

KINGDOM OF CAMBODIA

MINISTRY OF HEALTH

**HEALTH EQUITY AND QUALITY IMPROVEMENT PROJECT
(H-EQIP, P157291)**

Contingency Emergency Response Component - CERC

ADDENDUM TO

ENVIRONMENTAL MANAGEMENT FRAMEWORK

AND

INDIGENOUS PEOPLES PLANNING FRAMEWORK

March 25, 2020

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1. Introduction

This document is prepared as an addendum to the existing Environmental Management Framework (EMF) and Indigenous Peoples Planning Framework (IPPF) of the Cambodia: Health Equity and Quality Improvement Project (H-EQIP, P157291) (the Project). It describes additional information on the environment and social requirements for the implementation of the proposed activities to be carried out under Component 4: Contingent Emergency Response Component - CERC.

The Government of Cambodia (RGC) received financing from the International Development Association (IDA Credit No. 5813-KH; MDTF Grant No. TF0A3114) for the Cambodia H-EQIP, whose development objective is to improve access to quality health services for the targeted population groups with protection against impoverishment due to the cost of health services in the Kingdom of Cambodia. The Project's envelope is US\$174.20 million (IDA: US\$30 million; Cambodia Multi-Donor Trust Fund: US\$50 million; and the Borrower: US\$94.2 million).

The project comprises of 4 components.

Component 1: Strengthening Health Service Delivery (US\$74.2 million). This component will expand the current service delivery grants (SDGs) into a mechanism for providing performance-based financing to different levels of the Cambodian primary and secondary health system based on achievement of results. The payment of SDGs to Health centers (HCs) and hospitals will be more closely linked to performance in the delivery of basic and comprehensive packages of services, respectively. These packages of services are detailed in the Minimum Package of Activities (MPA) and Complementary Package of Activities (CPA) and include critical reproductive, maternal, neonatal, child, and adolescent health services. Nutrition will be among the services prioritized, with a focus on early breastfeeding, vitamin A supplementation, deworming, iron folic acid supplementation, and growth monitoring. Improving full immunization coverage of children under one year of age will also be a priority. Eligible categories of expenditure would include minor works, goods, and emergency purchase of drugs and/or recurrent costs, including supplies, short-term staff, consumables, communications, maintenance, transportation, accommodation, training, other incidental expenses, and performance bonuses for health workers.

Component 2: Improving Financial Protection and Equity (US\$70.0 million). This component will continue to support and expand the Health Equity Fund (HEF) system and co-finance with the RGC the cost of health services for the poor. The current HEF system is expected to evolve with changes in government policy on beneficiaries and benefit packages.

Component 3: Ensuring Sustainable and Responsive Health Systems (US\$30.0 million). This component will support a program of activities designed to improve supply-side readiness and strengthen the institutions that will be implementing project activities. Approximately US\$13 million from Component 3 is expected to finance civil works according to the priorities identified by the Ministry of Health (MