile gown provide the patient with the best possible barrier against pathogenic bacteria in the environment and against bacteria from the surgical team. A surgical hand decontamination (scrub) should be undertaken before every invasive procedure.

To ensure effective surgical hand decontamination (scrub):

- Hands must be well cared for, any abrasions covered with water resistant dressings and nails must be clean and kept short. False nails or nail polish should not be worn
- Nail brushes should not be used, they can actually raise the bacterial count
- All jewellery should be removed before entering the scrub area. Wearing of jewellery, including earrings, watches, and rings, encourages persistence of high bacterial counts on skin surfaces
- Staff should wear short sleeved shirts / scrubs to allow thorough decontamination of the forearms

If antiseptic solution is not available, antiseptic soap should be used (see Fig 2 for procedure). Running water is preferred; however, when no running water is available, use a bucket with a tap that can be turned off, to lather hands, and turned on again (by a buddy) for rinsing, or use a buddy to pour the water with a scoop.

Figure 2: Surgical hand scrub procedure (antiseptic solution and water)

	<ol style="list-style-type: none"> 1. Remove jewelry and watch. Wedding rings harbour bacteria and must be removed when scrubbing, whenever possible 2. Hold hands above the level of the elbow and wet hands thoroughly
	<ol style="list-style-type: none"> 3. Keep short nails at all the time DO NOT use scrubbing brush
	<ol style="list-style-type: none"> 4. Holding your hands up above the level of your elbow, apply the antiseptic liquid. 5. Wash following the 7 steps for hand hygiene 6. Thoroughly wash the wrists and forearms moving from the hand to the elbow <p>Continue washing in this way for 3-5 minutes</p>
	<ol style="list-style-type: none"> 7. Rinse each arm separately, fingertips first, holding your hands above the level of your elbow. Do not let rinse water flow over clean area. Water should flow from area of least contamination to area of most contamination
	<ol style="list-style-type: none"> 8. Using a sterile towel, dry your hands and arms thoroughly– from fingertips to elbow - using a different side of the towel on each arm <p>Surgical hand antiseptis - antiseptic handwash or antiseptic handrub</p>
	<ol style="list-style-type: none"> 9. Keep your hands above the level of your waist and do not touch anything before putting on sterile gown and gloves <ul style="list-style-type: none"> • Contact with soiled objects contaminates clean hands. The area below the level of the waist is considered unclean • Handwashing - action of performing hand hygiene for the purpose of physically or mechanically removing dirt, organic material, and/or microorganisms

Surgical hand scrub with ABHR

Several ABHR have been licensed for use as preoperative surgical hand preparations. The antimicrobial efficacy of ABHR formulations is superior to all other currently available products. It is essential that before applying ABHR, the hands of the surgical team should be cleaned upon entering the operating theatre by washing the hands with soap and running water. To optimise the efficacy of ABHR for surgical scrub it is essential that:

- Before applying ABHR, hands must be completely dry (See Fig. 3 below)
- When applying ABHR, hands should be wet from the alcohol based rub during the whole procedure, which requires approximately 15 mL (depending on the size of the hands) and requires a total of 3 minutes.

Use of an ABHR for surgical hand disinfection has several advantages over antiseptic solution and water which include; rapid action, time saving, fewer side effects, and non-risk of recontamination by rinsing hands with water.

Figure 3: Surgical hand scrub with ABHR

The handrubbing technique for surgical hand preparation must be performed on perfectly clean, dry hands. On arrival in the operating theatre and after having donned theatre clothing (cap/hat/bonnet and mask), hands must be washed with soap and water. After the operation when removing gloves, hands must be rubbed with an alcohol-based formulation or washed with soap and water if any residual talc or biological fluids are present (e.g. the glove is punctured).

Surgical procedures may be carried out one after the other without the need for handwashing, provided that the handrubbing technique for surgical hand preparation is followed (Images 1 to 17).



1
Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your left hand, using the elbow of your other arm to operate the dispenser



2
Dip the fingertips of your right hand in the handrub to decontaminate under the nails (5 seconds)



3
Images 3–7: Smear the handrub on the right forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10–15 seconds)



4
See legend for Image 3



5
See legend for Image 3



6
See legend for Image 3



7
See legend for Image 3



8
Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your right hand, using the elbow of your other arm to operate the dispenser



9
Dip the fingertips of your left hand in the handrub to decontaminate under the nails (5 seconds)



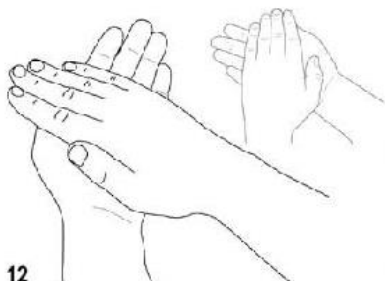
10

Smear the handrub on the left forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10-15 seconds)



11

Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your left hand, using the elbow of your other arm to operate the distributor. Rub both hands at the same time up to the wrists, and ensure that all the steps represented in Images 12-17 are followed (20-30 seconds)



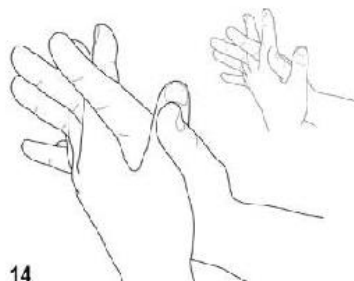
12

Cover the whole surface of the hands up to the wrist with alcohol-based handrub, rubbing palm against palm with a rotating movement



13

Rub the back of the left hand, including the wrist, moving the right palm back and forth, and vice-versa



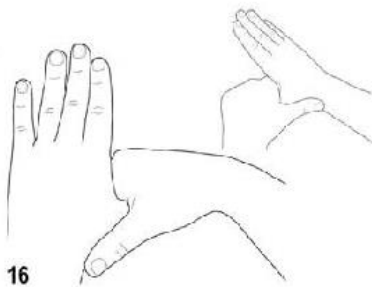
14

Rub palm against palm back and forth with fingers interlinked



15

Rub the back of the fingers by holding them in the palm of the other hand with a sideways back and forth movement



16

Rub the thumb of the left hand by rotating it in the clasped palm of the right hand and vice versa



17

When the hands are dry, sterile surgical clothing and gloves can be donned

Repeat the above-illustrated sequence (average duration, 60 sec) according to the number of times corresponding to the total duration recommended by the manufacturer for surgical hand preparation with an alcohol-based handrub.

Personal protective equipment (theatre attire)

- PPE is designed to minimize the transfer of microorganisms from the mucous membranes, skin and hair of the surgical team to the patient
- PPE provides the surgical team with some protection from the patient
- It is recommended that perioperative personnel in the semi-restricted and restricted areas wear facility-provided, clean, freshly laundered, or disposable surgical scrub attire
- When in the restricted areas, all non-scrubbed personnel should completely cover their arms with a long-sleeved scrub top or jacket (facility may require this in semi-restricted area as well)
- Perioperative personnel should change into surgical attire in designated dressing areas to decrease the possibility of cross-contamination
- Scrub attire and cover apparel (e.g., lab coats) should be laundered as per facility guidelines after each daily use and when contaminated
- Personnel should change back into street clothes if they need to leave the facility or travel between buildings in order to prevent contaminating the surgical attire through contact with the external environment

Gloves: Sterile gloves of good quality and the correct fit/size must be worn

Disposable hats/hoods: Should completely cover the hair (including facial hair and sideburns) and must be worn when entering the semi-restricted and restricted area. This is particularly important for arthroplasty/prosthetic implant surgery.

Masks: Scrub team must wear surgical masks to completely obscure the mouth and nose. They should be removed by the tapes and discarded at the end of each case. Masks must be removed prior to leaving the theatre suite. High efficiency masks e.g. N-95 masks (fluid repellent) must be available in theatre for procedures where there is a risk of exposure to TB or other airborne pathogens.

Eye Protection: Full face shields/visors or protective goggles must be available for all staff and must be worn during invasive procedures that potentially generate splashing. Face shields/visors, goggles should either be disposable or decontaminated according to manufacturer's instructions after use. If magnifying loupes are available, visors cannot be used. Loupes should, therefore, be fitted with side shields.

Scrub gowns: The scrub team should either wear disposable fluid repellent gowns or reusable gowns that are provided by the organization and returned for laundering.

Footwear: Staff should wear closed toe non-slip footwear. Boots should be worn if there is a high risk of heavy blood/body fluid loss. Staff should not leave the operating theatre wearing shoes that are visibly stained.

Use of Cover gowns: Use of cover gowns can be determined using a risk assessment. Cover gowns have been found to have little or no effect on reducing contamination of surgical scrubs but if used, should be laundered daily.

5.1.5 Before surgical procedures

Before surgical procedures, set up the operating theatre as follows:

- Organize Mayo and ring-stand tables side by side in an area away from the traffic pattern and at least 45 centimetres from walls, cabinets, and other non-sterile surfaces
- Cover the Mayo stand and other non-sterile surfaces that are to be used during the procedure with a sterile towel or cloth
- Check and set up suction, oxygen, and anaesthesia equipment
- All theatre personnel should be clear on their roles and responsibilities
- Make sure that a clean sheet, a canvas, and arm-board covers are available, if required (place them on the operating theatre table)
- Make sure that supplies and packages that are ready to open are placed on the tables (not on the floor)
- Ensure that the operating theatre has:
 - A leak-proof covered waste container with appropriate bin liner for contaminated waste items

- A puncture-resistant container for the safe disposal of sharps at the point of generation that does not contaminate the sterile field
- A leak-proof covered container for soiled linen away from sterile items
- All sterile items to be used during an operative procedure must be opened in a manner so as to avoid any possible contamination to prevent surgical infections
- Sterile items must be covered with sterile drape when not in use to avoid contamination

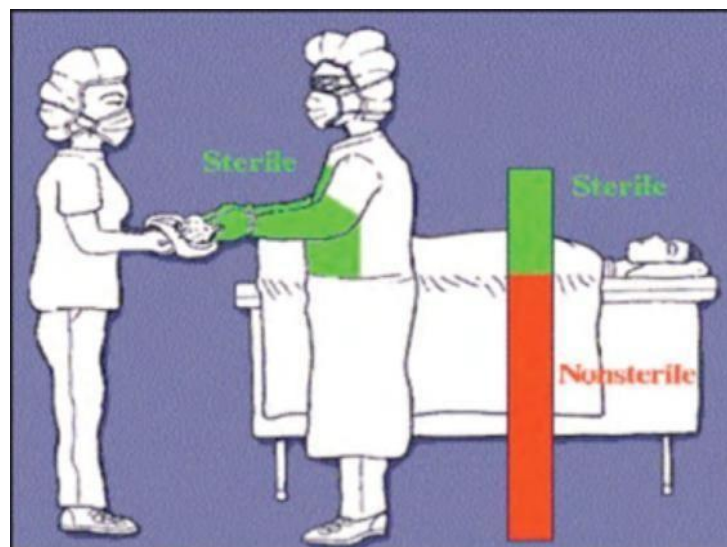
5.1.6. During surgical procedures

- Scrubbed staff should wear full surgical attire i.e., scrub suits, plastic aprons, clean caps and masks, protective eyewear, clean and closed theatre shoes, and sterile surgical gloves
- Scrubbed staff should keep their arms and hands within the operative field at all times
- Non-scrubbed staff should wear surgical attire (i.e. caps, clean and closed theatre shoes), protective eyewear; and mask
- Non-scrubbed staff should stay at the periphery of the operating theatre
- Blood or body fluid spillages should be absorbed with towels, preferably disposable, and cleaned
- Maintain the patient's temperature above 36°C (excluding cardiac surgery)
- Patients who are diabetic should have their blood glucose levels at <11mmols/l
- Patients' haemoglobin (Oxygen) saturation should be maintained above 95%
- At the end of the surgery, the wound site should be covered by a sterile dressing
- Accurate records must be kept of the surgical proceedings, (e.g., instruments/equipment used, medications administered)

Creating and maintaining a sterile field:

- A sterile field is an area created by placing sterile towels or surgical drapes around the procedure site and on the stand that will hold sterile instruments and other items needed during the procedure
- Only sterile objects and personnel dressed in sterile attire should be allowed within the sterile field
- A properly gowned and gloved provider's sterile area extends from the chest to the level of the sterile field
- Areas below the level of the draped patient are considered non-sterile
- Only sterile items are free of potentially harmful microorganisms
- Once a sterile object comes in contact with a non-sterile object, person, dust, or other airborne particles, the object is no longer considered sterile

Figure 4: Maintaining a sterile field



If even one non-sterile object or person enters the sterile field, the field is no longer sterile (e.g., sterile objects become contaminated if the object is touched with a bare hand, if the object comes in contact with dust or other airborne particles, or if the object is held below the level of the sterile field).

Place only sterile items within the sterile field:

- The edges of a package containing a sterile item are considered unsterile
- Do not contaminate sterile items when opening, dispensing, or transferring them
- Consider items located below the level of the draped patient to be unsterile
- Do not allow non-sterile personnel to reach across the sterile field or to touch sterile items
- Open, dispense, and transfer items without contaminating them
- Do not place sterile items near open windows or doors
- Recognize and maintain the service provider's sterile area
- If a sterile barrier has been wet, cut, or torn, consider it contaminated
- Be conscious of where your body is at all times, and move within or around the sterile area
- When in doubt about whether something is sterile, consider it contaminated

If your gloves become contaminated:

- Stop whatever you are doing and step away from the sterile field
- Promptly change a glove punctured during an operation and rinse your hand with antiseptic or re-scrub if the glove has leaked during the puncture
- If your ungloved hands are soiled with blood or other matter, perform surgical hand scrub and put on new sterile gloves and new sterile gown

To avoid contaminating solutions:

- Never leave cotton balls, cotton wool, or gauze sponges soaking in antiseptic solutions
- Repeated dipping of forceps or fingers into the container to pick up the items will contaminate the solution and the items
- Never dip cotton or gauze into the main antiseptic container- instead either:
 - Pour the amount of antiseptic needed into a small container and dip the cotton or gauze into it - Discard any antiseptic remaining in this container after use for each patient, or
 - Pour the antiseptic from the container directly onto the cotton or gauze, making sure not to touch the lip of the container with the cotton or gauze

Avoid administering the wrong solution/medication during a procedure:

- Label the solution container (e.g., if pouring a solution into a basin, label the basin with name and concentration of solution, if indicated)
- Dispose of solution at end of the case; do not save any contaminated solution for the next case
- Any medication to be delivered to the sterile field should be identified verbally by the circulator nurse with the label shown to the scrubbed person for confirmation

5.1.7 Theatre cleaning

Preparation of the operating theatre before the first case:

- All horizontal surfaces (e.g., furniture, surgical lights, equipment) should be damp-dusted with a clean, lint-free cloth moistened with 0.05% hypochlorite solution
- Equipment from areas outside of the operating theatre should be cleaned (e.g. with lint free cloth moistened in 0.05% hypochlorite solution before being brought into the operating theatre
- Equipment that cannot be cleaned should not be brought into the operating theatre

Between case cleaning:

- After the procedure ends and the patient has exited the room, the following personnel and areas are considered contaminated:
 - Members of the sterile team, all furniture, anaesthesia equipment, the floor immediately surrounding the focus area or patient area, and patient transport carts
 - Furniture and equipment that are visibly soiled should be cleaned with soap and water followed by disinfection with 0.05% hypochlorite solution following each procedure
 - Walls, doors, and surgical lights and ceilings should be cleaned if soiled with blood, tissue, or body fluids
- Anaesthesia equipment should be cleaned according based on the good practice international guidelines

- Floors that are visibly soiled must be cleaned using a new or freshly laundered mop head with soap and water followed by 0.05% hypochlorite solution
- Mechanical friction should be used when cleaning, the efficacy of the cleaning is dependent on the scrubbing action

Terminal cleaning:

- At the end of each day, thoroughly clean operating theatres- even if they have been cleaned between cases
- Terminally clean operating theatres in which procedures may be performed, regardless of use, every 24-hour period during the regular work week
- Terminally clean scrub/utility areas daily during the regular work week
- Clean and disinfect all exposed surfaces, including wheels and casters, of all equipment (e.g., foot pedals, kick buckets, telephones, light switches, push plates, Mayo stands, handles on cabinets, vents, walls, etc.)
- Place a special emphasis on cleaning and disinfecting high/hand touch surfaces
- Clean and disinfect the floor with a wet vacuum or single-use mop, moving equipment around the room to clean the floor underneath

5.1.8 Maintenance staff and other visitors

- Any visitors to the operating theatre must report to reception or the person in charge prior to entering the operating theatre complex
- Theatre staff will advise on the appropriate dress code required, per hospital policy

5.1.9 Waste

- All clinical waste should be placed in biohazard waste bags
- Biohazard waste bags should not be filled greater than 3/4 full and should be secured/tied to ensure an effective seal
- Heavily contaminated waste should be placed in double biohazard waste to prevent leakage
- Human body parts should be placed in an approved receptacle
- Sharps boxes must be used for all metal ware
- All suction equipment including liners must be changed in-between patients to prevent cross infection and fluid loss volume management in the container

5.1.10. Linen

- Contaminated linen must be placed in approved receptacle and sent for laundering
- Contaminated theatre clothes must be changed at the end of the case, bagged and sent to the laundry

Managing TB patients in OT

- Elective surgery on infectious TB patients should be postponed until such patients have received adequate drug therapy
- If emergency surgery is indicated, schedule the TB patient as the last surgical case to provide maximum time for adequate ACH (ventilation of the theatre), and allow terminal cleaning of the operating theatre
 - Operating theatre personnel should use a fluid repellent respirator mask (e.g., N-95)
 - Keep the operating theatre door closed after the patient is intubated, and allow adequate time for sufficient ACH to remove 99% of airborne particles (for rooms with 15 ACH, 18 minutes are required to achieve 99% removal of airborne particles)
 - Extubate the patient in the operating theatre or allow the patient to recover in an airborne infection isolation (AII) room rather than in the regular open recovery facilities
 - If AII room is not available, recover the patient in a well ventilated private room.
 - Breathing circuit filters with 0.1–0.2 µm pore size (if available) can be used as an adjunct infection control measure

5.1.12 After surgical procedures

After each surgical procedure, staff wearing utility gloves should clear the operating theatre:

- Collect all waste in closed, leak-proof containers and remove them from the room
- Close and remove puncture-resistant containers when they are three-quarters full
- Remove soiled linen, soiled instruments and equipment, and supplies that have been opened, but not used, in an enclosed cart for reprocessing

5.2. Clinical laboratories

Laboratory workers who handle blood or potentially infected body fluids are at risk of accidental injury or exposure to infectious material. Individuals working in clinical laboratories or research units that isolate or handle pathogenic microorganisms, such as microbiology, biochemistry, haematology, and histopathology/tissue pathology laboratories, are at risk of exposure to pathogens that may cause infection. Dependent on the microorganisms involved, this may range from asymptomatic or mild infection to life-threatening illness. The World Health Organization classifies infective microorganisms into four groups, depending on the level of risk they pose to humans.

Laboratory personnel and health care facility managers must be aware of the importance of laboratory safety. Adherence to standard precautions, primary barriers and secondary barriers are necessary to minimize the risk of laboratory-acquired infections and to promote a safe environment for all workers in the laboratory and elsewhere. This section covers specific IPC activities and is not a substitute for a laboratory hand book and detailed laboratory SOPs.

The following preconditions for prevention of HAIs should be addressed by HCF leaders and managers, informed by the evidence based information provided:

- **Infrastructure/system change:** Primary barriers range from simple measures, e.g., the availability and use of gloves, availability and use of other appropriate PPE and sealed centrifuge buckets, to more complex equipment, e.g. Biosafety cabinets. Good laboratory design and access to proper equipment is key. Access to occupational health support is also an important component in ensuring protection of laboratory personnel. Hazardous materials which may be harmful if handled improperly include equipment (e.g. needles, glass), chemical agents (e.g. acids, alkalis), and biological agents (e.g. clinical samples, microbial cultures).
- **Training and education:** a program of routine training and education and periodic retraining for all workers involved in laboratory work.
- **Monitoring, evaluation and feedback:** a program of regular monitoring and feedback is in place.
- **Awareness raising/promotion:** the practices described in the chapter are reinforced through awareness raising (e.g., use of posters displayed at the point of care).
- **Safety culture:** managers and leaders at every level of the HCF show their visible support for injection and phlebotomy safety and sharps injury prevention and reinforce a culture of patient safety.

5.2.1. Routes of Infection in the Clinical Laboratory

In order to appreciate and implement infection prevention and control recommendations in the work place, laboratory staff need to be aware of routes of transmission within the laboratory:

- **Inhalation:** Laboratory staff are at risk of infection from pathogens spread by aerosols generated by mechanical procedures such as mixing, grinding, blending/sonicating, centrifuging and pipetting.
- **Ingestion:** Infection via ingestion may occur when laboratory staff inadvertently place contaminated articles in the mouth, e.g. pens or pencils or fingers, consume food within the laboratory, and fail to adhere to good hand hygiene prior to eating or smoking, or mouth-pipette.
- **Inoculation:** Needles and sharps used in the laboratory pose both an injury risk (via direct inoculation of needle and laceration using sharps) and an infection risk (via inoculation). Scalpel blades used in histopathology/tissue pathology and microbiology laboratories and broken glassware may also transmit infections.

- **Skin and mucous membrane:** Splashing of skin from mechanical procedures and hand-to-face contact (e.g. rubbing eyes, biting nails) may result in transmission of pathogens via the mucous membranes of eyes, mouth, and nasal cavity.

5.2.2. General laboratory safety

All material of human origin (e.g. blood and body fluids, secretion/excretions and tissues) should be treated as potentially infectious. Laboratory workers should adhere to the following general safety practices:

- Access to the lab **must be limited** or restricted at all times. Use international biohazard sign for Laboratory door to restrict unauthorised visitors to the lab
- Children **must not** be authorized or allowed to enter laboratory working areas
- Do not store food or drinks in refrigerators that are used for reagents and clinical or research specimens. It is prohibited to wear protective laboratory clothing outside the laboratory, e.g. in canteens, coffee rooms, offices, libraries, staff rooms and toilets. Laboratory coats should be left in the lab when going on breaks, to lunch, or when leaving at the end of a shift and laundered per facility guidelines
- Eating, drinking, smoking, applying cosmetics and handling contact lenses is prohibited in the laboratory working areas
- Labels must not be licked
- Protective clothing such as laboratory coats should be worn at all times in the laboratory
- Open-toed footwear must not be worn in laboratories
- Wear appropriate gloves when handling and processing specimens, change gloves between tasks and do not touch “clean” surfaces (telephones, door handles, office desks, stationery, computer keyboards, etc.) with gloved hands. Once the task is finished, remove gloves carefully and discard in a designated laboratory waste and wash hands after removal of gloves. Use proper mechanical devices, such as suction bulbs or pipette for manipulating all liquids in the laboratory. **No mouth pipetting is permitted**
- Centrifuge **all** materials in sealed tubes inside a sealed centrifuge and do not open a centrifuge while it is in motion
- Always cover the end of blood-collection tubes with a cloth or paper towel, or point them away from anyone’s face when opening
- Clean and decontaminate work surfaces (0.05% ppm available chlorine) daily or when they become contaminated, such as after spills (0.5% chlorine)
- Wear facial and eye protection (face mask and goggles or face shield) if splashes and sprays of blood, body fluids, or fluids containing infectious agents are possible
- Wear heavy-duty or utility gloves when cleaning laboratory glassware
- Minimize use of sharps as much as possible. If used then handle sharps with care and dispose of them immediately after use in puncture-resistant, leak proof sharps containers located close to work areas
- Do not re-sheath needles after use, this is the most common cause of needle stick injury
- Place infectious waste materials in designated plastic bags or containers as per local guidelines
- Do not perform any procedures that generate aerosols in the open laboratory. Use appropriate biosafety cabinet for containment
- Adhere to appropriate laboratory SOPs
- Immediately report any injury or accident (e.g. sharps) to supervisor (**after first aid**) for medical attention
- Vaccinate all laboratory staff members against HBV and other vaccine preventable disease as per local policy

5.2.3 Hand hygiene

Hand hygiene is the most important procedure for preventing and controlling the spread of contamination. Laboratory workers must perform hand hygiene throughout their shift, including:

- Before going on duty
- Immediately after coming in contact with contaminated objects or surfaces
- After contact with patient specimens containing blood and body fluids, secretion/excretions and tissues
- After removing gloves
- Before eating and before and after using the restroom

- Before going off duty

5.2.4 Biosafety Practices

- Use appropriate prohibition sign in the lab on the wall as reminder to enforce to safe practice
- Doors to laboratory must be kept closed when infectious materials are in use to alert non lab personnel not to enter the laboratory
- Treat all specimens from all patients as potentially infectious
- All laboratories must make hand-washing facilities available (**at the entrance/s and**) in each procedure room
- Collect all specimens for laboratory examination carefully using standard precautions
- Transport **all specimens** to the laboratory in a well-constructed robust leak proof container with a secure lid to prevent breakage, leakage and/or spillage during transport
- A requisition form issued by the department that is requesting testing must accompany all specimens submitted to the laboratory
- Tightly seal the caps of all containers and place them in a plastic bag and the requisition forms must be kept separately. Don't wrap requisition forms around the specimen container. This separation will prevent the forms from getting contaminated. Do not staple request form to the plastic bag
- Clinical team or departments **must** complete requisition forms properly and provide all of the data required by the headings on the forms
- Supply all additional information relevant to the nature of the specimen, time of collection, and treatment regimen of the patient that might affect the testing and reporting
- Transport specimens to the laboratory under conditions that preserve the specimen's integrity and that protect the HCW
- All specimens transported to the laboratory from field research, clinical hospitals or laboratory must be accompanied by a chain of custody form
- Wear gloves when handling and processing specimens
- Minimize splashing, spattering, and generating droplets while performing laboratory procedures
- Laboratory workers should follow mechanical pipetting procedures
- All laboratory staff **must strictly** adhere to local SOPs
- Decontaminate work areas after spills of blood, body fluids, or other potentially infectious material and after completing work as per lab SOPs
 - Prior to servicing or repair, contaminated equipment must be decontaminated externally and internally as per manufacturer's instructions or if this is not available, they should be decontaminated as per lab SOP

5.2.5 Working with specimens

- Personnel who work with specimens in the lab must take these precautions:
- Put on gloves prior to handling the specimens
- Wear face and eye protection for procedures that are likely to generate splashes or sprays of blood or other potentially infectious material. Splashguards are an alternative to eye and face protection. These can be mounted on a cabinet and pulled down in front of the face for protection
- Use care when opening specimens. Open all specimen gently
- **Do not** use mouth pipette
- **Change reusable lab coats after splashes or on a daily basis, or use disposable coats/gown while working in the lab**
- Wash hands whenever they are soiled, following removal of gloves, prior to leaving the laboratory, and at the end of each day (see above)
- An eyewash station should be readily available in case of accidental splashes to the eye

5.2.6 Phlebotomy

- Blood drawing is a high-risk procedure given risk of accidental exposure to blood and sharps injury (e.g. needle stick)
- Laboratory workers collecting blood (e.g. phlebotomy or transfusion services) should follow good infection prevention and control practices (i.e. hand hygiene and glove use, and sharp safety devices if available) to minimize risk of accidental exposure
- Dispose of sharps/needles in designated robust sharps containers

To prevent complications and HAIs in patients:

- Avoid unnecessary transfusions
- Screen donors for serious blood-borne infections (HIV, HBV, HCV, syphilis, etc.)
- Collect the donor's blood aseptically into a closed system to minimize contamination
- Perform all steps in processing the blood within this closed system
- HCWs should wear gloves while collecting, testing, and transfusing blood
- HCWs should handle sharps carefully and dispose of them immediately in a puncture-resistant container
- HCWs should wear PPE at all times

5.2.7 Sputum specimens

- Laboratory procedures involving *Mycobacterium tuberculosis* pose a risk to laboratory workers from possible exposure to aerosols containing live *M. tuberculosis*
- Any laboratory personnel working with sputum specimens should protect themselves from possible exposure by performing work in Class I Bio Safety Cabinets (BSC) to prevent discharge of contaminated aerosols into the laboratory
- In the absence of a BSC, laboratory staff must employ appropriate respiratory protection and good laboratory technique to prepare sputum smears in a well-ventilated, separate area of the laboratory

5.2.8 Decontamination and sterilisation

- Cleaning and disinfection of work surfaces and spills and sterilization of laboratory equipment are critical to protecting laboratory workers from occupational exposure. At the end of each day, work surfaces in laboratories should be cleaned and decontaminated as per local standard operating procedures using 0.05%.
- Spills in the laboratory may occur on work surfaces (laboratory bench, BSC) or involve accidental spills or contamination on skin or clothing. Laboratories should have procedures in place to respond to spills

5.2.9 Disposal containers

- Waste disposal jars, should be washed with soap and water then decontaminated with 0.5% chlorine and rinsed in clean water before reuse
- Specimen containers and samples not being kept should be autoclaved before incineration

5.2.10 Packaging of specimens and etiologic agents

Shippers of infectious substances must comply with regulations and prepare shipments in such a manner that they arrive at their destination in good condition and present no hazards to persons or animals during shipment. The packaging must include both inner and outer packaging. For detail please consult WHO document 'Laboratory Biosafety Manual' (3rd edition). Geneva: World Health Organization: 2004).

5.2.11 Laboratory occupational health

Since laboratory workers are at risk of occupational injury and accidental exposure to microorganisms during laboratory procedures, an occupational health program should be in place to ensure laboratory workers receive appropriate vaccinations. Consult Occupational Health chapter for further information on protecting healthcare workers from occupational exposure.

5.2.12 Set up of laboratory

All laboratories should be located in the same area, preferable away from public areas, and divided into separate entities. Details guidelines are outlined in the WHO publication 'Laboratory Biosafety Manual'(3rd edition). Geneva: World Health Organization.

The following setup should be used for all laboratories:

- Samples should be collected in a special receiving area located next to the lab
- Dedicated toilets for the patients should be located next to the receiving area
- Samples should be transported to the lab by a trained HCW or porter. Samples should be placed in closed tubes for transportation
- A separate room should be affiliated with the lab for reprocessing glassware and instruments. An autoclave should always be available in this area
- Laboratories should be set up according to the following guidelines
- Design the laboratory so that it can be easily cleaned. Spaces between benches, cabinets, and equipment must be accessible for cleaning. Carpets and rugs in laboratories are inappropriate
- Provide lockable doors for facilities that house restricted microbiologic agents
- Provide separate sinks for hand washing and for disposing body fluids or chemicals
- Bench tops should be impervious to water and should be resistant to moderate heat and organic solvents, acids, alkalis, and chemicals that will be used to decontaminate the work surfaces and equipment
- Laboratory furniture should be capable of supporting anticipated loading and uses
- Cover chairs and other furniture used in laboratory work with a non-fabric material that can be easily decontaminated

5.3 Antenatal and labour suite

Pregnant women require appropriate clinical and obstetric care at all stages of their pregnancy whilst preventing potential exposure of others to infection. It is important to assess the risk of possible infection transmission at each stage of pregnancy and wear appropriate PPE for the activities being undertaken. Standard precautions as set out in the various chapters of these guidelines should always be adhered to with rigorous attention to hand hygiene, waste, sharps and laundry management, environmental cleaning and decontamination at all times. In addition, it is important that all pregnant women should be screened to determine contact risks for infections such as HIV and hepatitis B.

5.4 IPC in mortuary settings

Personal care of a body should honour the spiritual or cultural wishes of the deceased person. However, if the body has been in contact or has been diagnosed as an infection risk or has an unknown cause of death, including death on arrival at hospital certain standard precautions are required to safeguard the health care worker, mortuary attendant and funeral director.

It is essential that the management of dead bodies be handled with extreme sensitivity and a sensible approach. An individualized approach assists with the relationship between the families and carers at a time of probable distress.

It is unusual for organisms in a dead body to infect healthy people with intact skin, but there are other ways infection may be spread:

- Needle stick injuries from a contaminated instrument or sharp fragment of bone
- Intestinal pathogens from anal and oral orifices
- Leaking body fluids
- Through abrasions, wounds and sores on the skin
- Contaminated aerosols from body openings or wounds e.g. tubercule bacilli
- When condensation could possibly be forced out of the mouth
- Splashes and/or aerosols onto the eyes

The risks of infection are usually prevented by the use of standard precautions. Occasionally TBP are required as in the handling of a known or possible case of an infectious pathogen, such as for COVID-19.

While the risk of transmission of COVID-19 from handling the body of a deceased person is low, it is recommended the HCWs handling deceased patients don contact and droplet PPE. After use, PPE should be carefully removed and decontaminated or disposed as infectious waste as soon as practicable and hand hygiene should be performed. The body of a deceased person confirmed or suspected to have COVID-19 should be wrapped in cloth or fabric and transferred as soon as possible to the mortuary area. Body bags are not necessary for COVID-19 virus although they may be used for other reasons (e.g. excessive body fluid leakage). The responsible authority within the treatment centre should organise and prepare a team for dead body management. This team should have received appropriate training. They should have the necessary materials and PPE to prepare the body for burial.

IPC Standard Precautions should be adhered to at all times in the mortuary and include:

- Hand hygiene
- Appropriate use of protective clothing i.e. water repellent aprons and gloves when handling a body or decontaminating the environment (either disposable or heavy duty reusable)
- Use of body bags when indicated (see below)
- Appropriate cleaning of the environment
- Appropriate decontamination of equipment
- Body fluid spillage management
- Waste disposal as per waste management guidelines
- Safe use and disposal of sharps

There may be occasions when a body bag is required because the body is leaking body fluids or exudates, because the cause of death is unexplained or the individual was dead on arrival at hospital not met in the criteria above.

If a body is likely to leak or cause of death is unknown, then it must be placed in a body bag regardless of their infectivity status.

If the person had a known infectious disease or an unexplained cause of death you must inform anyone else coming into contact with that body e.g. Funeral Directors.

Chapter 6: OCCUPATIONAL HEALTH AND SAFETY

6.1. Introduction

HCWs are at risk of exposure to blood and body substances, and to infectious diseases. Implementation of preventative measures against infectious diseases, and managing occupational exposure to blood and body substances, will assist in the maintenance of staff health.

The following preconditions support the minimization of risk of bodily injury and/or infection in HCWs, and should be addressed by HCF leaders and managers, to ensure that all HCWs adhere to the evidence based guidelines in this chapter.

Infrastructure/system change: access to the right equipment and supplies including PPE, and an environment that is designed and planned to facilitate patient and health worker safety. This includes Immunization programs.

Training and education: a program of routine health and safety education and training and periodic retraining for all personnel.

Monitoring, evaluation and feedback: Pre-placement health evaluation of HCWs and the establishment of protocols for surveillance and management of job-related illnesses and exposures to infectious diseases.

Awareness raising/promotion: the practices, including the Waste Management Plan described in the chapter are reinforced through awareness raising e.g. use of posters displayed across the HCF.

Safety culture: managers and leaders at every level of the HCF show their visible support for occupational health and safety to help develop and reinforce a culture of patient safety. This includes counselling services for personnel regarding infection risks related to employment or special conditions and the development, review and revision of policies and procedures and their ready availability in the HCF. Maintenance of confidential employee health and injury records is important.

6.1.1 Employer duties and responsibilities:

- Ensure a healthy and safe working environment for all employees
- Provide employees appropriate orientation, training and supervision on safety procedures
- Have safety and employee health standard operating procedures readily available to staff
- Assess and manage any identified risks (e.g., investigate accidents and illnesses)
- Document and report worker injury or illness
- Ensure best practices for HCW safety and IPC
- Have a process for worker feedback on safety issues

The following recommendations are intended to improve compliance with procedures and eliminate the risk of occupational injuries or HAI:

- Establish appropriate engineering controls (controls used to remove/reduce a hazard or place a barrier between the worker and the hazard in health care facilities)
- Make available and use appropriate supplies and equipment
- Readily accessible hand-washing facilities and materials
- Puncture-resistant, leak-proof, labelled or colour-coded sharps containers that are located as close as possible to their places of use
- Leak-proof containers for specimens and other regulated wastes that are properly labelled or colour-coded
- An easily accessible first-aid kit in all departments
- Implement controls for work practices:
 - Prohibit eating, drinking, smoking, applying cosmetics, and handling contact lenses in the work areas and on work surfaces that carry an inherent potential for contamination

- Do not store food and drink in refrigerators, freezers, or cabinets where blood or other potentially infectious material is stored. Such storage equipment should be clearly labelled to prevent this possibility
- Wash hands and other skin surfaces that become contaminated with blood or other potentially infectious materials immediately and thoroughly with soap and running water
- Thoroughly wash (flush) with water mucous membranes that become contaminated
- Prohibit HCWs with open wounds or weeping skin rashes from all direct patient-care, potentially hazardous laboratory procedures, and handling patient-care equipment until recovery
- Cuts or abrasions should be protected with a waterproof dressing and gloves prior to performing any procedure that involves contact with blood and other potentially infectious material
- Adequately staff healthcare facilities
- Provide information and training
- Record and monitor exposures to blood and body fluids
- Monitor and maintain surveillance of work practices

6.1.2 Healthcare workers should practice the following:

- Follow safe work practices at all times
- Be familiar with employer's written departmental policies
- Know the potential health and safety hazards of the job and protective measures by participating in appropriate occupational health and safety training programs
- Use personal protective equipment (PPE) as trained and report any changes in personal medical condition that would require a change in status as to wearing PPE
- Know how to report unsafe working conditions
- Report any work-related injury or illness to supervisor
- Participate in accident and injury investigations
- Know what to do in an emergency
- Participate in health and safety committees (when available)

6.1.3 Pre-employment health evaluations

When personnel are initially appointed or are reassigned to different jobs or areas, a pre-placement evaluation can be used to ensure that persons are not placed in jobs that would pose undue risk of infection to them, other personnel, patients, or visitors. A health inventory is an important part of this evaluation. This inventory, can include determining a health worker's immunization status, and obtaining a history of any conditions that may predispose the health worker to acquiring or transmitting infectious diseases.

6.1.4 Personnel health and safety education

- Personnel are more likely to comply with an infection control program if they understand the rationale; thus staff education should be a central focus of the Infection Prevention and Control program
- Clearly written policies, guidelines, and procedures are needed for uniformity, efficiency, and effective coordination of activities
- All healthcare facilities should develop and implement appropriate orientation and in-service training programs for new employees, as well as, in-service refresher training (e.g., yearly) for existing employees
- Training should be designed to cover all cadres of staff, including doctors, nurses, clinical officers, laboratory workers, nonmedical workers, and support staff and should be matched to the roles/responsibilities of each group
- Health and safety training should ensure that workers know and understand the potential risks that are associated with waste from health care facilities, the value of immunization against vaccine preventable diseases such as, HBV and the importance of appropriate use of PPE

6.1.5. Immunisation

Since hospital personnel are at risk of exposure to and possible transmission of vaccine-preventable diseases because of their contact with patients or material from patients with infections, maintenance of immunity is an essential part of a hospital's occupational health and IPC program. Optimal use of immunizing agents will serve to safeguard the health of personnel and also protect patients from becoming infected by personnel. Following a consistent program of immunizations could eliminate the problem of susceptible personnel and avoid unnecessary activity restrictions. Immunizations should be free of charge and at least include the following:

- Hepatitis B vaccine (for HCWs whose occupational tasks place them at risk of exposure to blood or other potentially infectious material)
- MMR (measles, mumps, rubella)
- Influenza
- Chickenpox (varicella)
- Tdap (tetanus, diphtheria, pertussis)
- Meningococcal meningitis

The infection prevention issues for HCWs described in this section include:

- human immunodeficiency virus (HIV)
- hepatitis B virus (HBV)
- hepatitis C virus (HCV)
- tuberculosis (TB)
- meningococcal meningitis
- tetanus
- work restrictions
- guidelines for managing occupational exposure to blood and body substances
- immunisation of HCWs

6.2 HIV

HIV is transmitted from person to person via sexual contact, sharing of needles contaminated with HIV, infusions contaminated with HIV, and transplantation of organs or tissues infected with HIV. The risk of a HCW acquiring HIV after a needle stick or other sharp injury route is 0.3% and 0.9% via the mucous membrane and non-intact skin.

There are no confirmed effective methods of treatment and no cures for HIV, hence the focus must be on preventing exposure to HIV through safe infection control work practices, such as standard precautions, ongoing education and training, safe management, proper disposal of healthcare-related waste and sharps, and use of personal protective equipment. There is no vaccine for HIV.

6.3. Hepatitis B virus

The transmission route of hepatitis B is through blood and other body substances such as blood products, saliva, cerebrospinal fluid, peritoneal, pleural, pericardial and synovial fluid, amniotic fluid, semen and vaginal secretions. However, studies state that although HBV is present in saliva and tears, these body fluids have not represented an occupational risk to HBV unless it contains blood. Blood from persons infected with HBV contains the highest HBV titres of all body fluids.

HBV is one of several viruses that may be transmitted by significant exposure to blood or other body substances. HBV, like HIV, cannot be cured and often results in severe liver damage or death. There is a highly effective vaccine for HBV.

6.3.1 Hepatitis B immunisation

Immunisation is the best way of preventing HBV transmission to healthcare staff, and should be offered to all HCWs.

Hepatitis B immunisation is a series of three injections: an initial injection, an injection given one month after the initial injection, and one given six months after the initial injection.

6.3.2. Antibody testing

Post-immunisation testing for seroconversion should be done one to two months after the third immunisation dose. All HCWs should be responsible for knowing their immune status.

6.4. Hepatitis C virus

In the healthcare setting, the transmission route of HCV is largely parenteral (through the skin, for example a needle stick), through exposure to blood and body substances. Sexual transmission does occur, but is far less frequent. As with HIV, there are no confirmed effective methods for treating HCV, hence the focus must be on preventing exposure to HCV through safe infection control work practices (e.g. standard precautions, ongoing education and training, safe management and disposal of healthcare-related waste and sharps, and use of personal protective equipment). There is no vaccine for HCV.

6.5. Tuberculosis

Tuberculosis (TB) is usually transmitted by exposure to airborne particles produced by individuals with pulmonary disease while coughing and/or sneezing. Prolonged close contact with such individuals increases the risk of transmission. The aerosol droplets are very small, less than 5 µm in diameter, and can stay infectious for long periods in the air, making transmission possible when they are inhaled and settle into the lungs.

All health-care settings need a TB infection prevention and control program designed to ensure prompt detection, initiation of airborne precautions and treatment of persons who have suspected or confirmed MTB disease (or prompt referral of persons who have suspected MTB disease for settings in which persons with MTB disease are not expected to be encountered). Healthcare workers, including nurses, doctors, clinical officers, nursing and medical students, housekeeping staff, and others are vulnerable to tuberculosis (TB) exposure, infection, and disease. Healthcare workers are at even greater risk in the following circumstances:

- Aerosol-generating or aerosol-producing procedures, including bronchoscopy, endotracheal intubation, suctioning, other respiratory procedures, open abscess irrigation, autopsy, sputum induction, and aerosol treatments that induce coughing
- When they are working with difficult-to-treat TB such as relapses, treatment failure, multi-drug resistant (MDR), and extensively drug-resistant (XDR) TB
- Prolonged contact with patients with unrecognized TB disease who are not promptly handled with appropriate airborne precautions or patients moved from an airborne infection isolation (AII) room too soon (e.g., patients with unrecognized TB, patients with MDR or XDR TB)
- Longer duration of employment
- Working without following IPC procedures
- Having HIV infection

General IPC recommendations include the following.

- Assigning responsibility for TB IPC in the setting
- Conduct initial and ongoing evaluations of the risk for transmission of TB regardless of whether or not patients with suspected or confirmed TB disease are expected to be encountered in the setting:
 - The TB risk assessment determines the types of administrative, environmental, and respiratory-protection controls needed for a setting and serves as an ongoing evaluation tool of the quality of TB infection control and for the identification of needed improvements in infection-control measures
 - The risk assessment will help determine the facility's risk classification (low, medium, potential transmission of TB)
 - Risk classification should be used as part of the risk assessment to determine the need for a TB screening program for HCWs and the frequency of screening

- Bacille Calmette–Guerin (BCG) is given as a childhood vaccination schedule in most nations to prevent severe forms of TB in children; it likely has little protective effect in adults
- Ongoing education should be provided to all healthcare personnel regarding the recognition, transmission and prevention of TB
- HCWs working in TB wards, intensive care units, medical nursing staff, mortuary staff, radiographers, physiotherapists, maids and laboratory staff working with TB specimens should be offered baseline Mantoux (PPD / TST / TB skin test) testing and chest x-rays

Recommendations for TB screening procedures for settings/HCWs classified as medium risk:

- All HCWs should receive baseline TB screening upon hire, using two-step tuberculin skin test (TST) or a single BioMedical Admissions Test (BAMT) to test for infection with TB
- After baseline testing for infection with TB, HCWs should receive TB screening annually (e.g., symptom screen for all HCWs and testing for infection with TB (for HCWs with baseline negative test results)
- HCWs with a baseline positive or newly positive test result for TB infection or documentation of previous treatment for latent TB infection (LTBI) or TB disease should receive one chest radiograph result to exclude TB disease

HCWs with TB disease should be allowed to return to work when they:

- Have had three negative AFB sputum smear results collected 8–24 hours apart, with at least one being an early morning specimen because respiratory secretions pool overnight
- Have responded to anti-tuberculosis treatment that will probably be effective based on susceptibility results
- In addition, HCWs with TB disease should be allowed to return to work when a physician knowledgeable and experienced in managing TB disease determines that HCWs are non-infectious
- Consideration should also be given to the type of setting and the potential risk to patients (e.g., general medical office versus HIV clinic)
- HCWs with active TB should be provided with sick leave (with pay) during the period of the illness

6.6. Meningococcal meningitis

Neisseria meningitidis is transmitted via direct contact, particularly by respiratory droplets from the nose or throat of colonised or infected people. Individuals with meningococcal septicaemia (blood poisoning) or meningitis are usually not infectious after 24 hours of appropriate antibiotic therapy.

The risk of transmission is high for HCWs who have been in direct prolonged contact with the patient and have not been wearing personal protective equipment (i.e. masks), or have been involved in mouth-to-mouth resuscitation, intubation or bronchoscopy of infected patients.

Antibiotic prophylaxis (treatment to prevent developing symptoms) should be made available to HCWs in these situations if the risk of exposure has been deemed to be significant. No prophylaxis can be considered 100% effective; prevention of exposure should therefore be aimed for. Immunisation is available for some strains.

6.7. Tetanus

Tetanus enters the body through wounds contaminated with soil, human and animal faeces, and street dust. Tetanus vaccinations are given as a childhood vaccination schedule in most nations. A booster vaccination is required every 10 years. Tetanus status should be reviewed in the event of an occupational exposure to blood or body substances, particularly those involving used or discarded sharps or needles, or for deep or dirty wounds. People who haven't had a recent booster should be re-vaccinated.

6.8. COVID 19

COVID-19 is primarily transmitted between people through direct contact and droplet transmission, noting there is a risk of airborne transmission during aerosolising procedures. In addition to standard precautions which are to be used when caring for all patients, WHO recommends droplet and contact precautions be implemented when caring for all suspected COVID-19 patients. Airborne precautions are to be implemented

only when conducting aerosol generating procedures and providing supportive airway management procedures, according to risk assessment. As COVID-19 is known to survive on some environmental surfaces for up to 3 days, effective cleaning and disinfection processes must also be implemented as outlined in Chapter 4.

6.9. Work restrictions

Table 1: Work restrictions for healthcare workers exposed to, or infected with, selected infectious diseases

Disease/pathogen	Relieve from direct patient contact	Partial work Restriction	Duration
Conjunctivitis Infectious	Yes		Until discharge ceases
COVID 19 Infectious	Yes		Exclude personnel with COVID 19 from the workplace until the facility has documentation from their healthcare provider that they are no longer contagious
Cytomegalovirus Infectious	No		
Diphtheria	Yes		Exclude exposed staff and those identified as asymptomatic carriers from duty until antimicrobial therapy is completed and results of two nasopharyngeal cultures obtained at least 24 hours apart are negative.
Enteroviral infections	Yes	Restrict from care of infants, neonates, and immunocompromised patients and their environments	Until symptoms resolve.
Gastroenteritis Acute	Yes		Until symptoms resolve and infection with Salmonella is ruled out.
Group a streptococcus infections	Assess		Do not routinely exclude personnel unless it is shown epidemiologically that they are responsible for disseminating the organism in the healthcare setting.
Hepatitis A	Yes		Until 7 days after onset of jaundice
Hepatitis B acute symptoms	Assess		Refer to specialist
Hepatitis C	Assess	May be restricted from performing exposure prone procedures.	Refer to specialist
Herpes simplex orofacial or genital	Assess		Assess the potential for transmission to high-risk patients (neonatal intensive care unit patients, patients with severe burns or eczema, and severely immunocompromised patients) and the need for exclusion from the care of such

			patients. Counsel to cover and not touch the infected lesions, hand hygiene, do not allow the lesions to touch patients with dermatitis.
herpetic whitlow (fingers and hands)	Yes		Exclude until lesions are healed
Herpes zoster Shingles	Yes	Restrict immunocompetent personnel with localised zoster from the care of high-risk patients until lesions are crusted; allow them to care for other patients with lesions covered.	Restrict immunocompromised personnel with zoster from contact with patients until lesions are crusted. Restrict susceptible personnel exposed to zoster from patient contact from the 10 th day after the first exposure through the 21 st day after the last exposure.
HIV	Assess	May be restricted from performing exposure prone procedures.	Refer to specialist
Influenza and other viral respiratory illness including the common cold	Yes		Consider excluding personnel with acute febrile respiratory infections from the care of high risk patients (e.g. neonates, young infants, patients with chronic obstructive lung disease and immunocompromised patients) during community outbreaks of influenza or respiratory syncytial virus (RSV) infections.
Measles Active	Yes		Until 7 days after the rash appears or for the duration of their acute illness, whichever is longer.
post exposure (susceptible personnel)	Yes		From the 5 th through the 21 st day after the last exposure OR 7 days after the rash appears or for the duration of their acute illness, whichever is longer.
Meningococcal disease	Yes		Exclude personnel with <i>N. meningitidis</i> infections from duty until 24 hours after the start of effective antibiotic therapy. Do not routinely exclude personnel from duty who only have nasopharyngeal carriage of <i>N. meningitidis</i> .
Mumps	Yes		Exclude susceptible personnel who are exposed to mumps from duty from the 12 th day after the first exposure through the 26 th day after the last exposure or, if symptoms develop, until 9 days after the onset of parotitis.
Pertussis	Yes		Exclude personnel in whom symptoms develop (cough ≥7 days, particularly if accompanied by paroxysms of coughing, inspiratory whoop, or post-tussive

			vomiting) after known exposure to pertussis from patient care areas until 5 days after the start of appropriate therapy
Rubella	Yes		Exclude susceptible personnel who are exposed to rubella from duty from the 7 th day after the first exposure through the 21 st day after the last exposure. Exclude personnel who acquire rubella from duty until 7 days after the beginning of the rash.
Scabies and pediculosis	Yes		Exclude personnel with confirmed scabies from the care of patients until they have received appropriate treatment and have been shown, by medical evaluation, to have been effectively treated. Exclude personnel with confirmed or suspected louse infestation from contact with patients until after they receive appropriate initial treatment and are found to be free of adult and immature lice.
Staphylococcal infection or carriage	Assess		Do not routinely exclude personnel unless it is shown epidemiologically that they are responsible for disseminating the organism in the healthcare setting.
Tuberculosis Lung or larynx	Yes		Exclude personnel with infectious pulmonary or laryngeal TB from the workplace until the facility has documentation from their healthcare provider that they are receiving adequate therapy, their coughs have resolved, and that they have had three consecutive sputum smears collected on different days with negative results for acid fast bacilli (AFB). After personnel return to work, obtain periodic documentation from their healthcare provider that effective drug therapy has been maintained for the recommended period and that sputum smear results AFB negative.
other sites	Assess		Do not exclude personnel from the workplace who have TB only at sites other than the lung or larynx.
Varicella	Yes		Exclude personnel from work who have onset of varicella until all lesions have dried and crusted. Exclude from duty after exposure to varicella personnel who are not known to be immune to varicella (by history or serology), beginning on the 10 th day after the first exposure until the 21 st day after the last exposure.

6.9 Guidelines for managing occupational exposures to blood and body substances

Occupational exposure is defined as an incident that occurs during the course of a person's employment and involves contact with blood or body substances. Such exposure may put the person at risk of acquiring a blood borne infection.

Adherence to standard infection control practices remains the first line of protection for HCWs against occupational exposure to HIV, HBV and HCV.

Policies should be developed at national and local level to cover all people in a healthcare setting, including all staff and visitors such as clinical staff, non-clinical staff (e.g. administrators, house-keeping and laundry staff, maintenance workers), laboratory staff, volunteers, private contractors and consultants.

6.9.1 Prevention of occupational exposure

Preventing exposure through safer practices, barrier precautions, safer needle devices and other methods remains the most effective strategy for reducing the risk of infection with HIV and other blood borne pathogens in healthcare settings.

Two significant prevention priorities are that all:

- HCWs should be trained in, and be able to demonstrate competency in, standard precautions, and
- staff should be provided with the necessary materials and protective equipment

Staff should also be knowledgeable about the risks of acquiring HIV and other blood borne pathogens sexually, and should have ready access to condoms and confidential sexually transmitted infection treatment services.

The following measures aimed at reducing the incidence of occupational exposures should be taken.

- Never recap needles
- Do not disconnect needles from the syringe
- Always transport (or pass to another person) sharp objects in a kidney dish or puncture-proof container
- Sharps should be disposed of in puncture-proof containers
- Take care with all blood contaminated equipment

All employers must ensure that the following management strategies are implemented:

- An efficient system for reporting and managing potential exposures of HCWs to blood and body substances
- Confidentiality of injured HCWs is maintained
- Expert advice is available to all HCWs 24 hours a day, and that processes are in place to facilitate ready access to appropriate treatment
- Rapid assessment of HCWs is available to ensure timely administration of specific prophylaxis, if appropriate
- All occupational exposures are fully documented to meet regulatory requirements

6.9.2 Definition and reporting of occupational exposure

Occupational exposure includes:

- percutaneous injuries or cuts with used instruments, such as needles or scalpel blades, and involving blood or other body substances
- contamination of fresh cuts or abrasions with blood or other body substances
- contamination of the eyes or other mucous surfaces with blood or other body substances

6.9.3 Immediate care of the exposed person

It is strongly recommended that immediately after an occupational exposure to blood or other body substances, the following measures must be followed (Appendix 12 Occupational Exposure Management):

- perform first aid
- wash affected site of exposure and any remaining blood on the skin under running water with soap
- apply a sterile dressing if necessary and apply pressure through the dressing if still bleeding
- do not squeeze or rub the injury site
- do not use strong solutions such as iodine or bleach on the wound
- if eyes have been exposed or contaminated, irrigate gently with normal saline or water while it is open for at least 30 seconds (remove contact lens after irrigation, then irrigate again)
- if blood or body substances gets in the mouth, spit it out immediately and rinse the mouth with water several times
- if clothing is contaminated, remove and shower.
- if water is not available for washing percutaneous exposures or punctures of the skin, ABHR or antiseptic should replace soap and water

6.9.4. Procedure for reporting occupational exposures

- The HCW should IMMEDIATELY report the exposure to their supervisor or manager (24 hours per day)
- The supervisor should arrange immediate medical assessment (24 hours per day) of the HCW and the patient who is the “source” of the exposure
- Complete an exposure report. An exposure report should contain the following information:
 - The name of the staff member involved
 - Area where the incident occurred such as the ward, operating room or emergency room
 - A description of the incident
 - The name of the source person whose blood or body substances were involved in the incident
 - If the source of the blood is unknown this must also be documented

As soon as possible (within one day), a copy of the incident form should be sent to the IPC officer (or equivalent) and the exposed HCW’s supervisor, so that they can be aware of any standard precaution procedural risks or lapses, in a confidential, sensitive and non-judgmental way.

6.9.5 Medical assessment

A medical risk assessment involves taking and recording the history and details of the occupational exposure and assessing the risk for HIV, HBV and HCV from the source person and the exposed person. This assessment should be undertaken by a trained person IMMEDIATELY after first aid is given, regardless of what time of day the occupational exposure occurs. Immediately after the reporting the incident, arrangements should be made to release the HCW from work so that immediate risk assessment can be made. Information to be examined during the assessment includes:

- date, time and location of the exposure
- duty being performed at time of exposure
- how exposure occurred
- protective clothing such as gloves being worn at time of incident
- nature of exposure such as percutaneous, mucous membrane non-intact skin
- type and volume of blood and/or body substances exposed to
- duration of contact with blood and/or body substances
- if a sharps injury: type of implement involved, whether it was visibly contaminated with blood, depth of injury, if bleeding occurred
- if a needle stick injury: needle gauge, syringe size, purpose for which needle had been used
- if non-intact skin: condition of skin
- HIV, HBV and HCV status of the source (if known)
- HBV immunity and vaccination history of the exposed person

6.9.6 Exposure and source patient

Exposure should be assessed for its potential to transmit a blood borne pathogen (based on the clinical assessment of the exposure and the eligibility for post-exposure prophylaxis).

If testing a source patient of unknown status is possible, it should only occur after obtaining informed consent, and should include appropriate pre-test counselling and a referral plan for care, treatment and support. Confidentiality must be maintained throughout the process.

Medical assessment constitutes an emergency for the exposed HCW. Baseline testing for HIV and follow-up testing should form part of the clinical pathway but **should not delay initiating post-exposure prophylaxis where warranted.**

Baseline testing is done at this time to ascertain whether the exposed person has been infected from a previous exposure at the time of the incident. The following should be done:

- Baseline testing should occur immediately (after first aid has been completed) following exposure, but at least within 72 hours
- Baseline tests are usually HIV antibody, hepatitis B surface antigen (HbsAg) and hepatitis B and C antibodies
- The HCW's tetanus immunisation status should be considered
- Pre-test counselling for HIV should occur before any blood is taken for testing (but blood drawing should not be delayed if an appropriate counsellor cannot be located right away)
- Follow-up retesting for HIV, HBV and HCV should occur at six weeks and three months. There is also a six-month follow up for HIV and HCV only

Clinical evaluation and baseline testing of the exposed HCW, which should proceed only after pre-test counselling and after obtaining informed consent, should always include a/an:

- explanation of privacy and confidentiality
- and, if necessary, further explanation of HIV, HBV and HCV infection and its consequences
- explanation of testing, possible results and confirmatory testing
- assessment of risk related to past and current sexual and other behaviour
- assessment of risk related to the occupational exposure in question
- explanation of low transmission risk associated with occupational exposure
- assessment of anxiety level and coping mechanisms
- informed consent for testing
- informed consent for pregnancy test (if indicated)
- plan for precautions while awaiting test results (and while on PEP, if indicated): adverse effects of anti-retrovirals (ARVs), safer sexual practices or abstinence, cessation of breast feeding if lactating
- list of any other risks identified by sexual and behavioural history
- mechanism for support while patient waits for test results, and while on PEP if indicated
- review of the sequence of events that preceded the exposure, and provide exposure risk reduction education in a sensitive and non-judgmental way

6.9.7 Risk of HIV and other infections following occupational exposure

Data from several studies of HCWs exposed to HIV in the work place suggest that the risk of HIV transmission after percutaneous exposure to HIV-infected blood is approximately 0.3% (95% confidence interval [CI] 0.2 to 0.5%).

Risks towards the higher range are associated with exposures such as:

- a deep injury
- visible blood on the "sharp" device causing the injury
- a hollow-bore needle (as opposed to a solid one)
- injury by a needle that was previously used in the patient's vein or artery
- a high viral load on the part of the patient (either acute or late-stage HIV infection or, if being managed at a specialist centre overseas, a known high viral load)

The risk of transmission from a “sharp” object contaminated with other infected body fluids or tissues is believed to be lower than for exposure to infected blood.

After a mucous membrane (eye, nose or mouth) exposure to HIV-infected blood, the risk is approximately 0.09% (95% CI 0.006 to 0.5%).

According to the Centers for Disease Control and Prevention (CDC), studies indicate that HCW's who sustained injuries from needles contaminated with blood contaminated by HBV, the risk of developing **clinical hepatitis** if the blood was both **HBsAg-positive and HBeAg positive was 22%**

- **31%**, the risk of developing **serologic evidence of HBV infection was 37% - 62%**. By comparison, the risk for developing **clinical hepatitis** from needles contaminated with **HBsAg-positive and HBeAg- negative was 1% - 6%**, the risk for developing **serologic evidence for HBV infection was 23% - 37%**.

The risk for hepatitis C infection after percutaneous exposure to infected blood is approximately 1.8%. Infection with hepatitis C following mucous membrane exposure has not been quantified but is thought to be rare.

Post-exposure prophylaxis (PEP) is treatment to reduce the likelihood of HIV, HBV and tetanus infection in HCWs after possible occupational exposure. There is no PEP available for HCV.

6.9.8 Annual review of personal protection equipment guidelines

Due to the rapidly evolving nature of all aspects of HIV/AIDS and other blood borne pathogens (e.g. diagnosis, treatment and care), these guidelines should be reviewed annually by the HIV/AIDS clinical team in the healthcare facility.

6.9.9 HIV post exposure prophylaxis (PEP)

Health care workers should have immediate access to PEP, 24 hours a day, seven days a week to be freely dispensed by any hospital (private or public), regardless of the location or type of work they do. The minimum care following potential exposure to HIV should be risk assessment and, if deemed necessary, the first dose of PEP medication.

Assess the following to evaluate the eligibility for HIV PEP:

- The timing of the potential exposure
- The HIV status of the person exposed
- The nature and risk of the exposure (i.e. needle stick injury, mucous membrane exposure or intact skin exposure)
- The HIV status of the source of the potential exposure

PEP is not indicated under the following circumstances:

- If the source patient is infected with HIV-1 and exposed healthcare worker is positive for HIV-2
- If the exposure does not pose a risk of transmission:
 - Exposure of intact skin to potentially infectious body fluids
 - Exposure to non-infectious body fluids (such as faeces, saliva, urine, and sweat)
 - Exposure to body fluids from a person known to be HIV-negative, unless this person is identified as being at high risk for recent infection
 - If the exposure occurred more than 72 hours previously

A starter pack (or a first dose) of PEP drugs should be offered to individuals who are determined to be at risk as soon as possible, within one hour and not later than 72 hours, after exposure. Do not offer PEP to anyone more than 72 hours after exposure. An HIV test should normally not be a condition of initiating PEP, nor should PEP be delayed until the results of a HIV test become available.

Summary of Post Exposure Management of HIV Recommendations

- ☐ Post – Exposure Prophylaxis (PEP) is recommended when occupational exposures to HIV occur
- ☐ Determine the HIV status of the exposure source patient to guide need for HIV PEP, if possible
- ☐ Start PEP medication regimens as soon as possible after occupational exposure to HIV and continue them for a 4-week duration
- ☐ New Recommendation --- PEP medication regimens should contain 3 (or more) antiretroviral drugs for all occupational exposures to HIV
- ☐ Expert consultation is recommended for any occupational exposures to HIV and at a minimum for situations described in Box 1
- ☐ Provide close follow-up for exposed personnel that includes counselling, baseline and follow-up HIV testing, and monitoring for drug toxicity. Follow-up appointments should begin within 72 hours of an HIV exposure
- ☐ New Recommendation --- if a newer 4th generation combination HIV p24 antigen-HIV antibody test is utilized for follow-up HIV testing of exposed HCP, HIV testing may be concluded at 4 months after exposure (Box 2). If a newer testing platform is not available, follow-up HIV testing is typically concluded at 6 months after an HIV exposure.

Preferred HIV PEP Regimen

Raltegravir (Isentress, ®RAL) 400 mg PO Twice

daily Plus

Truvada [™], 1 PO once daily

[Tenofovir DF (Viread ®; TDF) 300 mg + emtricitabine (Emtriva [™]; FTC) 200mg]

Alternative Regimes

(May combine one drug or drug pair from the left column. Prescribers unfamiliar with these agents/regimes should consult physicians familiar with the agents and toxicities)

Raltegravir (Isentress®; RAL)	Tenofovir DF (Viread®; TDF) + emtricitabine (Emtriva [™] ; FTC); available as Truvada [™]
Darunavir (Prezista®; DRV) + ritonavir (Norvir®; RTV)	Tenofovir DF (Viread®; TDF) + lamivudine (Epivir®; 3TC)
Etravirine (Intelence®; ETR)	Zidovudine (Retrovir [™] ; ZDV; AZT) + lamivudine (Epivir®; 3TC); available as Combivir®
Rilpivirine (Edurant [™] ; RPV)	Zidovudine (Retrovir®; ZDV; AZT) + emtricitabine (Emtriva [™] ; FTC)
Atazanavir (Reyataz®; ATV) + ritonavir (Norvir®; RTV)	
Lopinavir/ritonavir (Kaletra®; LPV/RTV)	
The following alternative is a complete fixed-dose combination regimen and no additional antiretrovirals are needed: Stribild [™] (elvitegravir, cobicistat, tenofovir DF, emtricitabine)	

6.9.10 Hepatitis C PEP

There is no HCV prophylaxis to offer HCWs at this time. For hepatitis C, PEP agents (e.g. ribavirin, interferon) are expensive and potentially very toxic. Prevention remains the best way to avoid hepatitis C.

6.9.11 Hepatitis B PEP

Childhood vaccination against hepatitis B is included in the expanded programme on immunisation. Management of possible exposure to hepatitis B should follow existing national guidelines and protocols but ideally, all HCWs should already be immune to hepatitis B. Hepatitis B immunoglobulin (HBIG) is available, and vaccination should be given to exposed individuals who have not been previously vaccinated Table 2 summarises the recommended actions to protect HCWs against occupationally acquired hepatitis B.

Table 1

ALTERNATIVE ANTIRETROVIRAL AGENTS FOR USE AS PEP ONLY WITH EXPERT CONSULTATION	
Abacavir (Ziagen®; ABC)	
Efavirenz (Sustiva®; EFV)	
Enfuvirtide (Fuzeon™; T20)	
Fosamprenavir (Lexiva®; FOSAPV)	
Maraviroc (Selzentry®; MVC)	
Saquinavir (Invirase®; SQV)	
Stavudine (Zerit®; d4T)	
ANTIRETROVIRAL AGENTS GENERALLY NOT RECOMMENDED FOR USE AS PEP	
Didanosine (Videx EC ® ddl)	
Nelfinavir (Viracept ®NFV)	
Tipranavir (Aptivus®; TPV)	
ANTIRETROVIRAL AGENTS CONTRAINDICATED AS PEP	
Nevirapine (Viramune ®;NVD)	

Table 2: Post-exposure prophylaxis against hepatitis B infection where serological testing and hepatitis B immunoglobulin are available

	SOURCE PATIENT	
Healthcare worker	HBSAg+	Unknown
Unvaccinated		
	HBIG x 1 dose <i>plus</i> hepatitis B vaccine x 3 doses	hepatitis B vaccine x 3 doses
Vaccinated		
Serological “responder” (anti-HBs >10 mIU/ml)	No treatment	No treatment
Serological “non-responder” (anti-HBs <10 mIU/ml)	HBIG x 1 dose <i>plus</i> hepatitis B vaccine x 3 doses	If higher risk exposure: HBIG x 1 dose <i>plus</i> hepatitis B vaccine x 3 doses
Antibody status unknown	Test for anti-HBs if available If anti-HBs >10 mIU/ml: No treatment If anti-HBs <10 mIU/ml: HBIG x 1 dose <i>plus</i> hepatitis B vaccine x 1 doses	Test for anti-HBs if available If anti-HBs >10 mIU/ml: No treatment If anti-HBs <10 mIU/ml: hepatitis B vaccine x 3 doses

Note: Hepatitis B Immune Globulin (HBIG) should be administered soon after the exposure when indicated. It is administered intramuscularly either on the gluteal or deltoid muscle. The dosage for HBIG is 0.06ml/kg.

Hepatitis B vaccination is 20µg intramuscularly per dose and is administered at 0, 1 and 6 months.

6.9.12 Tetanus PEP

Tetanus prophylaxis should be recommended depending on the type of exposure and the exposed person's past history of tetanus immunisation.

- If less than five years since immunisation, then no tetanus immunoglobulin or tetanus toxoid is necessary.
- If 5–10 years since immunisation, a tetanus toxoid booster is recommended.

If more than 10 years since immunisation, both tetanus immunoglobulin and tetanus toxoid is recommended.

6.10 Immunisation of healthcare workers

Vaccines	Recommendations
Hepatitis B vaccine	If you don't have documented evidence of a complete blood test that shows you are immune to hepatitis B (i.e., no serologic evidence of immunity or prior vaccination) then you should: <ul style="list-style-type: none">• Get the 3-dose series (dose #1 now, #2 in 1 month, #3 approximately 5 months after #2).• Get anti-HBs serologic tested 1–2 months after dose #3
Influenza	Get 1 dose of influenza vaccine annually
MMR (Measles/Mumps/Rubella)	<i>If you were born in 1957 or later</i> and have not had the MMR vaccine, or if you don't have an up-to-date blood test that shows you are immune to measles or mumps (i.e., no serologic evidence of immunity or prior vaccination), get 2 doses of MMR (1 dose now and the 2nd dose at least 28 days later). <i>If you were born in 1957 or later</i> and have not had the MMR vaccine, or if you don't have an up-to-date blood test that shows you are immune to rubella, only 1 dose of MMR is recommended. However, you may end up receiving 2 doses, because the rubella component is in the combination vaccine with measles and mumps. <i>For HCWs born before 1957:</i> Acceptable evidence of measles, rubella, and mumps immunity, health-care facilities should consider vaccinating unvaccinated personnel born before 1957 who do not have laboratory evidence of measles, rubella, and mumps immunity; laboratory confirmation of disease; or vaccination with 2 appropriately spaced doses of MMR vaccine for measles and mumps and 1 dose of MMR vaccine for rubella. Vaccination recommendations during outbreaks differ from routine recommendations for this group
Varicella	If you have not had chickenpox (varicella), if you haven't had varicella vaccine, or if you don't have an up-to-date blood test that shows you are immune to varicella (i.e., no serologic evidence of immunity or prior vaccination) get 2 doses of varicella vaccine, 4 weeks apart
Tdap (Tetanus/Diphtheria/Pertussis)	Get a one-time dose of Tdap as soon as possible if you have not received Tdap previously (regardless of when previous dose of Td was received). Get Td boosters every 10 years thereafter. Pregnant HCWs need to get a dose of Tdap during each pregnancy.
Meningococcal	Those who are routinely exposed to isolates of <i>N. meningitidis</i> should get one dose

Chapter 7 SURVEILLANCE FOR IPC

7.1 Introduction

Surveillance, in the public health context, is the “ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health”.⁵ One of the key elements of surveillance is that the process must be

systematic. Furthermore, there is little gain to performing surveillance if the information and results obtained from it will not be used.

The specific goals of surveillance may vary somewhat depending on who is conducting it and the population under study, and may include any or all of the following: establishing baseline or endemic rates of disease; identification of disease outbreaks or changes in disease trends; determination of risk factors for or the natural history of specific diseases; measurement of compliance with established standards; and assessment of the effect(s) of practice changes, new interventions, or new technology.

Surveillance in an infection prevention and public health context also aids in the detection of communicable diseases of public health importance that should be reported to health authorities to prevent spread (e.g., tuberculosis, viral haemorrhagic fevers, sexually transmitted infections), provides the foundation for immediate preventive actions (e.g., in outbreaks of disease), and directs public health policy. Ultimately, surveillance should generate data that can be applied in some manner to improve care.

The WHO defines surveillance as a systematic collection, analysis and interpretation of health related data needed for the planning, implementation and evaluation of clinical practice. IPC surveillance can:

- Provide a baseline for HAIs on agents, host and environment from a range of sources
- Serve as an early warning system for outbreaks and identifies the break-down in IPC
- Document the impact of an intervention or track progress towards specific goals
- Make improvements to infection prevention and control program and strategies

Active surveillance is a core component of the IPC program and is normally performed by the IPC Nurse/Officer. However, it is not recommended to conduct facility wide surveillance for all areas of the IPC program. Therefore, surveillance should respond to actual needs of the healthcare facility and is often targeted to specific areas and populations and those infections that are preventable.

7.2 Objectives of surveillance

A good surveillance program will include a written plan that outlines the goals and objectives of the program, and should be based on a framework that includes several well-defined practices.⁶ A written plan also allows for strategic allocation of resources to enable effective and meaningful surveillance, decrease HAI rates, and improve patient safety. Surveillance programs should be evaluated periodically to ensure that they are effectively meeting the needs of the facility.⁷

The specific objectives of a surveillance program include:

- To improve awareness of clinical staff and other HCWs (including administrators about HAI and AMR)
- Identification of high-risk populations, procedures and exposures
- Monitoring of trends
- Identify possible areas of improvement inpatient care, and for further epidemiological studies
- Early detection of outbreaks
- Assessment of the impact of interventions

7.3 Surveillance inclusions

The following may be considered for HAI surveillance:

- Specific sites of infection (e.g. bloodstream, surgical site infection, indwelling urinary catheters) etc.
- Specific population (e.g. HCWs occupational exposure to blood and body substances, neonates) etc.
- Specific organisms that can have severe outcomes (multidrug resistant organisms);
- Specific locations (intensive care unit, neonatal intensive care units) etc.

A surveillance program should include:

- Nationally standardized set of case definitions that are consistently and accurately applied
- Standardized methods for identification of the number of persons developing an infection (numerator)
- Standardized methods for detecting the exposed or at risk population (denominator)
- The time period involved
- Process for analysis of data and reports, calculation of rates and both numerator and denominator

HAI rates are developed by three elements:

- Numerator - number of persons developing an infection
- Denominator - the exposed or at risk population
- The time period involved

Other surveillance/audits activities can include:

- Hand hygiene audits for all clinical units
- Environmental audits on cleaning schedules, colour coding
- Waste management audits
- Audits on specific work practices such as:
 - Use of surgical antimicrobial prophylaxis
 - Aseptic manipulation of invasive devices etc.

7.4. National IPC surveillance

At the national level, IPC surveillance activities and responsibilities should include:

- Coordination, gathering and documentation of available data on HAI from all levels of health service delivery
- Defines the national objectives of surveillance
- Establishes the priorities for surveillance of infections, pathogens and others
- Establishes what data should be provided to the MHMS and how
- Reports to interested parties on the national situation of HAI and special events
- Standardises:
 - case definitions
 - methods of surveillance
- Promotes the assessment of IPC practices and other relevant processes in a blame-free organisational culture

7.5. Healthcare facility surveillance

At the health service delivery level, IPC surveillance activities and responsibilities should include:

- Documents the situation of HAI and IPC processes in the healthcare facility
- Defines the local objectives of surveillance aligned with the national objectives
- Establishes the priorities for surveillance according to the scope of care in the facility
- Establishes the minimum registers necessary for medical records used for surveillance purposes and monitors compliance
- Conducts surveillance applying national standardised case definitions and methods of surveillance of infections
- Detects outbreaks and coordinates the response
- Reports HAI and events to the local interested parties and the MHMS as required by regulations
- Conducts the assessment of IPC practices and other relevant processes in an blame-free organisational culture

7.6 Minimum requirements

Performing accurate and reliable surveillance may be challenging even in the most well-resourced settings, where multiple data sources are accessible to the surveillance team, information technology services and

computer infrastructure are well established, and dedicated trained personnel (i.e., infection control professionals) are present. In resource-limited settings that may be lacking in one or more of these dimensions, the following may be considered as minimum requirements for surveillance:

1. Assess the population. Even the most basic surveillance programs must consider the types of patients receiving care, and the types of services the facility provides, to determine the risks of infection.
2. Select processes or outcomes for surveillance. Identifying and measuring the most important outcomes, and limiting process measures to those that are most important in the patient population, can conserve time and other resources in limited settings.
3. Use surveillance definitions. For some surveillance activities, collecting limited data may be simpler and more time efficient, with less dependence on other resources.
4. Collect surveillance data. Because data collection can be labour and time intensive, and many resource-limited settings will not have access to computerized data, other individuals may need to be trained to assist with data collection. Severely resource-limited settings may consider conducting repeated point prevalence surveys that can identify high-risk areas requiring more attention, and to monitor HAI or process indicators in these areas. In lieu of ongoing continuous surveillance, sampling or more prolonged periodic surveillance of specific programs or procedures can also save time and resources; for example, SSI or ICU surveillance might be conducted for only three months each year instead of, recognizing that seasonal or other unexpected variation may be missed.
5. Analyse and interpret data. In smaller or more basic surveillance programs, data analysis can be simplified to provide only the most important results. Risk stratification may not be feasible for various reasons (e.g., missing data, or inadequate training or resources) and can be omitted, although this may limit comparisons with other organizations or published benchmarks.
6. Report and use surveillance information. In any system, it is critical that surveillance information is provided to and used by the relevant stakeholders; failure of either renders the surveillance program meaningless.
7. Evaluate the program. Surveillance activities should be evaluated periodically in any surveillance program. At a minimum, assessment of the acceptability of the surveillance program, the quality of the data, and any changes in the patient population that impact the relevance of the surveillance program should be conducted.

7.7. Methods of surveillance

“Passive surveillance” with reporting by individuals outside the IPC team (laboratory-based surveillance, extraction from medical records post-discharge, infection notification by physicians and nurses) is of low sensitivity and should not be performed. Therefore, some form of active surveillance for infections (referred to as prevalence or incidence studies) is recommended. Methods of surveillance could include:

- Active surveillance (prevalence and incidence studies)
- Targeted surveillance (site, unit, priority-oriented)
- Appropriately trained investigators
- Standardised methodology
- Risk-adjusted rates for comparisons

7.7.1 Prevalence study

Infections in all patients hospitalised at a given point in time are identified (point prevalence) in the entire facility, or on selected units. Typically, a team of trained investigators visits every patient of the hospital on a single day, review-data. The outcome measure is a prevalence rate.

Prevalence rates are influenced by duration of the patient’s stay (infected patients stay longer, leading to an overestimation of patient’s risk of acquiring an infection) and duration of infections. Another problem is determining whether an infection is still “active” on the day of the study. In small hospitals, or small units, the number of patients may be too few to develop reliable rates, or to allow comparisons with statistical significance.

The prevalence of an HAI is the proportion of patients who have active (new and previously diagnosed) HAI in a defined patient population during the surveillance period. These may be new cases, or cases that developed before the survey.

Prevalence (%): $\frac{\text{number of new and existing cases of specific HAI during the specified survey period}}{\text{total number of patients surveyed for specific HAI during the specified survey period}} \times 100$

In general, prevalence increases the longer the duration of the disease. Prevalence can be assessed at one single point in time (point prevalence) or over a defined time period (period prevalence). Since prevalence rates include new and existing infections, these cannot be compared with incidence rates, which include only new infections.

7.7.2 Incidence study

Prospective identification of new infection (Incidence surveillance) requires monitoring of all patients within a defined population for a specific time period.

Patients are followed throughout their stay, and sometimes after discharge (e.g., post-discharge surveillance for surgical site infections). This type of surveillance provides attack rates, infection ratio and incidence rates (Table 3). It is more effective in detecting differences in infection rates, to follow trends, to link infections to risk factors, and for inter-hospital and inter-unit comparisons.

This surveillance is more labour-intensive than a prevalence survey, more time-consuming, and costly. Therefore, it is usually undertaken only for selected high-risk units on an ongoing basis (i.e., in intensive care units), or for a limited period, focusing on selected infections and specialties (i.e., 3 months in surgery).

Common priority areas can include:

- Ventilator associated pneumonia
- Surgical site infections
- Intravascular device associated infections
- Multi-resistant organisms (MRO) (MRSA, extended spectrum beta-lactamase producing organisms)

The incidence of an HAI is a specific rate that represents the occurrence (number) of new cases of a disease (e.g., a specific HAI) occurring in a defined patient population during a defined period. All individuals in the population being surveyed must be at risk of developing the outcome. To calculate incidence, the number of patients at risk of the specific HAI during the surveillance period forms the denominator:

$\frac{\text{number of patients diagnosed with new specific HAI during surveillance period}}{\text{number of patients at risk of the specific HAI during the surveillance period}} \times 100$

7.8. Calculating rates of HAI

Rates are obtained by dividing a numerator (number of infections or infected patients observed) by a denominator (population at risk, or number of patient-days of risk). The frequency of infection can be estimated by prevalence and incidence indicators. For MRO surveillance, the three main indicators used are:

- Percentage of antimicrobial resistant strains within isolates of a species, e.g. percentage of *Staphylococcus aureus* resistant to methicillin (MRSA)
- Attack rate (e.g. number of MRSA/100 admissions)
- Incidence rate (e.g. MRSA/1000 patient-days)

For both prevalence and incidence rates, either the global population under surveillance, or only patients with a specific risk of exposure, may be the denominator.

Incidence rates are encouraged as they take into account the length of exposure, or the length of stay (and/or follow-up) of the patient, giving a better reflection of risk and facilitates comparison. Either patient-day rates or device-associated rates can be used.

7.8.1 Organisation for efficient surveillance

HAI surveillance includes data collection, analysis and interpretation, feedback leading to interventions for preventive action, and evaluation of the impact of these interventions. It is important that all those involved in surveillance undergo training, including training of HCWs responsible for data collection. A written HCF protocol must describe the methods to be used, the data to be collected (e.g. patient inclusion criteria, definitions), the analysis that can be expected, and preparation and timing of reports as well as roles and responsibilities.

7.8.2. Data collection and analysis

Data collection requires multiple sources of information as no method, by itself, is sensitive enough to ensure data quality. Trained data extractors performing active surveillance will increase the sensitivity for identifying infections.

Techniques for case finding include:

- Ward activity
 - The presence of devices or procedures known to be a risk for infection (indwelling urinary and intravascular catheters, mechanical ventilation, surgical procedures)
 - Record of fever or other clinical signs consistent with infection
 - Antimicrobial therapy
 - Laboratory tests
 - Medical and nursing chart review
 - Patient interview
- Laboratory reports
 - isolation of microorganisms potentially associated with infection, antimicrobial resistance patterns, serological tests. Microbiology laboratory reports have low sensitivity because cultures are not obtained for all infections, specimens may not be appropriate, some infectious pathogens may not be isolated (e.g. virus), and the isolation of a potential pathogen may represent colonization rather than infection (e.g. for surgical site infections, pneumonia). Laboratory reports are, however, reliable for urinary tract infection, bloodstream infections,
 - Other diagnostic tests: e.g. white blood counts, diagnostic imaging, autopsy data -Discussion of cases with clinical staff during periodic ward visits

Continuing collaboration among IPC staff, the laboratory where available, and clinical units will facilitate an exchange of information and improve data quality. The patient is monitored throughout the hospital stay, and in some cases (e.g. for surgical site infections), surveillance includes the post-discharge period. The progressive reduction of the average length of stay with recent changes in healthcare delivery increases the importance of identifying post discharge infections.

Appendix 1: IPC Committee Terms of Reference

PURPOSE

The aim of the committee is to advise the Chief Executive Officer (CEO)/ Provincial Health Director on strategies required to prevent, reduce, treat and control infection among patients, clients and staff and to protect patients, clients and staff against potential infection.

OBJECTIVES

- Determine and monitor the incidence of infections among patients, clients and staff.
- Identify, implement and monitor strategies to prevent, reduce, treat, and control infection among patients, clients and staff.
- Develop, maintain and review regularly infection control guidelines and procedure manual and ensure an understanding of infection control principles and access to the manual by staff.
- Identify appropriate criteria and indicators with which to monitor and regularly report on the effectiveness of and adherence to the infection control guidelines and procedure.
- Investigate, review and report on hospital and health service acquired infections by patients, clients and staff and to ensure that an effective mechanism exists to respond to issues identified and that these areas are effectively addressed.
- Review regularly cleaning, sterilizing, maintenance, materials handling, storage and disposal practices to ensure that these practices facilitate and maintain effective and efficient infection control.
- Monitor the use and effectiveness of pharmaceuticals and other therapeutic agents for the treatment of infections and provide advice on strategies required to maintain therapeutic effectiveness and to minimize any resistance.
- Ensure compliance with all relevant statutory and other requirements relating to infection control.
- Establish sub-committees and working groups and co-opt other members as required and to receive and take appropriate action on their reports and recommendations.

COMMITTEE MEMBERSHIP

- The Head of the Hospital or Healthcare facility or his/her designate
- The senior administrative officer who is in a position to allocate necessary resources etc
- IPC Nurse/Officer/team
- One or more senior medical officers
- Midwife or doctor working in obstetrics
- Housekeeper
- Operating room staff responsible for sterilisation
- Clinical Microbiologist or microbiology technician or laboratory personnel
- Pharmacist
- Chair of the AMR Committee

AUTHORISATION OF THE COMMITTEE

- The Infection Prevention and Control Committee is authorized by the Chief Executive officer/Provincial Health Director
- The Committee is a "Standing Committee"

MEETINGS

- A quorum for the committee to begin and transact business is half plus one (to be decided at the initial meeting)
- The business of the Committee shall be formally conducted and all recommendations properly recorded.
- An Agenda and Action List shall accompany the minutes of the previous meeting one (1) week prior to such meetings.
- Meetings will be of no more than 2 (2) hours duration initially then 1 (1) hour.
- Secretariat is the Infection Control Officer
- Consensus is the preferred method for this committee with voting a last resort. Should a vote be necessary, an item shall be deemed to be carried by a majority decision.

COMMITTEE RECOMMENDATIONS AND REPORTING.

- The Committee reports through the Nursing Superintendent/Director of Nursing Services and provides advice to the Chief Executive Officer/Provincial Health Director

Appendix 2: IPC Officer Position Description

Position: Infection Prevention and Control Nurse/Officer

Primary purpose

Responsible for the overall co-ordination, implementation and monitoring of the infection prevention and control (IPC) policies and procedures, conduct relevant training, education and provision of relevant advice in hospitals and other health facilities.

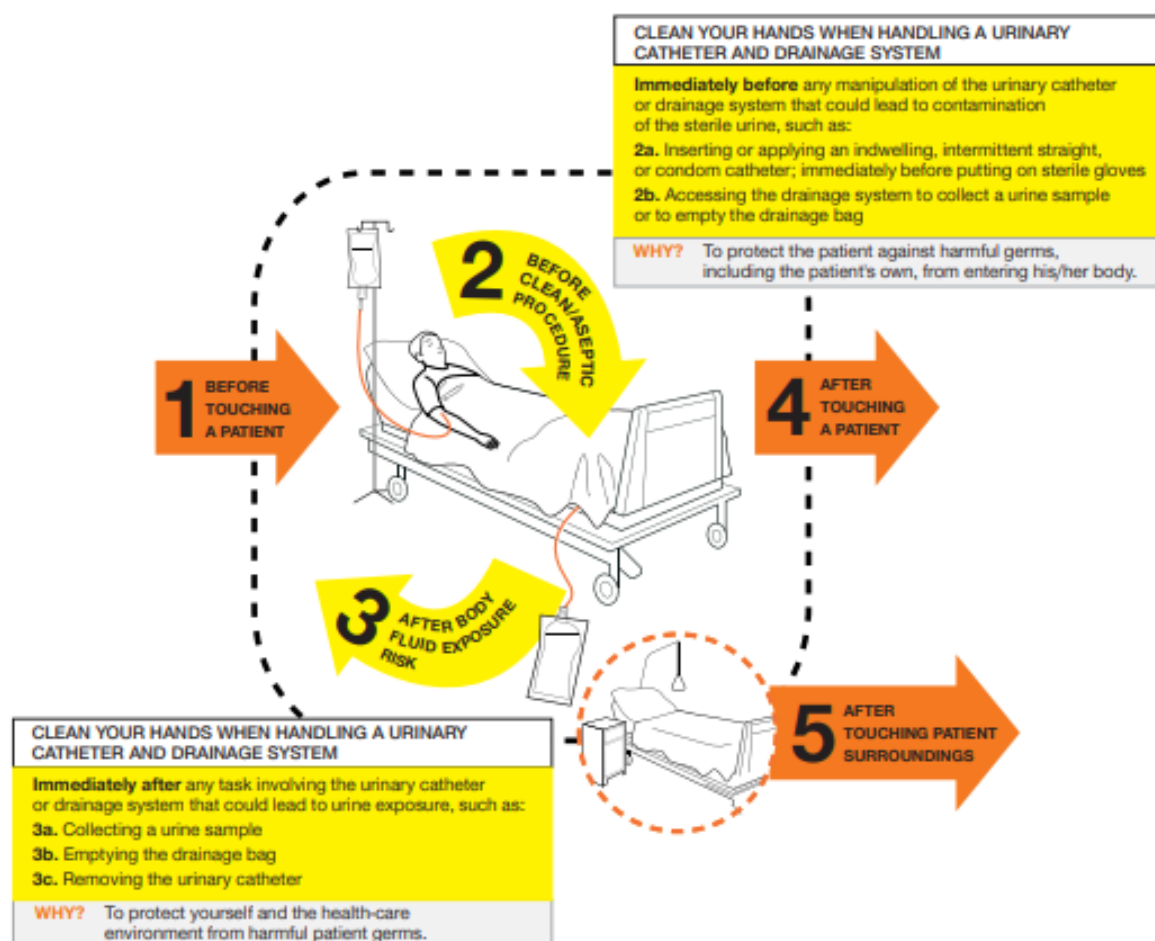
Duties and responsibilities

1. Maintain close liaison with all departments to provide advice on matters relating to infection control and to ensure adherence on IPC guidelines.
2. Ensure ongoing review and update of all policies and procedures in relation to IPC in line with new research and development.
3. Participate as the principal working member of the IPC Committee and act as secretary to the committee.
4. Deliver verbal and written infection control reports in the required format to the IPC Committee.
5. Design and deliver IPC education including orientation and maintain ongoing programs for all staff.
6. Investigate specific outbreaks of healthcare associated infection in order to identify specific procedures that may constitute a risk of infection transmission.
7. Review usage of all chemical cleaning products and antiseptics to ensure appropriateness of products and usage.
8. Ensure appropriate follow up of staff who experience occupational exposure involving blood and body substances.
9. Be involved in the development of staff health programs in relation to hepatitis B immunisations and any other infectious disease related matter.
10. Establish and maintain ongoing surveillance on the occurrence of healthcare associated infection.
11. Develop, update and implement infection prevention techniques according to current standards of practice, which provide optimum care to patients and a safe workplace to employees.

Appendix 3: My 5 Moments. Focus on caring for a patient with a urinary catheter

My 5 Moments for Hand Hygiene

Focus on caring for a patient with a Urinary Catheter



5 KEY ADDITIONAL CONSIDERATIONS FOR A PATIENT WITH A URINARY CATHETER

- Make sure that there is an appropriate indication for the indwelling urinary catheter.
- Use a closed urinary drainage system, and keep it closed.
- Insert the catheter aseptically using sterile gloves.
- Assess the patient at least daily to determine whether the catheter is still necessary.
- Patients with indwelling urinary catheters do not need antibiotics (including for asymptomatic bacteriuria), unless they have a documented infection.

Appendix 4: Surgical Safety Checklist

Surgical Safety Checklist



World Health
Organization

Patient Safety
A World Alliance for Better Health Care

Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?

☐ Yes

Is the site marked?

☐ Yes

☐ Not applicable

Is the anaesthesia machine and medication check complete?

☐ Yes

Is the pulse oximeter on the patient and functioning?

☐ Yes

Does the patient have a:

Known allergy?

☐ No

☐ Yes

Difficult airway or aspiration risk?

☐ No

☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?

☐ No

☐ Yes, and two IVs/central access and fluids planned

Before skin incision

(with nurse, anaesthetist and surgeon)

☐ Confirm all team members have introduced themselves by name and role.

☐ Confirm the patient's name, procedure, and where the incision will be made.

Has antibiotic prophylaxis been given within the last 60 minutes?

☐ Yes

☐ Not applicable

Anticipated Critical Events

To Surgeon:

☐ What are the critical or non-routine steps?

☐ How long will the case take?

☐ What is the anticipated blood loss?

To Anaesthetist:

☐ Are there any patient-specific concerns?

To Nursing Team:

☐ Has sterility (including indicator results) been confirmed?

☐ Are there equipment issues or any concerns?

Is essential imaging displayed?

☐ Yes

☐ Not applicable

Before patient leaves operating room

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:

☐ The name of the procedure

☐ Completion of instrument, sponge and needle counts

☐ Specimen labelling (read specimen labels aloud, including patient name)

☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:

☐ What are the key concerns for recovery and management of this patient?

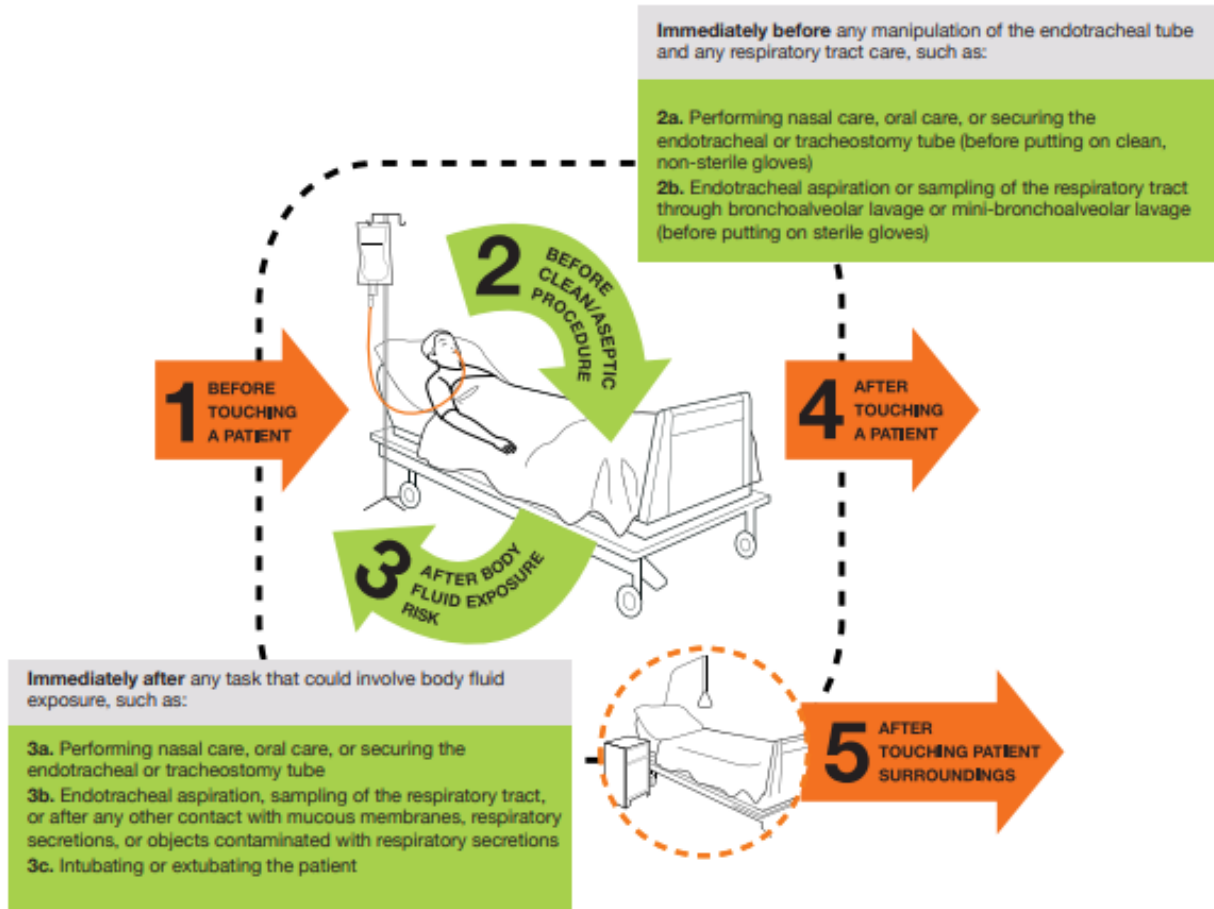
This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

© WHO, 2009

My 5 Moments for Hand Hygiene

Focus on caring for a patient with an endotracheal tube

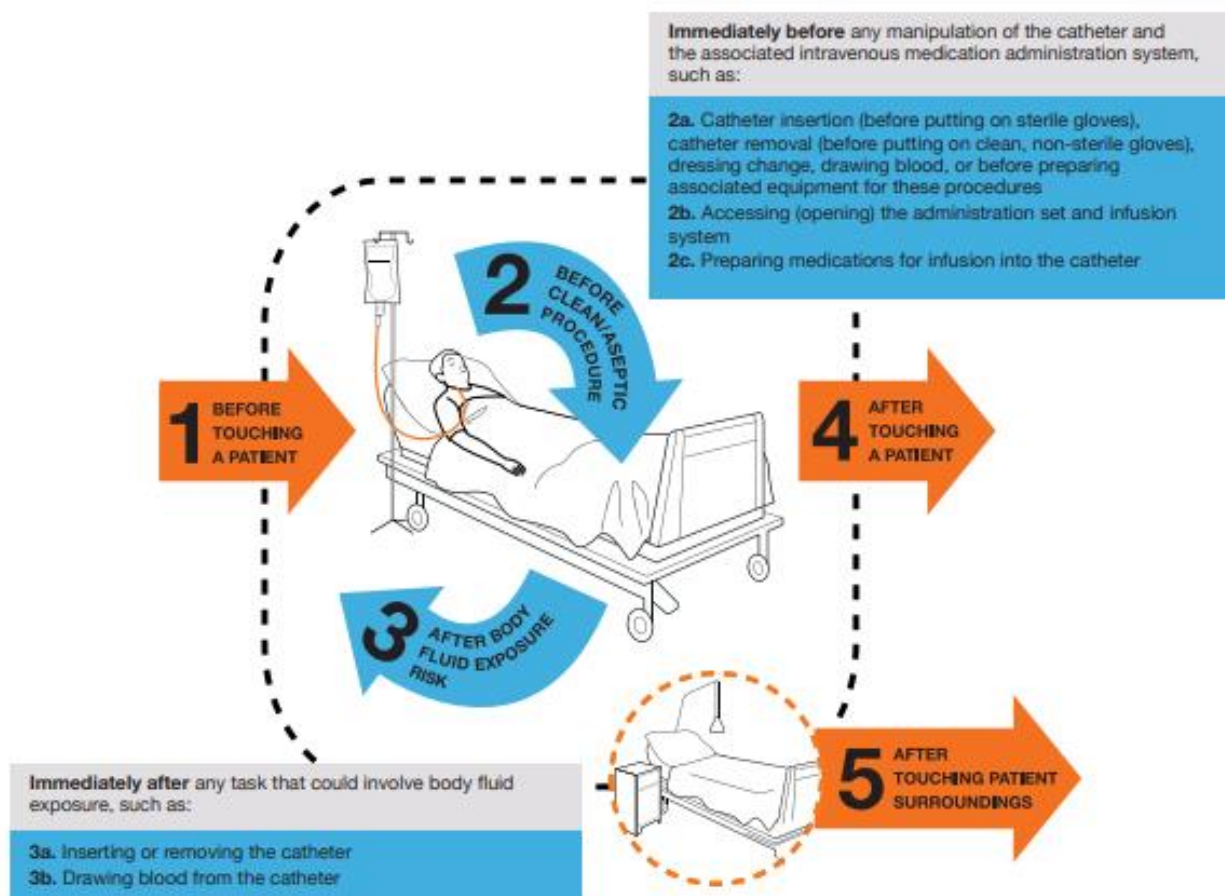


Key additional considerations for adult patients with endotracheal tubes

- Avoid intubation and use non-invasive ventilation whenever appropriate.
- If possible, provide endotracheal tubes with subglottic secretion drainage ports for patients likely to require more than 48 hours of intubation.
- Elevate the head of the bed to 30°–45°.
- Manage ventilated patients without sedatives whenever possible.
- Assess readiness for extubation every day by performing spontaneous breathing trials with sedatives turned off (in patients without contraindications).
- Perform regular oral care aseptically using clean, non-sterile gloves.
- Facilitate early exercise and mobilization to maintain and improve physical condition.
- Change the ventilator circuit only if visibly soiled or malfunctioning.

My 5 Moments for Hand Hygiene

Focus on caring for a patient with a central venous catheter

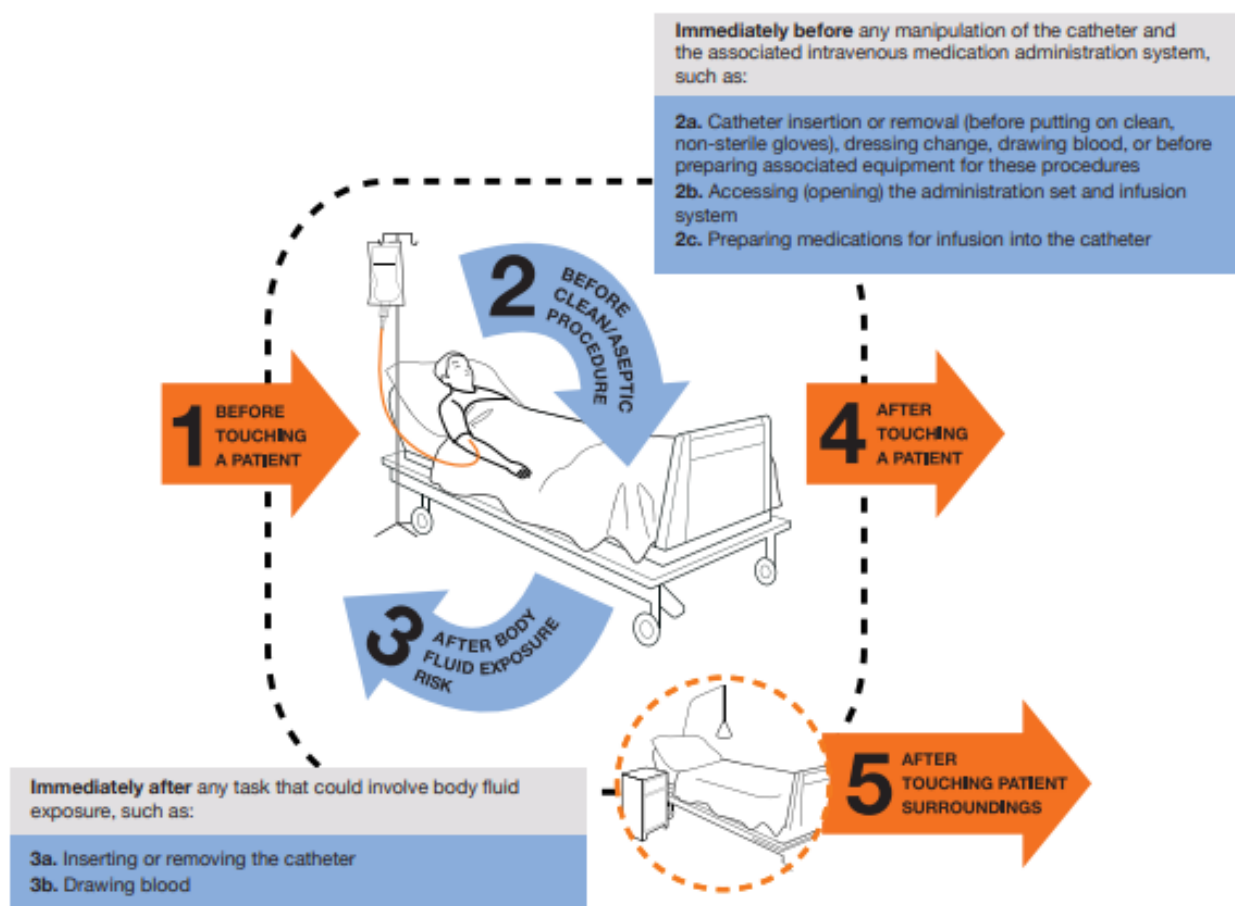


Key additional considerations for central intravenous catheters

- 1. Indication:** Ensure that a central intravenous catheter is indicated. Remove the catheter when no longer needed/clinically indicated.
- 2. Insertion/maintenance/removal**
 - 2.1 Avoid inserting catheters into the femoral vein.
 - 2.2 Prepare clean skin with an antiseptic (alcohol-based 2% chlorhexidine-gluconate preferred) before insertion.
 - 2.3 Use full sterile barrier precautions during insertion (cap, surgical mask, sterile gloves, sterile gown, large sterile drape).
 - 2.4 Replace gauze-type dressings every 2 days and transparent dressings every 7 days; replace dressings whenever visibly soiled.
- 3. Monitoring:** Record time and date of catheter insertion, removal and dressing change, and condition (visual appearance) of the catheter skin site every day.
- 2.5 Change tubing used to administer blood, blood products, chemotherapy, and fat emulsions within 24 hours of infusion start. Consider changing all other tubing every 96 hours.
- 2.6 Use aseptic procedure (with non-touch technique) for all catheter manipulations.
- 2.7 "Scrub the hub" with alcohol-based chlorhexidine-gluconate for at least 15 seconds.

My 5 Moments for Hand Hygiene

Focus on caring for a patient with a peripheral venous catheter



Key additional considerations for peripheral intravenous catheters

1. **Indication:** Ensure that a peripheral venous catheter is indicated. Remove the catheter when no longer necessary/clinically indicated.
2. **Insertion/maintenance/removal**
 - 2.1 Prepare clean skin with an antiseptic (70% alcohol, tincture of iodine, an iodophor, or alcohol-based 2% chlorhexidine gluconate) before catheter insertion.
 - 2.2 Wear clean, non-sterile gloves and apply an aseptic procedure (with non-touch technique) for catheter insertion, removal, and blood sampling.
 - 2.3 Replace any dry gauze-type dressings every 2 days.
 - 2.4 Consider scheduled catheter change every 96 hours.
 - 2.5 Change tubing used to administer blood, blood products, chemotherapy, and fat emulsions within 24 hours of infusion start. Consider changing all other tubing every 96 hours.
3. **Monitoring:** Record time and date of catheter insertion, removal and dressing change, and condition (visual appearance) of catheter site every day.

How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB



Duration of the entire procedure: 40-60 seconds



Wet hands with water;



Apply enough soap to cover all hand surfaces;



Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



Palm to palm with fingers interlaced;



Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



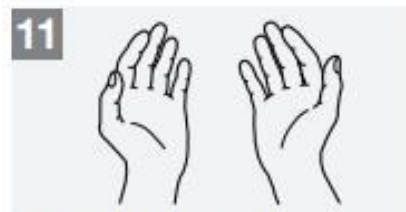
Rinse hands with water;



Dry hands thoroughly with a single use towel;



Use towel to turn off faucet;



Your hands are now safe.

How to Handrub?

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED



Duration of the entire procedure: 20-30 seconds

1a

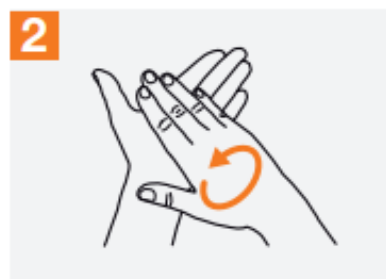


Apply a palmful of the product in a cupped hand, covering all surfaces;

1b

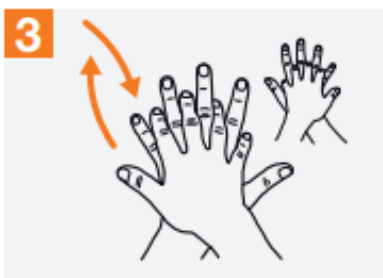


2



Rub hands palm to palm;

3



Right palm over left dorsum with interlaced fingers and vice versa;

4



Palm to palm with fingers interlaced;

5



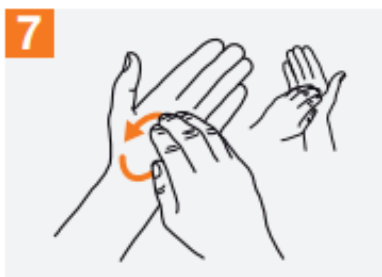
Backs of fingers to opposing palms with fingers interlocked;

6



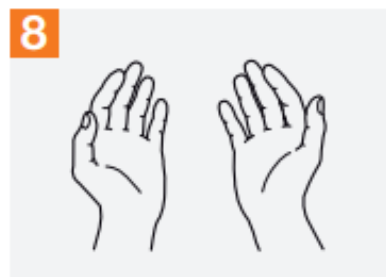
Rotational rubbing of left thumb clasped in right palm and vice versa;

7



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

8



Once dry, your hands are safe.

Appendix 10: How to put on/take off PPE

HOW TO PUT ON AND TAKE OFF

Personal Protective Equipment (PPE)



How to put on PPE (when all PPE items are needed)



Step 1

- Identify hazards & manage risk. Gather the necessary PPE.
- Plan where to put on & take off PPE.
- Do you have a buddy? Mirror?
- Do you know how you will deal with waste?



Step 2

- Put on a gown.



Step 3a

- Put on face shield.

OR

Step 3b

- Put on medical mask and eye protection (e.g. eye visor/goggles)



Note: If performing an aerosol-generating procedure (e.g. aspiration of respiratory tract, intubation, resuscitation, bronchoscopy, autopsy), a particulate respirator (e.g. US NIOSH-certified N95, EU FFP2, or equivalent respirator) should be used in combination with a face shield or an eye protection. Do user seal check if using a particulate respirator.



Step 4

- Put on gloves (over cuff).

How to take off PPE



Step 1

- Avoid contamination of self, others & the environment
- Remove the most heavily contaminated items first

Remove gloves & gown

- Peel off gown & gloves and roll inside, out
- Dispose gloves and gown safely



Step 2

- Perform hand hygiene



Step 3a

If wearing face shield:

- Remove face shield from behind
- Dispose of face shield safely



Step 3b

If wearing eye protection and mask:

- Remove goggles from behind
- Put goggles in a separate container for reprocessing
- Remove mask from behind and dispose of safely



Step 4

- Perform hand hygiene

Appendix 11: Recommended cleaning schedule

The table outlines a cleaning schedule guide for healthcare facilities to use to develop their local schedule to suit their environment.

Level of Risk	Area/Ward
Very High Risk	Outbreak area
High Risk	Intensive care units, operating theatres, burns units, dialysis units post-operative care units
Significant Risk	General wards
Low Risk	Office area, non-clinical areas
Level 1	Detergent
Level 2	Disinfectant for MRO and Detergent (disinfectant should have a label indicating evidence against the organism of concern)

Item	MINIMUM CLEANING FREQUENCY				Method
	Very High Risk	High Risk	Significant Risk	Low Risk	
Bathrooms	Daily after use	Daily after use	Daily after use	Daily after	1 2
Bed	Daily & after discharge	Daily & after discharge	Daily & after discharge	After discharge	1 2
	Weekly & at discharge under bed	Weekly & at discharge under bed	Weekly and at discharge under bed		1 2
bedrails Bedside table and lockers	Twice daily and at discharge	Twice Daily and at discharge	Daily and at discharge	Weekly and at discharge	1 2
Catheter stands and brackets	Clean daily and after use	Clean daily and after use	Clean before and after use	Clean before and after use	1
Ceiling	Spot clean and yearly	Spot clean and yearly	Spot clean and yearly	Spot clean and yearly	1
Chairs	Twice daily	Twice daily	Daily and at discharge	Daily & at discharge	1 2
Cleaning equipment	Clean after use	Clean after use	Clean after use	Clean after use	1 2
clipboards	Daily and between patient use	Daily and between patient use	Daily and between patient use	Daily and between patient use	1
Commode	After use and daily	After use and daily	After use and daily	After use and daily	1 2
Computer and key boards	Weekly	weekly	weekly	weekly	1
Curtains	After discharge	monthly	biannually	annually	Laundry wash
Door knobs and handles	Twice daily	daily	daily	weekly	1 2
Floor	Damp mop twice daily	daily	daily	daily	1 2
Fridges	Daily	daily	Daily spot clean, and clean weekly	Spot clean weekly	1
Fridge (drug)	Weekly	weekly	weekly	weekly	1
IV stands and Poles 7 Hooks	Daily and after use	Daily and after use	Daily and after use	after use	1 2
Light switch	Daily	daily	weekly	Weekly	1

ITEM	MINIMUM CLEANING FREQUENCY				METHOD
	Very High Risk	High Risk	Significant Risk	Low Risk	
Mattress	Weekly and after discharge	Weekly and after discharge	After discharge	After discharge	1 2
Medical equipment (infusion pumps) not connected to patient	Daily between patient use	Daily between patient use	Daily between patient use	weekly between patient use	1 2
Medical Gas	daily	daily	daily	weekly	1
Nebulizer machine	Daily after use	Daily after use	Daily after use	Daily after use	1
Oxygen equipment	Daily after use	Daily after use	Daily after use	Daily after use	1
Pillows (waterproof cover)	Weekly and after discharge	After discharge	After discharge	After discharge	1 2
Dressing Trolleys	Before & after use	before & after use	Before & after use	before & after use	1 2
Sinks (hand washing)	Twice daily	daily	daily	daily	1
General surfaces in patients room	Twice daily and after discharge	Twice daily and after discharge	Daily and after discharge	Weekly and after discharge	1 2
telephones	Twice daily	Twice daily	Daily	weekly	1
Toilet	Twice daily	Twice daily	Twice daily	daily	1
Trolley Linen	daily	daily	Daily	weekly	1
Trolley resuscitation	daily	daily	Daily	weekly	1
walls	Spot clean	Spot clean	Spot clean	Spot clean	1
Patient bowls	Between use	Between use	Between use	Between use	1 2
Wheelchair	Daily and after use	Daily and after use	Monthly and after use	Monthly and after use	1
Waste Bins	weekly	Weekly	weekly	Weekly	1

Adapted from: Australian Guidelines Prevention and Control of Infection in Healthcare (2010)

Appendix 12: Reporting and management of occupational exposures

Hospital or workplace: _____

Report completed by: _____

Date & time of exposure: _____

Date & time of report: _____

1. The injury occurred in which work area?

- ☐ Medical ward
- ☐ Surgical ward
- ☐ Operating room
- ☐ ICU
- ☐ Nursery
- ☐ Labor ward
- ☐ Laboratory
- ☐ Other _____

2. Job classification of the injured worker?

- ☐ Dentist
- ☐ Technician
- ☐ Housekeeper/laundry
- ☐ Doctor
- ☐ Nurse
- ☐ Student
- ☐ Security
- ☐ Other _____

3. How did the incident occur?

- ☐ Patient moved and jarred device
- ☐ While inserting needle in line or patient
 - ☐ While withdrawing needle from line/patient
- ☐ Passing/transferring equipment
- ☐ Suturing
- ☐ Recapping
- ☐ Disassembling device/equipment
- ☐ Opening/breaking glass container
- ☐ Injured by sharp being disposed
- ☐ Over-filled sharps container

☐ Sharp in in-proper place (general waste, linen etc.)

4. What type of device caused the injury?

- ☐ Hollow bore needle
- ☐ Glass object
- ☐ Non-healthcare item
- ☐ Other sharp object
- ☐ Unknown
- ☐ Other _____

5. When in the use of the object did the exposure occur?

- ☐ Before contact with source blood or body fluid
- ☐ Following contact with source blood or body fluid
- ☐ Unknown
- ☐ Other _____

6. Type of exposure

- ☐ Percutaneous
- ☐ Mucous membrane
- ☐ Non-intact skin
- ☐ Intact skin

7. Part of body

injured: _____

8. Type of body fluid exposed to:

9. Was first aid given? YES NO

10. Were gloves worn? YES NO

11. Was staff member vaccinated against
Hepatitis B? YES NO

12. When was vaccination given (year)
? _____

13. Post immunization HBsAb tested? YES NO

14. Was Hepatitis B immunoglobulin given? YES NO

15. Is anti-retroviral therapy required? YES NO

16. Baseline Serology
(if performed/consented)

HBV

HCV

HIV

Other

Follow up required? YES NO

17. Considered immune? YES NO

18. Was physician on-call contacted? YES NO

SOURCE FOLLOW UP

Source name (if
known): _____

Source agreed to blood tests? YES NO

CONSENT FORM FOR POST-EXPOSURE PROPHYLAXIS

I,, have been duly provided with all the necessary information in order for me to make an informed choice. I therefore accept/not accept [delete one] post -exposure prophylaxis as per Needle-Stick Injury Protocol.

Signature of exposed HCW

Signature of Attending Clinician

Completed forms must be submitted to the infection control officer
HIV COUNSELLING FORM CHECKLIST

1. What the test means:

- **Elisa** test is looking for antibodies, not the virus itself.
- **Time Frame** “Window Period”: 2–12 weeks.

2. What a positive result means with regards to:

- Medical Aspects.
- The infection is life long and you can pass on the virus from time of infection.
- Modes of transmission are from exposure to blood and body fluids i.e. through a needle stick injury, sexual intercourse with an infected partner or sharing of used needles and syringes.
- Medical progression is such that you may be well for many years before experiencing other symptoms progressing to **AIDS**.

3. Psychological aspects:

- Thinking through possible results.
- Have you thought about the test being positive? How do you think you would feel?
- Assessing coping ability. How have you coped before with stressful life events?
- Back up services available if unable to cope while waiting for results.

4. Notification requirements:

- **HIV** positive results – testing laboratory notifies Ministry of Health – all that is required is:
 - **DOB:**
 - **SEX:**
 - **MODE OF TRANSMISSION:**

5. Social aspects:

- Client’s legal obligation – inform current and future sexual partners of infection.
- Discussion re: family, friends and support.
- Need for care re disclosure – should your test be positive – be selective who you discuss this with.
- Implications for travel, housing, employment.

6. Travel:

- Some countries will not allow HIV positive people to visit i.e. America.
- Other countries will not allow HIV positive people to work and for this reason when applying for an overseas work permit you may be asked to supply a recent HIV result – Countries include Australia and the Emirates.

7. Housing:

- People who are HIV positive may also experience some difficulties with long term housing loans.

8. What a negative result means:

- Interpreted in relation to time frame of test/risk practices

9. Preventive aspects (whatever the test result):

- Safer needle and syringe use
- Reinforce non sharing of needle and syringes
- Safer sex practices.
- Information re condoms, high and low risk sexual practices. Check the expiry date on condoms and if this is a month of expiring, a new pack should be used. Also give instructions on how to apply a condom in the correct way i.e. Ensure the air bubble at the end of the condom is firmly clasped expelling the air while rolling down the shaft of the penis.

10. How results of tests are obtained:

- All staff **MUST** receive results **face to face, never over the phone.**

11. Counselling on drug therapy:

- Toxicity and side effects profile of drugs. Patients must be made fully aware of the associated side effects of these drugs.
- Monitoring and evaluation of Post Exposure Prophylaxis.

REFERENCES

1. Centres for Disease Control and Prevention. Updated guidelines for evaluating public health surveillance systems: recommendations from the guidelines working group. *Morb Mortal Wkly Rep*. 2001;50(2): RR-13.
2. Edwards J, Peterson K, Banerjee S. National Healthcare Safety Network (NHSN) report: data summary for 2006 through 2008. *Am J Infect Control*. 2009; 37:783-805.
3. International Federation of Infection Control. Infection Control: Basic Concepts. <http://theific.org/basic-concepts-book-more-info/>. Published 2016.
4. Ministry of Health and Sanitation. *National Infection Prevention and Control Guidelines*. Sierra Leone; 2016. http://www.cdsbc.org/~ASSETS/DOCUMENT/CDSBC_Infection_Prevention_and_Control_Guidelines_July_2012.pdf [19 June 2015].
5. National Referral Hospital Medical laboratory, *Laboratory Policies and Procedures*. Document ID SPEC 4100.
6. National Referral Hospital Medical Laboratory, *Health and Safety Manual*
7. Pacific Public Health Surveillance Network. Infection Prevention and Control Guidelines.
8. World Health Organization. Clean Care is Safer Care. <http://www.who.int/gpsc/en/>. Published 2009.
9. World Health Organization. *Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute Health Care Facility Level.*; 2016. doi:10.1111/j.1442-8903.2011.00607.x.
10. World Health Organization. My 5 moments for hand hygiene focus on caring for a patient with a urinary catheter. https://www.who.int/gpsc/5may/hh-urinary-catheter_poster.pdf [retrieved 20 June 2019].
11. World Health Organization. How to handrub. https://www.who.int/gpsc/5may/How_To_HandRub_Poster.pdf?ua=1 [retrieved 20 June 2019].
12. World Health Organization. How to hand wash. https://www.who.int/gpsc/5may/How_To_HandWash_Poster.pdf?ua=1 [retrieved 20 June 2019].
13. World Health Organization. How to put on/take off PPE. https://www.who.int/csr/resources/publications/PPE_EN_A1sl.pdf?ua=1 [retrieved 20 June 2019].
14. World Health Organization. My 5 Moments. Focus on caring for a patient with a central venous catheter. https://www.who.int/gpsc/5may/HH15_CentralCatheter_WEB_EN.pdf?ua=1 [retrieved 20 June 2019].
15. World Health Organization. My 5 Moments. Focus on caring for a patient with an ETT. https://www.who.int/gpsc/5may/HH15_Endotracheal_WEB_EN.pdf?ua=1 [retrieved 20 June 2019].

16. World Health Organization. Surgical safety checklist.
https://www.who.int/patientsafety/safesurgery/ss_checklist/en/ [retrieved 20 June 2019].

Annex VII. Labour Management Procedure (LMP)



MINISTRY OF HEALTH AND MEDICAL SERVICES
SOLOMON ISLANDS

Solomon Islands COVID-19 Emergency Response Project
World Bank: P173933

Labour Management Plan

Solomon Islands Covid-19 Emergency Response Project

LABOUR MANAGEMENT PLAN

Abbreviations and Acronyms

CEDAW	Convention Against All Forms of Discrimination Against Women
ESCP	Environmental and Social Commitment Plan
ESHS	Environmental, Social, Health and Safety
ESHSCE	Environmental, Social, Health and Safety and Community Engagement
ESMF	Environmental and Social Management Framework
ESS	Environmental and Social Standards
FM	Financial Management
GBV	Gender-Based Violence
ILO	International Labour Organization
LMP	Labour Management Plan
MHMS	Ministry of Health and Medical Services
M&E	Monitoring and Evaluation
OHS	Occupational Health and Safety
PPE	Personal protective equipment
POM	Project Operations Manual
SEA	Sexual Exploitation and Abuse
SIG	Government of Solomon Islands
TIN	Tax Identification Number
WB	World Bank
WHO	World Health Organisation
WGRM	Workers Grievance Redress Mechanism

1. Introduction

This Labour Management Plan (LMP) aims to ensure proper working conditions, including occupational health and safety and protection from sexual exploitation, abuse and sexual harassment, for staff recruited to manage the Solomon Islands Covid-19 Emergency Response Project. Government workers who participate in the Project as part of their broader responsibilities will be covered by Project occupational health and safety measures and by measures to protect the workforce in terms of child labour and forced labour. Health care workers in facilities that benefit from Project activities are outside the scope of this LMP.

The Ministry of Health and Medical Services (MHMS) will be responsible for Project management, implementation and coordination with other government ministries and stakeholders. The MHMS will establish a Project Management Unit (PMU), led by the Undersecretary Administration and Finance (USAF). The PMU will be responsible for the day-to-day management of the Project, including financial management, procurement, safeguard preparation, consolidation of workplan and budget, financial audit, compliance with the World Bank's Environmental and Social Framework (ESF), and monitoring and evaluation (M&E). The PMU will be staffed with a core team with expertise in Project management, procurement, financial management, environment and social risk management, and monitoring and evaluation. Individual consultants with specific skill sets will be recruited to provide support to the PMU as needed. Pending recruitment of the PMU, and in view of the emergency nature of the Project, however, the Project will be managed on an interim basis by existing MHMS staff and by staff on an existing World Bank financed project in Solomon Islands. It is envisaged that these interim arrangements will operate for the first six months of the Project.

1.1 Project Description

The Solomon Islands Covid-19 Emergency Response Project will assist the Government of Solomon Islands (SIG) in preventing, detecting and responding to the threat posed by COVID-19 and to strengthen national systems for public health preparedness in Solomon Islands. The Project will be national in scope but will also include support to selected provinces.

Achievement of the Project Development Objectives will be monitored through the following PDO level outcome indicators:

- Number of suspected cases of COVID-19 reported and investigated per approved national protocols.
- Number of acute healthcare facilities with isolation capacity.

The Project objectives are aligned to the results chain of the COVID-19 SPRP. This Project is prepared under the global framework of the World Bank COVID-19 Response financed under the Fast Track COVID-19 Facility.

1.2 Project Subcomponents

The proposed Project components and sub-components are:

Component 1. Emergency COVID-19 Preparedness and Response

This component provides immediate support to implement prevention, preparedness, and emergency response activities for COVID-19 in Solomon Islands at all levels of health facilities across all provinces, focusing on the following areas: (a) improving infection prevention and control measures by providing personal protective equipment to front line health workers (which are largely women, about 67%) as well as necessary supplies and consumables, including test kits and laboratory consumables; (b) enhancing case detection, confirmation, and contact tracing capabilities; (c) upgrading quarantine facilities in areas bordering Papua New Guinea (Nila, Shortlands and Taro, Choiseul); and isolation units at Good Samaritan and Autoifi hospitals to prepare for potential surge in demand to separate people who are ill with symptoms of COVID-19 and/or have tested positive; (d) mobilizing contractual health care workers (including laboratory technicians) to respond to a surge in demand for health care services, and general operating expenses for the response, including gender-based violence (GBV) support in quarantine facilities and GBV messaging in all forms of community health outreach as part of the emergency response. In renovating and upgrading quarantine facilities and isolation units the Project will implement climate change adaptation measures, including energy efficiency improvements such as sustainable cooling (with passive cooling as first option), renewable energy sources, energy efficient equipment, including low energy lightbulbs (LED lightbulbs) and replacement of old inefficient equipment, such as refrigerators and cooling systems, to mitigate the release of greenhouse gas (GHG) emissions.

Component 2. Health Systems Strengthening

This component supports health systems strengthening activities to ensure continuity of delivery of critical health services and to cope with the surge in demand for care posed by COVID-19. The activities include: (a) renovating and upgrading intensive care units and capacity building in two Provincial hospitals (Tulagi and Helena Goldie hospitals); (b) enhancing health care waste management by financing energy efficient incinerators, transport for waste disposal, and training in health care waste management. The location for the incinerators to be supported under the Project will be climate safe and determined by MHMS in accordance with criteria satisfactory to the World Bank, which will be elaborated in the Project Operations Manual (POM); (c) upgrading the national medical storage facility (NMS) by financing refurbishment of the warehouse and training of staff; (d) supporting MHMS with establishing a national health emergency coordination centre by financing upgrading and repurposing of existing building (Zome) currently used as temporary accommodation for health care workers. Currently the emergency operation centre is housed at NRH; (e) training of health care workers in hospital infection control, and disease surveillance (including climate-related infectious diseases and other climate related health outcomes). All training for health workers will include a module on GBV to build capacity of staff to identify GBV cases, appropriately handle disclosure, and refer patients for additional services. The renovation and upgrading of existing health infrastructures (two provincial hospitals, NMS, and national health emergency coordination centre) will consider a climate adaptive design features such as: passive ventilation for cooling, cooling vegetation, shutters on windows, for cooling and hence decreased need for energy use for air-conditioning, roof and wall insulation to buildings keep cool during heat events, flood protection in flood prone areas. This component will also finance goods for MHMS such as fuel-efficient trucks (where feasible there will be electric) for health care waste management, which contribute to climate change mitigation.

Component 3: Project Implementation Management, Monitoring and Evaluation

This component supports the management and M&E of Project activities and outputs. It will also finance capacity building activities to MHMS staff and consultants who will be directly involved in Project management and procurement of goods and consulting services. Key activities include: (a) financing interim support from an existing World Bank Project's Project Management Unit (PMU) ; (b) support for establishing a PMU in MHMS through contracting fiduciary staff, among others; (c) capacity building for Project management, financial management (FM), procurement, environmental and social management, training on climate change and sharing lessons learnt on climate change, M&E, and reporting; (d) sharing lesson learnt from response exercises and joint learning with other Pacific countries; and (e) operating expenses. The M&E will be implemented in coordination with technical departments responsible for implementing activities using the agreed M&E tools.

1.3 Summary of Key Project Subcomponent Activities

Project-supported activities will include purchase of goods and equipment, provision of training, and operational costs for rapid response and surveillance. The main Project activities will include provision of goods and supplies including PPE, test kits and laboratory consumables; enhancing case detection, confirmation, and contact tracing capabilities; upgrading quarantine facilities and isolation units; mobilizing contractual health care workers; renovating and upgrading intensive care units; enhancing health care waste management including the provision of incinerators; training in health care waste management; upgrading the national medical storage facility; supporting MHMS with establishing a national health emergency coordination centre; and training of health care workers in hospital infection control, and disease surveillance. The Project will not fund procurement of vaccines or provide operational support for rollout of COVID-19 vaccine.

Some minor civil works associated with the installation of the incinerators and existing health centre refurbishments are expected. Minor civil works will be undertaken to expand treatment capacity by refurbishing existing ICU facilities within existing facilities, upgrading and repurposing an existing building to function as a national health emergency coordination centre, upgrading the existing central medicine store in Honiara and refurbishing other existing health facilities in the nominated five provinces. However, Project activities are not expected to involve land acquisition, physical or economic displacement, or restriction of access to natural resources.

Energy efficient incinerators may be procured. The exact number, type and location for the incinerators is yet to be determined but will be climate safe and determined by MHMS in accordance with criteria satisfactory to the World Bank. Decisions on the procurement of new incinerators will be based on a feasibility study that will be undertaken during implementation. The review will also include assessments of possible repairs of malfunctioning units procured in 2015 under the Secretariat of the Pacific Regional Environment Programme (SPREP) PacWaste Project.

There will be no security forces funded by the Project. However, there may be security present on sites where Project activities take place such as the quarantine facilities. The security personnel will be engaged by the SIG with limited to general security functions related to the COVID-19 response.

The general types of Project activities can be summarized into the following activities which will be assessed and screened for their environmental and social risks:

Table 14 – Summary of Proposed Project Activities

Project Activity	Description
Provision of goods and supplies	Includes PPE, test kits, and laboratory consumables - Component 1 (a)
Renovations and refurbishments	Renovation of quarantine facilities in areas bordering Papua New Guinea - Component 1 (c)
	Renovation of isolation units at Good Samaritan and Autoifi hospitals - Component 1 (c)
	Renovation of intensive care units in two Provincial hospitals (Tulagi and Helena Goldie hospitals) - Component 2 (a)
	Refurbishment of the national medical storage facility (NMS) by financing refurbishment of the warehouse – Component 2 (c)
	Refurbishment of the existing Zome building to establish a national health emergency coordination center (NHEC) - Component 2 (d)
Capacity building and training	Enhancing case detection, confirmation, and contact tracing capabilities - Component 1 (b)
	Capacity building in two Provincial hospitals (Tulagi and Helena Goldie hospitals) - Component 2 (a)
	Training in health care waste management - Component 2 (b)
	Training of staff at the NMS on warehouse management - Component 2 (c)
	Training of health care workers in hospital infection control, and disease surveillance, GBV – Component 2 (e)
Enhancing health-care waste management	Financing energy efficient incinerators - Component 2 (b)
	Waste disposal transport, specifically four fuel-efficient trucks - Component 2 (b)

1.4 Project Area and Beneficiaries

The Project will operate at both national and provincial levels, with the five participating provinces currently being Western Province, Malaita, Choiseul, Isabel and Greater Honiara. The purchase of consumables is expected to cover all provinces under the central coordination of MHMS, while infrastructure investments will largely focus on the provinces of Malaita, Choiseul, Isabel, Western Province and Honiara.

The expected Project beneficiaries will be the Solomon Islands population at large given the nature of the disease, infected people, at-risk populations, particularly the elderly and people with chronic conditions, medical and emergency personnel, medical and testing facilities (all levels), and public health agencies engaged in the response in participating countries.

1.5 Project Management Overview

The MHMS will be responsible for Project management, implementation and coordination with other government ministries and stakeholders. A Project Management Unit (PMU), reporting to the

Undersecretary Administration and Finance, will be responsible for day-to-day management of the Project, including financial management, procurement, safeguard preparation, consolidation of workplan and budget, financial audit, compliance with the World Bank's ESF, and M&E.

A Project Operations Manual (POM) will be developed within three months of the effective date of the Financing Agreement to support the PMU to meet its responsibilities for management and implementation of the Project. The POM will describe detailed arrangements and procedures for the implementation of the Project, such as responsibilities of the PMU, operational systems and procedures, Project organizational structure, office operations and procedures, finance and accounting procedures (including funds flow and disbursement arrangements), procurement procedures, personal data collection and processing, and implementation arrangements for the Environmental and Social Commitment Plan (ESCP) as well as the preparation and/or implementation of instruments referred to in the ESCP such as the Environmental and Social Management Plan (ESMP) per World Bank ESF guidance. The Project will operate in accordance with the arrangements and procedures set out in the POM.

1.5.1 Project Management Unit

The PMU will be staffed with a core team with expertise in Project management, procurement, financial management, environment and social risk management, and monitoring and evaluation. Individual consultants with specific skill sets will be recruited to provide support to the PMU as needed. Pending recruitment of the PMU, and in view of the emergency nature of the Project, however, the Project will be managed on an interim basis by existing MHMS staff and by staff on an existing World Bank financed project in Solomon Islands. It is envisaged that these interim arrangements will operate for the first six months of the Project.

1.5.2 ESHS&CE Staff

The MHMS has committed to recruit a full-time, local Environmental, Social, Health, Safety and Community Engagement (ESHS&CE) Officer within six months of Project effectiveness, as part of the permanent PMU. In addition, an international part-time ESHS expert will be engaged upon Project Approval to provide training to the local environmental and social specialist and PMU staff and provide continued guidance and monitoring of the project's environmental and social performance on an as-required basis. The ESHSCE Officer will develop and support implementation of the Project's environmental, social, health and safety, and community engagement instruments in compliance with local legislation, good international industry practice (GIIP), including WHO Guidance on COVID-19 and the WB Environmental and Social Framework (ESF). The GBV Officer at the MHMS will be used to ensure quality messaging of the risk of GBV which will include a communication campaign in all forms of community outreach in all phases of the emergency response.

1.5.2.1 ESHS&CE Officer

The ESHS&CE Officer, reporting to the Project Manager, will function as a core member of the PMU and will ensure that environmental, social, and health and safety risks are managed in accordance with the requirements of the World Bank's ESF, WHO Guidance on COVID-19, and SIG Law.

Specifically, the ESHS&CE Officer will:

- Lead the implementation of the project's ESMF and associated instruments in accordance with the World Bank ESF, project ESCP and SIG legal requirements including:
 - Develop and deliver ESHS training for the PMU and other relevant stakeholders;
 - Managing the oversight of project contractors, including Civil Works Contractors;
 - Environmental and social screening (outlined in section 6), preparation and disclosure of site-specific instruments (ESIA/ESMP) and ECD consent applications and associated documents (PER/EIS), consultation and information dissemination activities with relevant stakeholders;
 - Managing environmental and social risks in procurement;
 - Site-based environmental, safety and social monitoring. Address non-compliances and develop and confirm the implementation of corrective actions. Assist with the implementation of project investment opportunities that would improve performance;
 - Preparation of the monthly and six-monthly monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project; and
 - Notification, reporting and management of incidents or accidents related to the Project which have, or are likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.
- Oversee the implementation of the project's SEP Plan in close collaboration with the Project Manager.
- Coordinate the implementation of the project's GM ensuring timely resolution of project related grievances.
- Participate in semi-annual Project Supervision missions, representing MHMS on environmental, safety and social aspects.
- Conduct other ESHS and CE related activities as required by the Project Manager.

1.5.2.2 International ESHS Specialist

The ESHS&CE Officer will be supported by part-time, international ESHS expert, who shall be recruited/appointed and retained on an as-required basis and report to the Project Manager.

The International ESHS Specialist will:

- Provide technical support to the ESHS&CE Officer to implement the project's ESMF and associated instruments in accordance with the World Bank ESF, ESCP and SIG legal requirements including:
 - Support the ESHS&CE to develop and deliver ESHS training for the PMU and other relevant stakeholders.
 - Support environmental screening, preparation and disclosure of site-specific instruments, and consultation and information dissemination activities with relevant stakeholders.
 - Support site-based environmental, safety and social monitoring. Advise on suitable corrective actions/opportunities for improving performance.

- Support/Review monthly and six-monthly monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project.
- Support notification, reporting and management of incidents or accidents related to the Project which have, or are likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.
- Participate (remotely) in semi-annual Project Supervision missions, representing MHMS on environmental, safety and social aspects.

1.5.2.3 Gender-Based Violence Officer

A GBV Officer will be engaged to ensure quality messaging of the risk of GBV which will include a communication campaign in all forms of community outreach in all phases of the emergency response. The MHMS GBV Officer will be used to provide this support.

1.6 Activity Level Environmental and Social Risk Management Responsibilities

1.6.1.1 Construction Contractors

Construction contractors may be used for installation and refurbishment activities such as the installation of the incinerators and refurbishment of health care facilities for isolation and quarantine centres. Contractor(s) will be required to comply with the project's E&S risk management plans and procedures, including the Code of Environmental and Social Practice (CoESP) and LMP, as well as local legislations and this will be specified in the contractor's agreements. Contractor(s) will be expected to disseminate and create awareness within their workforce of E&S risk management compliance, and undertake any staff training necessary for their effective implementation. Where contractors do not have existing environmental staff, the E&S Specialist/s within the PMU, supported by the World Bank Environmental and Social team, will make arrangements for adequate capacity building within the contractor's workforce.

Contractor(s) will also be required to prepare and comply with WMP(s) and health and safety plan(s) in compliance with both the ESMF and local legislation and submit those plans to the PMU E&S Specialists for approval, prior to the commencement of renovation and/or refurbishment activities and to take all necessary precautions to maintain the health and safety of their personnel. The contractor(s) will appoint a health and safety officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the site, to take protective measures to prevent accidents, to ensure suitable arrangements are made for all necessary welfare and hygiene requirements, to undertake worker training, and be a focal point to deal with COVID-19 issues. Contractors will be briefed on the GM and required to refer any grievances to the Social Specialist who will coordinate the GM.

1.6.1.2 Health-care Facilities

At the health-care facility level, the head of the health-care facility will have overall responsibility for Infection Prevention Control (IPC) and waste management. During Project implementation, the heads of health-care facilities will be expected to assess the following:

- whether adequate and qualified staff are in place, including those in charge of infection control and waste management.

- whether additional staff are required: if so, how many, and with what qualifications and training.
- how relevant departments in the healthcare facility will work together to create an intra-departmental team to manage, coordinate and regularly review the issues and performance of the facility.

The head of a health-care facility should formally appoint a person or team to be responsible for implementing the procedures and mitigation measures that have been adopted to avoid or minimize the spread of COVID-19. This would be the person/team with overall responsibility for infection prevention control and waste management and would ensure that IPC and health care waste management activities are carried out in accordance with the MHMS IPCG. This person/team would also manage, coordinate and regularly review the performance of the facility in terms of how the waste streams in the health-care facilities are separated, tracked and recorded, and oversee the procedures for the safe transportation of potentially infected samples to testing facilities.

Currently, some health care facilities have a dedicated person/s who champions IPC and health-care waste management who could also be identified for IPC and health-care waste management oversight for this Project. This will be decided during project implementation.

1.7 World Bank Environmental and Social Team

The Bank's Environmental and Social team will provide regular E&S risk management compliance monitoring and support for the duration of the project, remote and during missions, and to build capacity for ESMF implementation and stakeholder engagement. As international travel may be slow to resume, supervision and missions may continue to be conducted remotely for some time.

2. Labour Use on the Project

2.1 Categorization of the Workforce

The World Bank Environmental and Social Standard 2: *Labour and Working Conditions* (ESS2) categorizes Project workers into four categories:

1. Direct workers: People employed or engaged directly to work specifically in relation to the Project.
2. Contracted workers: People employed or engaged by third party contractors to perform work related to core function of the Project, regardless of location.
3. Primary supply workers: People employed or engaged by the primary suppliers. (This category of workers is not expected to be engaged on the Covid-19 Emergency Response Project and is not discussed in the LMP.)
4. Community workers: People employed or engaged in providing community labour. (This category of workers is not expected to be engaged on the Covid-19 Emergency Response Project and is not discussed in this LMP.)

2.1.1 Direct Workers

Two types of direct workers will be employed by the Project: Direct Workers – Government and Direct Workers - other.

1. **Direct workers – Government** are public servants employed by the MHMS and health facilities who will be involved in Project implementation. The number of government staff involved in Project implementation is not known yet. They will remain subject to the terms and conditions of their existing public sector employment agreement. They will, however, be covered by Project measures to address occupational health and safety issues (ESS2 paragraphs 24 to 30), including those specifically related to COVID-19, and measures to protect the workforce in terms of child labour and forced labour (ESS 2 paragraphs 17 to 20). Health care workers in any facilities that benefit from Project activities (such as training, equipment etc) are considered Project beneficiaries rather than Direct Workers – Government, and outside the scope of this LMP.
2. **Direct workers - Other** are those employed as full and part-time consultants by under the Project. This category will comprise the Project Manager, ESHS and ESHSCE Specialists recruited for the Project and maintained throughout Project implementation. Other experts/consultants will be hired on demand basis throughout the Project period.

2.1.2 Contracted workers

Contracted labour requirements are not likely to be fully determined until Project implementation commences. It is likely, however, that staff will be contracted for minor civil works associated with the installation of incinerators and for refurbishment of quarantine facilities, isolation and intensive care units and upgrading of the national medical storage facility and Laboratory Technicians. All contracted staff will be subject to the LMP. All Laboratory Technicians will be provided with appropriate safety equipment. Contractors will also be required to ensure that any subcontractors also adhere to the LMP and regulations.

2.1.3 Migrant workers

Migrant workers expected to work on the Project may include international consultants. Any international consultants working in Solomon Islands will require work permits.

Under current Covid-19 conditions, international travel to Solomon Islands is restricted and arrivals may be subject to a 14-day quarantine period.

2.2 Project Labour Requirements

Project labour requirements are shown in **Table 15** below.

Table 15 Number, Characteristics and Timing of Workforce

Project Component	Estimated Number of Project Workers	Characteristics of Project Workers	Timing of Labor Requirements	Contracted Workers
Component 1:				

Project Component	Estimated Number of Project Workers	Characteristics of Project Workers	Timing of Labor Requirements	Contracted Workers
Provision of supplies, test kits and consumables	7	Project Manager Procurement Officer Infrastructure Officer Finance Mgmt Officer M & E Officer ESHS&CE Officer ESHS Specialist (Part-time)	Operations Starting in Quarter 2, 2021 and maintained throughout the project implementation period.	Contracted Workers to implement and manage the project.
Upgrade of quarantine facilities in areas bordering Papua New Guinea and of isolation units at Good Samaritan and Atoifi hospitals	Unknown – It is not possible to estimate the number of workers until the scope of work is known during implementation.	Project Manager ESHS and ESHSCE Specialists MHMS Financial Management and Operations Management National construction contractor to conduct civil works associated with the upgrade/ refurbishment of quarantine facilities and isolation units. National construction management staff and labour to be contracted through construction contractor.	Construction Starting in Quarter 2, 2021	Contracted workers in construction, and refurbishment of quarantine facilities and isolation units
Mobilize contractual health care workers (including laboratory technicians) to respond to surge in demand	13	Project Manager Procurement Officer Infrastructure Officer Financial & Mgmt Officer M & E Officer ESHS and ESHSCE Specialists	Operations Starting in Quarter 2, 2021	
Component 2:				
Renovating/upgrading: <ul style="list-style-type: none"> intensive care facilities in Tulagi and 	Unknown – It is not possible to estimate the number of workers until the scope of	Project Manager ESHS and ESHSCE Specialists	Operations Starting in Quarter 2, 2021	Contracted workers in construction, and refurbishment of intensive care and medical storage facilities

Project Component	Estimated Number of Project Workers	Characteristics of Project Workers	Timing of Labor Requirements	Contracted Workers
Helena Goldie Hospitals <ul style="list-style-type: none"> • national medical storage facility 	work is known during implementation	<p>MHMS Financial Management and Operations Management</p> <p>National construction contractor to conduct civil works associated with the upgrade/ refurbishment of intensive care and medical storage facilities.</p>		
Installation of energy efficient incinerators; upgrading	Unknown – It is not possible to estimate the number of workers until the scope of work is known during implementation	<p>Project Manager</p> <p>ESHS and ESHSCE Specialists</p> <p>MHMS Financial Management and Operations Management</p> <p>National construction contractor to conduct civil works associated with the installation of energy efficient incinerators.</p>	Construction Starting Qtr 2, 2021	Contracted workers in installation of energy efficient incinerators
Establishment of national health emergency coordination centre	Unknown - It is not possible to estimate the number of workers until the scope of work is known during implementation	<p>Project Manager</p> <p>ESHS and ESHSCE Specialists</p> <p>MHMS Financial Management and Operations Management</p> <p>National construction contractor to conduct civil works associated with the upgrade/ refurbishment of facilities to establish national health emergency coordination centre.</p>	Construction Starting in Quarter 2, 2021	Contracted workers in upgrading facilities to establish national health emergency coordination centre

Project Component	Estimated Number of Project Workers	Characteristics of Project Workers	Timing of Labor Requirements	Contracted Workers
Training health care workers in infection control and disease surveillance	3	Project Manager ESHS and ESHSCE Specialists	Throughout the whole Project cycle	
Component 3:				
Implementation Management and Monitoring and Evaluation	3	Project Manager ESHS and ESHSCE Specialists MHMS Financial Management and Operations Management	Throughout the whole Project cycle	Contracted staff employed to support development of M&E frameworks, data collection and reporting
Capacity building for Project management, financial management, procurement, environmental and social management, training on climate change and sharing lessons learnt on climate change	3	Project Manager ESHS and ESHSCE Specialists MHMS Financial Management and Operations Management	Throughout the whole Project cycle	Contracted staff employed to support development of M&E frameworks, data collection and reporting
Sharing lesson learnt from response exercises and joint learning with other Pacific countries	3	Project Manager ESHS and ESHSCE Specialists MHMS Financial Management and Operations Management	Throughout the whole Project cycle	Contracted staff employed to support development of M&E frameworks, data collection and reporting

3. Potential Labour Risks

The Project will demonstrate high standards of human resource management and adhere to Solomon Islands national labour and OSH legislation and international instruments including International Labour Office conventions ratified by Solomon Islands.

The most significant risks to worker health, safety and well-being are summarized in **Table 16** below.

Table 16 Key Labour Risks

Project Activity	Key Labor Risks
General Project administration and implementation (hiring of consultants, monitoring and reporting, financial management, audits, E&S management, Project coordination, conducting behaviour and communication campaigns, conducting trainings, M&E)	<ul style="list-style-type: none"> • Risk of traffic accidents in travel to remote and isolated areas. • Exposure to people who could have COVID-19. • Project workers at risk of psychological distress, fatigue and stigma due to the nature of their work.
Minor civil works and/or construction works associated with the demolition, construction, and refurbishment of warehouses.	<ul style="list-style-type: none"> • Terms of employment (employment period, remuneration, tax and insurance payments etc.) are not secured by contractual agreements. • Workers suffer discrimination and lack of equal opportunity in employment. • Use of child labour contravenes national legislation and international conventions ratified by Solomon Islands Project workers at risk of psychological distress, fatigue, and stigma due to the nature of their work. • Risks of workplace accidents, particularly when operating construction equipment, when working at height on building construction, and when handling heavy equipment and materials • Risks from exposure to hazardous substances (dust, cement, chemicals used in construction etc.) • Accidents or emergencies (OHS) • Sexual Exploitation and Abuse (SEA), GBV and VAC to workers and community
Transportation of construction materials, equipment	<ul style="list-style-type: none"> • Road traffic accidents expose workers and local communities to hazardous materials (OHS) • Risk of road accidents in travel to provinces (OHS) • Risks of accidents when handling heavy equipment • Infected transportation staff transmit COVID-19 to local populations
Travel to/ from estimated 100 health facilities across the country to establish centralized health information management database and communications system	<ul style="list-style-type: none"> • Risk of traffic accidents in travel to remote and isolated areas. • Exposure to people who could have COVID-19. • Project workers at risk of psychological distress, fatigue and stigma due to the nature of their work. • Sexual Exploitation and Abuse (SEA), GBV and VAC to workers and community

Project Activity	Key Labor Risks
Screening people entering the country	<ul style="list-style-type: none"> • Risks from exposure to people who may be positive for COVID-19 • People entering the country suffer abuse of power, discrimination, stigma during screening process

4. Overview of Labour Legislation

The principal legislation governing labour management in the Solomon Islands includes:

- Labour Act (Revised Edition 1996) provides an overarching framework for labour legislation, establishing standards in relation to:
 - Days and Hours of Work
 - Payment of Wages
 - Written Contracts of Employment
 - Maternity Leave
 - Child labour
 - Care of workers
 - Termination of employment
- Trade Unions Act (Revised Edition 1996), which regulates the registration, leadership and operation of trades unions in Solomon Islands.
- Workmen’s Compensation Act (Revised Edition 1996) makes provision for compensation to workmen injured at work in Solomon Islands, it also includes occupational diseases.
- National Provident Fund Act (Revised Edition 1993) requires employers to pay contributions for any employee under a contract of service or apprenticeship.
- Unfair Dismissal Act (Revised Edition 1996) provides a remedy for employees who may be unfairly dismissed and establishes right of referral to the Trade Disputes Panel.
- Safety at Work Act (1982) designed to establish safe systems of work to eliminate or minimize the risks to health, safety and welfare. Under the Safety at Work Act, employer has the duty to:
 - Ensure the health, safety and welfare of all employees including part- and full-time workers, temporary workers, and work experience people.
 - Inform, instruct and supply relevant information to all employees.
 - Ensure that all plant, machinery and systems of work are safe and without risk to health and safety.
 - Ensure that the premises are safe to use and that all hazardous processes are either eliminated or adequately controlled.
 - Ensure that adequate training is supplied to staff where applicable.
 - Ensure freedom from discrimination, harassment, bullying or violence in the workplace.

- Ensure the health and safety of others who are not employed by employer but may be affected by their undertaking, for example visitors or contactors.

Solomon Islands has in addition ratified the following International Labour Organisation (ILO) Conventions:

- C029 - Forced Labour Convention, 1930
- C087 - Freedom of Association and Protection of the Right to Organise Convention, 1948
- C098 - Right to Organise and Collective Bargaining Convention, 1949
- C105 - Abolition of Forced Labour Convention, 1957
- C111 - Discrimination (Employment and Occupation) Convention, 1958
- C138 - Minimum Age Convention, 1973
- C182 - Worst Forms of Child Labour Convention, 1999

The Gender Equality and Women's Development (GEWD) Policy 2016 – 2020 is the overarching policy framework for achieving gender equality and women's human rights in Solomon Islands. SIG has in addition adopted other national and international frameworks and commitments such as the Convention on the Elimination of All forms of Discrimination against Women (CEDAW) and the Sustainable Development Goals (SDGs) are also fundamental to the purpose of the GEWD Policy. The Policy places the promotion of gender equality at the heart of the government's mission and recognizes that continuing to invest in women's empowerment is vital to achieving gender equality, including improved economic status of women, and recognizes the need to work to address attitudinal and institutional barriers to gender equality.

5. Roles and Responsibilities for Project Labour Management

5.1 Project Management

The MHMS will be responsible for Project management, implementation and coordination with other government ministries and stakeholders. The Project Manager will lead day-to-day Project management and implementation, supported by an international ESHS Specialist (part-time) and one full-time national ESHSCE Officer. The Project Manager, with support of the ESHS and ESHSCE Specialists, will be responsible for the following within their responsibility area:

- Implementing this LMP;
- Ensuring that contractors comply with this LMP;
- Monitoring to verify that contractors are meeting labour and OHS obligations toward contracted workers as required by national legislation and ESS2;
- Monitoring contractors' implementation of this LMP;
- Monitoring compliance with occupational health and safety standards at all workplaces in line with the national occupational health and safety legislation;

- Monitoring compliance with COVID-19 related health and safety measures including making workplaces ready for COVID-19;
- Monitoring and implementing training on LMP,OHS and mitigating the spread of COVID-19 for Project workers as described in the Project ESMF;
- Ensuring that all direct workers – other are provided with health insurance that covers treatment for COVID-19 infections;
- Ensuring that the grievance redress mechanism for Project workers is established and implemented and that workers are informed of its purpose and operation.
- Have a system for regular monitoring and reporting on labour and occupational safety and health performance; and data collection, monitoring, and analysis of the LMP as part of the Project's M&E activity.

5.2 Contractors

Contractors are responsible for management of their workers or subcontracted workers in accordance with this LMP, which will be supervised by the MHMS and Project Manager.

Contractors will be responsible for the following:

- To obey requirements of the national legislation (including any emergency regulations) and this LMP;
- Maintain records of recruitment and employment process of contracted workers;
- Communicate clearly job description and employment conditions to contracted workers;
- Provide workers with evidence of all payments made, including benefits and any valid deductions;
- Provide all contracted workers with health insurance that covers treatment for COVID-19 infections;
- Maintain records regarding labour conditions and workers engaged under the Project, including contracts, registry of induction of workers including Code of Conduct, hours worked, remuneration and deductions (including overtime).
- Assign a designated safety officer, conducting training on and implementing OHS measures and measures to mitigate the spread of COVID-19, recording safety incidents and corresponding Root Cause Analysis (lost time incidents, medical treatment cases), first aid cases, high potential near misses, and remedial and preventive activities required (for example, revised job safety analysis, new or different equipment, skills training, etc.) in accordance with the Project's ESMF
- Ensure no child or forced labour is involved in the Project.
- Maintain records of training/induction dates, number of trainees, and topics.

- Implement the grievance redress mechanism for workers, maintaining records of any worker grievances including occurrence date, grievance, and date submitted; actions taken and dates; resolution (if any) and date; and follow-up outstanding.
- Establish a system for regular review and reporting on labour, and occupational safety and health performance.

This LMP may be updated to include additional details about the hired workforce of contractors including, as necessary.

6. Project Labour Policies and Procedures

6.1 Terms and Conditions of Employment

Terms and conditions of direct workers are determined by their individual contracts. Permanent Project staff will have individual agreements (labour contract or service contract) with fixed monthly wage rates. Recruitment procedures will be documented and filed in accordance to the requirements of national labour legislation and the ESS2. A standard forty hours per week employment should be practiced. Requirements and conditions of overtime and leave entitlements are agreed as part of individual contracts.

The Project Manager will ensure that contractors are aware of, and comply with, labour management and OSH policies and procedures outlined in this LMP. Each contractor will be required to submit an assessment of environmental and social risks (including labour risks) associated with their activities and risk mitigation measures in accordance with the Project's environmental and social requirements.

The Project's labour requirements are outlined in the sections below.

6.2 Age of Employment

Solomon Islands has ratified both the ILO Minimum of Age Convention (C138) and the ILO Worst Forms of Child Labour Convention (C182). The minimum age of employment for this Project will be 18 years due to the hazardous working conditions. To ensure compliance, all employees will be required to produce a Tax Identification Number (TIN) as proof of their identity and age. Contractors and subcontractors will be required to receive approval for the specific procedures they will use to verify the ages of job applicants.

6.3 Occupational Health and Safety

The OHS measures of the Project are based on the requirements of the relevant sections of ESS2 as well as WHO guidelines. These will particularly address the key identified risks, including infection of Project workers with Covid-19 and of psychological distress, fatigue and stigma due to the nature of their work.

The ESHS and ESHSCE Specialists will establish OSH guidelines for all Project workers, monitor and implement training on OHS for Project workers and establish a system for regular monitoring and reporting on OSH performance including documentation and reporting of occupational accidents, diseases and incidents.

The Project Manager will ensure effective methods are put in place for responding to identified hazards and risks, establishing priorities for taking action and evaluating outcomes. WHO's [guidance for health workers](#) details both the rights of health workers and expectations of employers and managers in health facilities, as well as the responsibilities of health workers. These guidelines include preventive and protective measures (such as the use of PPE), emergency prevention and preparedness and response arrangements to emergency situations, and remedies for adverse impacts as requires under the ESS2.

The Project guidelines will require compliance with the following provisions:

- Ensure workplace health and safety standards in full compliance with Solomon Islands law, ESS2 and WHO Guidelines and include:
 - Basic safety awareness training to be provided to all persons as well as on COVID-19 prevention and related measures.
 - All Project vehicle drivers to have appropriate licenses.
 - Safe management of areas around operating equipment inside or outside hospitals/ laboratories/ treatment facilities/ isolation centres.
 - All workers to be equipped with all necessary PPE (particularly facemask, gowns, gloves, handwashing soap, and sanitizer) to protect from COVID-19.
 - Secure scaffolding and fixed ladders to be provided for work above ground level.
 - First aid equipment and facilities to be provided in accordance with labour legislation.
 - At least one supervisory staff trained in safety procedures to be present at all times when construction work is in progress.
 - Adequate provision of hygiene facilities (toilets, hand-washing basins) and resting areas etc.
- Compliance with Solomon Islands legislation, WB's ESS2 requirements and other applicable requirements which relate to OHS hazards, including WHO specific COVID-19 guidelines.
- All workplace health and safety incidents to be properly recorded in a register detailing the type of incident, injury, people affected, time/place and actions taken.
- All workers (irrespective of contracts being full-time, part-time, temporary or casual) to be covered by insurance against occupational hazards and COVID-19, including ability to access medical care and take paid leave if they need to self-isolate as a result of contracting COVID-19.
- All work sites to identify potential hazards and actions to be taken in case of emergency.
- Any on-site accommodation to be safe and hygienic, including provision of an adequate supply of potable water, washing facilities, sanitation, accommodation and cooking facilities.
- Workers residing at site accommodation to receive training in prevention of infection through contaminated food and/ or water, COVID-19 prevention and avoidance of sexually transmitted diseases.

- Laminated signs of relevant safe working procedures to be placed in a visible area on work sites, in local language and English, including on hand hygiene and cough etiquette, as well as on symptoms of COVID-19 and steps to take if suspect have contracted the virus.
- Fair and non-discriminatory employment practices.
- Under no circumstances will contractors, suppliers or sub-contractors engage forced labour.
- Construction materials to be procured only from suppliers able to certify that no forced labour or child labour (except as permitted by employment legislation) has been used in production of the materials.
- All employees to be aware of their rights under the Labour Law, including the right to organize.
- All employees to be informed of their rights to submit a grievance through the Project Worker Grievance Mechanism. All employees to be provided training on appropriate behaviour with communities, gender-based violence and violence against children.

Project workers will receive OHS training at the start of their employment, and thereafter on a regular basis and when changes are made in the workplace, with records of the training kept on file. Training will cover the relevant aspects of OHS associated with daily work, including the ability to stop work without retaliation in situations of imminent danger (as set out in paragraph 27 of ESS2) and emergency arrangements.

All Project workers will also receive training on COVID-19 prevention, social distancing measures, hand hygiene, cough etiquette and relations with local community. Training programs will focus, as needed, on COVID-19 laboratory biosafety, operation of quarantine and isolation centres and screening posts, communication and public-awareness strategies for health workers and the general public on emergency situations, as well as compliance monitoring and reporting requirements, including on waste management, the Project's labour-management procedures, stakeholder engagement and grievance mechanism.

All parties who employ or engage Project workers will actively collaborate and consult with Project workers in promoting understanding of, and methods for, implementation of OHS requirements, as well as in providing information to Project workers, training on occupational safety and health, and provision of personal protective equipment without expense to the Project workers.

6.3.1 Workers' Rights to Refuse Unsafe Work Environments

Workplace processes will be put in place for Project workers to report work situations that they believe are not safe or healthy. Project workers can remove themselves from a work situation which they have reasonable justification to believe presents an imminent and serious danger to their life or health. Project workers who remove themselves from such situations will not be required to return to work until an investigation has been conducted and necessary remedial action to correct the situation has been taken. Project workers will not suffer retaliation or otherwise be subject to reprisal or negative action for such reporting or removal.

6.3.2 Sexual Exploitation and Abuse and Sexual Harassment

Solomon Islands has ratified the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW). By ratifying CEDAW, it has made a commitment to ensure that the principles of equality are adhered to and that discriminatory practices including sexual exploitation and abuse and sexual harassment are abolished. Provisions to prevent sexual exploitation and abuse and sexual harassment will be included in the Code of Conduct for Project staff and for contracted workers in line with relevant international standards and national legislation.

6.3.3 Workers' Grievance Management

MHMS and health staff working on the Project will have access to the grievance mechanisms established by the Project. For direct workers – other and contracted workers, a Project specific Workers' Grievance Redress Mechanism (WGRM) consistent with ESS2 will be established and maintained to raise workplace concerns.

Workers will be informed of the grievance mechanism at the time of recruitment. The WGRM will be easily accessible and measures will be put in place to protect workers against reprisal for its use. The WGRM can be used to raise workplace related concerns including about the terms of employment, rights at work, unsafe or unhealthy work situations and others. If the issue cannot be resolved at the workplace level within seven days, it will be escalated to the Project Management level where the ESHSCE Specialist will serve as Grievance Focal Point to file the grievances and appeals. The Grievance Focal Point will coordinate with relevant departments/organizations and persons to address these grievances. The Project Manager will review the records on a monthly basis and report on the grievances, response time and resolution status in a quarterly report to the WB.

The WGRM will operate as follows:

1. The complainant may report their grievance in person, by phone, text message, mail or email (including anonymously if required) to the contractor as the initial focal point for information and raising grievances. For complaints that are satisfactorily resolved at this stage, the incident and resultant resolution will be logged and reported to the Grievance Focal Point.
2. If the complainant is not satisfied, the contractor will refer the aggrieved party to the Grievance Focal Point. The Focal Point endeavours to address and resolve the complaint and inform the complainant in two weeks or less. For complaints that are satisfactorily resolved by the Focal Point, the incident and resultant resolution will be logged by the Focal Point. Where the complaint is not resolved, the Focal Point will refer to the Project Manager for further action or resolution.
3. As a third step, if the matter remains unresolved, or the complainant is not satisfied with the outcome, the Project Manager will refer the matter to the MHMS Permanent Secretary, who will aim to resolve the grievance in three weeks or less. The Grievance Focal Point will log details of issue and resultant resolution status.
4. If the complaint remains unresolved or the complainant is dissatisfied with the outcome proposed by the MHMS Permanent Secretary, the complainant may refer the matter to the appropriate legal or judicial authority, at the complainant's own expense. A decision of the Court will be final.

The grievance mechanism is not an alternative or substitute for the legal system for receiving and handling grievances and does not preclude access to other judicial or administrative remedies that might be available under the law or through existing arbitration procedures. While all employees always have the right to access the legal system, the purpose of establishing a grievance mechanism is to provide an accessible and practical means to mediate and seek appropriate solutions, wherever possible.

Attachment A: WHO Guidance on OHS and Covid-19 Outbreak

Coronavirus disease (COVID-19) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health

Interim guidance
19 March 2020



Background

Health workers are at the front line of the COVID-19 outbreak response and as such are exposed to hazards that put them at risk of infection. Hazards include pathogen exposure, long working hours, psychological distress, fatigue, occupational burnout, stigma, and physical and psychological violence. This document highlights the rights and responsibilities of health workers, including the specific measures needed to protect occupational safety and health.

Health work rights, roles and responsibilities

Health worker rights include the expectation that employers and managers in health facilities:

- assume overall responsibility to ensure that all necessary preventive and protective measures are taken to minimize occupational safety and health risks;¹
- provide information, instruction, and training on occupational safety and health, including;
- refresher training on infection prevention and control (IPC);
- use, putting on, taking off and disposal of personal protective equipment (PPE);
- provide adequate IPC and PPE supplies (masks, gloves, goggles, gowns, hand sanitizer, soap and water, cleaning supplies) in sufficient quantity to those caring for suspected or confirmed COVID-19 patients, such that workers do not incur expenses for occupational safety and health requirements;
- familiarize personnel with technical updates on COVID-19 and provide appropriate tools to assess, triage, test, and treat patients, and to share IPC information with patients and the public;
- provide appropriate security measures as needed for personal safety;
- provide a blame-free environment in which health workers can report on incidents, such as exposures to blood or bodily fluids from the respiratory system, or cases of violence, and adopt measures for immediate follow up, including support to victims;
- advise health workers on self-assessment, symptom reporting, and staying home when ill;

- maintain appropriate working hours with breaks;
- consult with health workers on occupational safety and health aspects of their work, and notify the labour inspectorate of cases of occupational diseases;
- allow health workers to exercise the right to remove themselves from a work situation that they have reasonable justification to believe presents an imminent and serious danger to their life or health, and protect health workers exercising this right from any undue consequences;
- not require health workers to return to a work situation where there has been a serious danger to life or health until any necessary remedial action has been taken;
- honour the right to compensation, rehabilitation, and curative services for health workers infected with COVID-19 following exposure in the workplace – considered as an occupational disease arising from occupational exposure;
- provide access to mental health and counselling resources; and
- enable cooperation between management and health workers and their representatives.

Health workers should:

- follow established occupational safety and health procedures, avoid exposing others to health and safety risks, and participate in employer-provided occupational safety and health training;
- use provided protocols to assess, triage, and treat patients;
- treat patients with respect, compassion, and dignity;
- maintain patient confidentiality;
- swiftly follow established public health reporting procedures of suspected and confirmed cases;
- provide or reinforce accurate IPC and public health information, including to concerned people who have neither symptoms nor risk;
- put on, use, take off, and dispose of PPE properly;
- self-monitor for signs of illness and self-isolate and report illness to managers, if it occurs;
- advise management if they are experiencing signs of undue stress or mental health challenges that require supportive interventions; and

¹ Including implementation of occupational safety and health management systems to identify hazards and assess

risks to health and safety; IPC measures; and zero-tolerance policies towards workplace violence and harassment.

Rights, roles and responsibilities of health workers, including key considerations for occupational safety and health: Interim guidance

- report to their immediate supervisor any situation which they have reasonable justification to believe presents an imminent and serious danger to life or health.

Additional resources

[Emerging respiratory viruses, including COVID-19: methods for detection, prevention, response and control.](#)

[WHO COVID-19 technical guidance](#)

WHO continues to monitor the situation closely for any changes that may affect this interim guidance. Should any factors change, WHO will issue a further update. Otherwise, this interim guidance document will expire 2 years after the date of publication.

Attachment B Code of Conduct for direct workers (other) and contracted workers

A satisfactory Code of Conduct will contain obligations on all direct workers (other) and contracted workers (including sub-contractors and day workers) that are suitable to address the following issues, as a minimum. Additional obligations may be added to respond to particular concerns of the region, the location and the Project sector or to specific Project requirements. The Code of Conduct shall contain a statement that the term ‘child’/ ‘children’ means any person(s) under the age of 18 years.

The issues to be addressed include:

1. Compliance with applicable laws, rules, and regulations
2. Compliance with applicable health and safety requirements to protect the local community (including vulnerable and disadvantaged groups), the Employer’s and Project Manager’s personnel, and the Contractor’s personnel, including sub-contractors and day workers, (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment)
3. The use of illegal substances
4. Non-Discrimination in dealing with the local community (including vulnerable and disadvantaged groups), the Employer’s and Project Manager’s personnel, and the Contractor’s personnel, including sub-contractors and day workers (for example on the basis of family status, ethnicity, race, gender, religion, language, marital status, age, disability (physical and mental), sexual orientation, gender identity, political conviction or social, civic, or health status)
5. Interactions with the local community(ies), members of the local community (ies), and any affected person(s) (for example to convey an attitude of respect, including to their culture and traditions)
6. Sexual harassment (for example to prohibit use of language or behavior, in particular towards women and/or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate)
7. Violence including sexual and/or gender-based violence (for example acts that inflict physical, mental or sexual harm or suffering, threats of such acts, coercion, and deprivation of liberty)
8. Exploitation including sexual exploitation and abuse (for example the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favors or other forms of humiliating, degrading behavior, exploitative behavior or abuse of power)
9. Protection of children (including prohibitions against sexual activity or abuse, or otherwise unacceptable behavior towards children, limiting interactions with children, and ensuring their safety in Project areas)
10. Sanitation requirements (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas)
11. Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favors, are not provided to any person with whom there is a financial, family, or personal connection)

12. Respecting reasonable work instructions (including regarding environmental and social norms)
13. Protection and proper use of property (for example, to prohibit theft, carelessness or waste)
14. Duty to report violations of this Code
15. Non retaliation against workers who report violations of the Code, if that report is made in good faith.

The Code of Conduct should be written in plain language and signed by each worker to indicate that they have:

- received a copy of the code;
- had the code explained to them;
- acknowledged that adherence to this Code of Conduct is a condition of employment; and
- understood that violations of the Code can result in serious consequences, up to and including dismissal, or referral to legal authorities.

A copy of the code shall be displayed in a location easily accessible to the community and Project affected people. It shall be provided in languages comprehensible to the local community, Contractor's personnel (including sub-contractors and day workers), Employer's and Project Manager's personnel, and affected persons.

Annex VIII. Resource List: COVID-19 Guidance

WHO GUIDANCE

Advice for the public

- WHO advice for the public, including on social distancing, respiratory hygiene, self-quarantine, and seeking medical advice, can be consulted on this WHO website:
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>

Technical guidance

- [Infection prevention and control during health care when novel coronavirus \(nCoV\) infection is suspected](#), issued on March 19, 2020
- [Recommendations to Member States to Improve Hygiene Practices](#), issued on April 1, 2020
- [Severe Acute Respiratory Infections Treatment Centre](#), issued on March 28, 2020
- [Infection prevention and control at health care facilities \(with a focus on settings with limited resources\)](#), issued in 2018
- [Laboratory biosafety guidance related to coronavirus disease 2019 \(COVID-19\)](#), issued on March 18, 2020
- [Laboratory Biosafety Manual, 3rd edition](#), issued in 2014
- [Laboratory testing for COVID-19, including specimen collection and shipment](#), issued on March 19, 2020
- [Prioritized Laboratory Testing Strategy According to 4Cs Transmission Scenarios](#), issued on March 21, 2020
- [Infection Prevention and Control for the safe management of a dead body in the context of COVID-19](#), issued on March 24, 2020
- [Key considerations for repatriation and quarantine of travellers in relation to the outbreak COVID-19](#), issued on February 11, 2020
- [Preparedness, prevention and control of COVID-19 for refugees and migrants in non-camp settings](#), issued on April 17, 2020
- [Coronavirus disease \(COVID-19\) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health](#), issued on March 18, 2020
- [Oxygen sources and distribution for COVID-19 treatment centres](#), issued on April 4, 2020
- [Risk Communication and Community Engagement \(RCCE\) Action Plan Guidance COVID-19 Preparedness and Response](#), issued on March 16, 2020
- [Considerations for quarantine of individuals in the context of containment for coronavirus disease \(COVID-19\)](#), issued on March 19, 2020
- [Operational considerations for case management of COVID-19 in health facility and community](#), issued on March 19, 2020
- [Rational use of personal protective equipment for coronavirus disease 2019 \(COVID-19\)](#), issued on February 27, 2020
- [Getting your workplace ready for COVID-19](#), issued on March 19, 2020
- [Water, sanitation, hygiene and waste management for COVID-19](#), issued on March 19, 2020
- [Safe management of wastes from health-care activities](#), issued in 2014
- [Advice on the use of masks in the community, during home care and in healthcare settings in the context of the novel coronavirus \(COVID-19\) outbreak](#), issued on March 19, 2020
- [Disability Considerations during the COVID-19 outbreak](#), issued on March 26, 2020

WORLD BANK GROUP GUIDANCE

- [Technical Note: Public Consultations and Stakeholder Engagement in WB-supported operations when there are constraints on conducting public meetings](#), issued on March 20, 2020
- [Technical Note: Use of Military Forces to Assist in COVID-19 Operations](#), issued on March 25, 2020
- [ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects](#), issued on April 7, 2020
- [Technical Note on SEA/H for HNP COVID Response Operations](#), issued in March 2020
- [Interim Advice for IFC Clients on Preventing and Managing Health Risks of COVID-19 in the Workplace](#), issued on April 6, 2020
- [Interim Advice for IFC Clients on Supporting Workers in the Context of COVID-19](#), issued on April 6, 2020
- [IFC Tip Sheet for Company Leadership on Crisis Response: Facing the COVID-19 Pandemic](#), issued on April 6, 2020
- [WBG EHS Guidelines for Healthcare Facilities](#), issued on April 30, 2007

ILO GUIDANCE

- [ILO Standards and COVID-19 FAQ](#), issued on March 23, 2020 (provides a compilation of answers to most frequently asked questions related to international labour standards and COVID-19)

MFI GUIDANCE

- [ADB Managing Infectious Medical Waste during the COVID-19 Pandemic](#)
- [IDB Invest Guidance for Infrastructure Projects on COVID-19: A Rapid Risk Profile and Decision Framework](#)
- [KfW DEG COVID-19 Guidance for employers](#), issued on March 31, 2020
- [CDC Group COVID-19 Guidance for Employers](#), issued on March 23, 2020

CDC GUIDANCE

- [Vaccine Storage and Handling Toolkit-November 2020 \(cdc.gov\)](#) (COVID Annex)
- [Healthcare Professions: preparing for COVID-19 Vaccination](#)

Annex IX. Land Commitment Template

Provincial MAL Officer -----

Provincial MAL Coordinator/E&S Consultant -----

Province -----

Dear Sir/Madam,

Re: LAND AVAILABILITY FOR THE PROJECT

This letter serves to confirm our commitment that land is available for the project. This land is given for the use of the _____.

The owners of the land in our community are Mr/Mrs.

_____ wh
o with a second family/tribal member confirm our commitment by putting their hand
hereto;

This piece of land (_____) is confirmed to be free from the dispute and the Project Committee and subsequent committees appointed by the village to administrate the infrastructure are free to use the said land to provide/improve/expand the provision of the services directly provided by the infrastructure. The landowners fully agree that this commitment is irrevocable.

1. Resource owner (Name) 2. Resource owner representative

2. Signature

3. Date

4. Verified by Project Chairman and Secretary

Chairman

Secretary

Annex X. Terms of References for E&S Specialists in MHMS

TERMS OF REFERENCE

Environmental, Social, Health, Safety, and Community Engagement Specialist

Solomon Islands COVID-19 Emergency Response Project

A. Background

An outbreak of the coronavirus disease (COVID-19) caused by the 2019 novel coronavirus (SARS-CoV-2) has been spreading rapidly across the world since December 2019, following the diagnosis of the initial cases in Wuhan, Hubei Province, China. Since the beginning of March 2020, the number of cases outside China has increased thirteenfold and the number of affected countries has tripled. On March 11, 2020, the World Health Organization (WHO) declared a global pandemic. As of February, 2021, global confirmed cases have surpassed 112 million, and there have been over 2.4 million deaths.

Solomon Islands was one of 12 countries with no confirmed COVID-19 case until October, 2020. As of February 25, 2021, the total confirmed COVID-19 cases have increased to 18 with no deaths recorded. All international flights were stopped on March 22, 2020. With the limited number of flights between May 26 and September 29, 2020, a total of 1,159 passengers (899 nationals and 260 foreign national) have traveled back to Solomon Islands on 18 flights. While borders are currently closed between Papua New Guinea and Solomon Islands, Papua New Guinea has recorded a total of 1,139 cases and 11 deaths as of February 25, 2021, and there is a risk that COVID-19 could potentially cross to Solomon Islands through some of the northern island groups.

The Solomon Islands has prepared the Consolidated National Preparedness and Response Plan for COVID-19 (issued on March 12, 2020) and an updated Phase 2 plan issued on August 27, 2020. The Solomon Islands Government (SIG) declared a public health state of emergency on March 26, 2020. This allowed the SIG to enforce a number of emergency measures and procedures stipulated under its Emergency Act. In early March, Ministry of Health and Medical Services (MHMS) developed a COVID-19 preparedness and response plan (PRP) with support from DFAT, with estimated cost of SBD 20 million (~US\$ 2.42 million) largely for PPEs and Consumables.

The Solomon Islands COVID-19 Emergency Response Project aims to assist the Solomon Islands in its efforts to prevent, detect and respond to the threat posed by COVID-19 and to strengthen national systems for public health preparedness.

The Project will be implemented by the MHMS, who will recruit a Project Management Unit (PMU) under the leadership of the Deputy Secretary Corporate (DSC). An Environmental, Social, Health, Safety and Community Engagement Specialist (ESHS&CE Specialist) is required to work within the PMU, to support the implementation of the key ESF instruments and lead environmental, social, health and safety and community engagement activities during project implementation.

B. Project Description

The Solomon Islands Covid-19 Emergency Response Project will be comprised of the following components:

- **Component 1. Emergency COVID-19 Preparedness and Response:** Carrying out activities to assist the SIG to prevent, prepare for and respond to COVID-19 including: (a) improving infection prevention and control measures by providing personal protective equipment and necessary supplies and consumables; (b) enhancing case detection, confirmation and contact tracing capabilities; (c) upgrading quarantine facilities and isolation units; and (d) mobilizing contractual health care workers as may be required to respond to a surge in demand for health care services and general operating capacity.
- **Component 2. Health System Strengthening:** Carrying out activities to strengthen the Recipient's health care system by enhancing clinical care capacity to manage COVID-19 cases and sustain routine health service delivery, including: (a) renovations and upgrades to intensive care units in two provincial hospitals; (b) enhancing health care waste management by financing energy efficient incinerators, waste disposal transportation, and training in health care waste management; (c) upgrading of the national medical storage facility by financing refurbishment of its warehouse and training of its staff; (d) supporting MHMS with establishing of a national health emergency coordination center through upgrading and repurposing of the existing building currently used as temporary accommodation for health care workers; and (e) training of health care workers in hospital infection prevention and control.
- **Component 3. Implementation Management and Monitoring and Evaluation:** Providing technical and operational assistance to the Recipient on Project management and implementation, including supporting monitoring and evaluation activities, capacity building of MHMS staff and establishing and supporting the PMU.

C. Environmental and Social Requirements

The project will be implemented in accordance with World Bank Environmental and Social Framework (ESF) and Solomon Islands law. The ESF outlines ten environmental and social standards (ESSs) including i) Assessment and management of environmental and social risks and impacts; ii) Labor and working conditions; iii) Resource efficiency and pollution prevention and management; iv) Community health and safety; v) Land acquisition, restrictions on land use and involuntary resettlement; vi) Biodiversity conservation and sustainable management of living natural resources; vii) Indigenous peoples; viii) Cultural heritage; ix) Financial intermediaries; and x) Stakeholder engagement.

The Environmental and Social Review Summary (ESRS) completed by the World Bank during project preparation, outlines the relevant ESSs for the project including key risks and management measures.

The project is developed to support Solomon Islands to respond to the COVID-19 pandemic and to strengthen its health system for public health emergency, which is thus expected to result in long-term positive environmental and social impacts. However, project activities also present substantial environmental, social, health and safety risks for the project workforce and communities. The primary risks identified include: (i) Occupational, Health and Safety (OHS) management of healthcare workforce, including laboratory technicians; (ii) environmental pollution and community health and safety issues related to the handling, transportation and disposal of healthcare waste; (iii) lack of capacity and

experience of the project implementation agency on the World Bank's policy requirements for environmental and social risk management; (iv) real or perceived inequities to the delivery of services; and (v) potential for sexual exploitation and abuse/sexual harassment (SEA/SH) in quarantine/isolation facilities.

The Environmental and Social Commitment Plan (ESCP) completed by the SIG and endorsed by the World Bank sets out the material measures and actions to ensure the project is implemented in accordance with the relevant ESS requirements.

As per this plan, MHMS has committed to recruiting a full time ESHS&CE Specialist and a part-time International ESHS Specialist within six months of project effectiveness, and preparing, disclosing and adopting the following documents within 30 days of project effectiveness:

- Environmental and Social Management Framework;
- Code of Environmental (and Social) Practice for minor works (CoESP);
- Labor Management Procedures (LMP);
- Updated MHMS Infection Prevention and Control Guidelines (IPCG);
- Updated Stakeholder Engagement Plan (SEP); and
- Grievance Mechanism (GM)

D. Scope of Work

The ESHS&CE Specialist, reporting to the Project Manager, will function as a core member of the PMU under MHMS and will ensure that environmental, social, and health and safety risks are managed in accordance with the requirements of the World Bank's ESF, WHO Guidance on COVID-19, and SIG Law.

Specifically, throughout project implementation the ESHS&CE Specialist will:

- Lead the implementation of the project's ESMF and associated instruments in accordance with the World Bank ESF, project ESCP and SIG legal requirements including:
 - Review the feasibility study terms of reference (ToR) and final report for potential E&S risks prior to procurement of the incinerators;
 - Develop and deliver ESHS training for the PMU and other relevant stakeholders;
 - Managing the oversight of project contractors, including Civil Works Contractors, and review of contractor(s) waste management and health and safety plan(s);
 - Environmental and social screening, preparation and disclosure of site-specific instruments (ESMP) and ECD consent applications and associated documents (PER/EIS), consultation and information dissemination activities with relevant stakeholders;
 - Managing environmental and social risks in procurement;
 - Site-based environmental, safety and social monitoring. Address non-compliances and develop and confirm the implementation of corrective actions. Assist with the implementation of project investment opportunities that would improve performance;
 - Review incinerator waste management, health and safety, operator capacity building and training and operation and maintenance plans.

- Preparation of the monthly and six-monthly monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project; and
 - Notification, reporting and management of incidents or accidents related to the Project which have, or are likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.
- Oversee the implementation of the project's SEP Plan in close collaboration with the Project Manager.
- Coordinate the implementation of the project's GM ensuring timely resolution of project related grievances.
- Participate in semi-annual Project Supervision missions, representing MHMS on environmental, safety and social aspects.
- Conduct other ESHS and CE related activities as required by the Project Manager.

E. Time Inputs and Key deliverables

The ESHS&CE Specialist position is full time. Key deliverables include:

- Support the international ESHS Specialist to review the screening checklists and relevant ESF instruments.
- Review the action plan for the GM and completion of outputs as per this plan.
- Support the international ESHS Specialist to develop the ESHS training package and delivery of trainings.
- Activity/sub-project E&S screening and preparation of relevant instruments.
- Site-based E&S monitoring reports.
- 6-monthly monitoring reports and incident reports (as required).
- Participation in semi-annual Project Supervision missions

F. Required Expertise

The ESHS&CE Specialist shall have the following core competencies:

- Hold a relevant graduate degree in an environmental, social, public health, communications or related discipline.
- Have a minimum of five years' experience and a strong track record in ESHS assessment and management and in community consultation.
- Strong organizational, analytical and implementation skills.
- Fluent in spoken and written English and Pijin.
- Have strong ability to present clear, concise, accurate and structured reports.

G. References

- Solomon Islands COVID-19 Emergency Response Project preparation documents including the PAD, ESRS, and ESCP

- WHO Coronavirus Disease (COVID-19) Dashboard – see <https://covid19.who.int/>
- WHO COVID 19 Country and Technical Guidance – see <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>

TERMS OF REFERENCE

INTERNATIONAL ENVIRONMENTAL, SOCIAL AND HEALTH and SAFETY SPECIALIST

Solomon Islands COVID-19 Emergency Response Project

A. Background

An outbreak of the coronavirus disease (COVID-19) caused by the 2019 novel coronavirus (SARS-CoV-2) has been spreading rapidly across the world since December 2019, following the diagnosis of the initial cases in Wuhan, Hubei Province, China. Since the beginning of March 2020, the number of cases outside China has increased thirteenfold and the number of affected countries has tripled. On March 11, 2020, the World Health Organization (WHO) declared a global pandemic. As of February, 2021, global confirmed cases have surpassed 112 million, and there have been over 2.4 million deaths.

Solomon Islands was one of 12 countries with no confirmed COVID-19 case until October, 2020. As of February 25, 2021, the total confirmed COVID-19 cases have increased to 18 with no deaths recorded. All international flights were stopped on March 22, 2020. With the limited number of flights between May 26 and September 29, 2020, a total of 1,159 passengers (899 nationals and 260 foreign national) have traveled back to Solomon Islands on 18 flights. While borders are currently closed between Papua New Guinea and Solomon Islands, Papua New Guinea has recorded a total of 1,139 cases and 11 deaths as of February 25, 2021, and there is a risk that COVID-19 could potentially cross to Solomon Islands through some of the northern island groups.

The Solomon Islands has prepared the Consolidated National Preparedness and Response Plan for COVID-19 (issued on March 12, 2020) and an updated Phase 2 plan issued on August 27, 2020. The Solomon Islands Government (SIG) declared a public health state of emergency on March 26, 2020. This allowed the SIG to enforce a number of emergency measures and procedures stipulated under its Emergency Act. In early March, Ministry of Health and Medical Services (MHMS) developed a COVID-19 preparedness and response plan (PRP) with support from DFAT, with estimated cost of SBD 20 million (~US\$ 2.42 million) largely for PPEs and Consumables.

The Solomon Islands COVID-19 Emergency Response Project aims to assist the Solomon Islands in its efforts to prevent, detect and respond to the threat posed by COVID-19 and to strengthen national systems for public health preparedness.

The Project will be implemented by the MHMS, who will recruit a Project Management Unit (PMU) under the leadership of the Deputy Secretary Corporate (DSC). An International Environmental, Social, and Health and Safety (ESHS) Specialist is required to support the MHMS to assist with the implementation of ESF instruments required under the World Bank Environment and Social Framework (ESF). Given the current travel restrictions, the Specialist will not be required to visit Solomon Islands.

B. Project Description

The Solomon Islands Covid-19 Emergency Response Project will be comprised of the following components:

- **Component 1. Emergency COVID-19 Preparedness and Response:** Carrying out activities to assist the SIG to prevent, prepare for and respond to COVID-19 including: (a) improving infection prevention and control measures by providing personal protective equipment and necessary supplies and consumables; (b) enhancing case detection, confirmation and contact tracing capabilities; (c) upgrading quarantine facilities and isolation units; and (d) mobilizing contractual health care workers as may be required to respond to a surge in demand for health care services and general operating capacity.
- **Component 2. Health System Strengthening:** Carrying out activities to strengthen the Recipient's health care system by enhancing clinical care capacity to manage COVID-19 cases and sustain routine health service delivery, including: (a) renovations and upgrades to intensive care units in two provincial hospitals; (b) enhancing health care waste management by financing energy efficient incinerators, waste disposal transportation, and training in health care waste management; (c) upgrading of the national medical storage facility by financing refurbishment of its warehouse and training of its staff; (d) supporting MHMS with establishing of a national health emergency coordination center through upgrading and repurposing of the existing building currently used as temporary accommodation for health care workers; and (e) training of health care workers in hospital infection prevention and control.
- **Component 3. Implementation Management and Monitoring and Evaluation:** Providing technical and operational assistance to the Recipient on Project management and implementation, including supporting monitoring and evaluation activities, capacity building of MHMS staff and establishing and supporting the PMU.

C. Environmental and Social Requirements

The project will be implemented in accordance with World Bank Environmental and Social Framework (ESF) and Solomon Islands law. The ESF outlines ten environmental and social standards (ESSs) including i) Assessment and management of environmental and social risks and impacts; ii) Labor and working conditions; iii) Resource efficiency and pollution prevention and management; iv) Community health and safety; v) Land acquisition, restrictions on land use and involuntary resettlement; vi) Biodiversity conservation and sustainable management of living natural resources; vii) Indigenous peoples; viii) Cultural heritage; ix) Financial intermediaries; and x) Stakeholder engagement.

The Environmental and Social Review Summary (ESRS) completed by the World Bank during project preparation, outlines the relevant ESSs for the project including key risks and management measures.

The project is developed to support Solomon Islands to respond to the COVID-19 pandemic and to strengthen its health system for public health emergency, which is thus expected to result in long-term positive environmental and social impacts. However, project activities also present substantial environmental, social, health and safety risks for the project workforce and communities. The primary risks identified include: (i) Occupational, Health and Safety (OHS) management of healthcare workforce, including laboratory technicians; (ii) environmental pollution and community health and safety issues related to the handling, transportation and disposal of healthcare waste; (iii) lack of capacity and experience of the project implementation agency on the World Bank's policy requirements for environmental and social risk management; (iv) real or perceived inequities to the delivery of services;

and (v) potential for sexual exploitation and abuse/sexual harassment (SEA/SH) in quarantine/isolation facilities.

The Environmental and Social Commitment Plan (ESCP) completed by the SIG and endorsed by the World Bank sets out the material measures and actions to ensure the project is implemented in accordance with the relevant ESS requirements.

As per this plan, MHMS has committed to recruiting a full time ESHS&CE Specialist and a part-time International ESHS Specialist within six months of project effectiveness, and preparing, disclosing and adopting the following documents within 30 days of project effectiveness:

- Environmental and Social Management Framework;
- Code of Environmental (and Social) Practice for minor works (CoESP);
- Labor Management Procedures (LMP);
- Updated MHMS Infection Prevention and Control Guidelines (IPCG);
- Updated Stakeholder Engagement Plan (SEP); and
- Grievance Mechanism (GM).

D. Scope of Work

The International ESHS Specialist, reporting to the Project Manager and collaborating closely with the ESHS&CE Specialist, will support the implementation of environmental and occupational health and safety instruments that are compliant with local legislation, good international industry practice (GIIP), including WHO Guidance on COVID-19 and the World Bank ESF.

Specially, throughout implementation the International ESHS Specialist will:

- Provide technical support to the ESHS&CE Specialist to implement the project's ESMF and associated instruments in accordance with the World Bank ESF, ESCP and SIG legal requirements including:
 - Support the ESHS&CE Specialist to review the feasibility study terms of reference (ToR) and final report prior to procurement of the incinerators.
 - Support the ESHS&CE Specialist to develop and deliver ESHS training for the PMU and other relevant stakeholders.
 - Support environmental screening, preparation and disclosure of site-specific instruments, and consultation and information dissemination activities with relevant stakeholders.
 - Support site-based environmental, safety and social monitoring. Advise on suitable corrective actions/opportunities for improving performance.
 - Support the ESHS&CE Specialist to review incinerator Waste Management, Health and Safety, Operator capacity building and training and Operation and maintenance plans.
 - Support/Review monthly and six-monthly monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project.
 - Support notification, reporting and management of incidents or accidents related to the Project which have, or are likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.

- Participate (remotely) in semi-annual Project Supervision missions, representing MHMS on environmental, safety and social aspects.

E. Time Inputs and Key Deliverables

The International ESHS Specialist will be contracted for 40 days per year to support ongoing ESHS risk management including the following deliverables:

- ESHS training package and delivery (remote).
- Technical review of screening checklists and relevant ESF instruments.
- Technical review and inputs for monthly and 6-monthly monitoring reports and incident reports.
- Participation in semi-annual Project Supervision missions (remote).

F. Required Experience

The consultant is required to have the following skills and qualifications:

- Qualifications and a minimum of 10 years work experience relating to safeguards implementation, ideally for health projects with a particular focus on disease control and waste management;
- Experience in developing countries (ideally Solomon Islands or similar context) and teaching/capacity building experience in cross-cultural contexts;
- Demonstrated experience in the development and implementation of safeguards instruments; and
- Experience working with the WB, WHO or other development agencies.

G. References

- Solomon Islands COVID-19 Emergency Response Project preparation documents including the PAD, ESRS, and ESCP
- WHO Coronavirus Disease (COVID-19) Dashboard – see <https://covid19.who.int/>
- WHO COVID 19 Country and Technical Guidance – see <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>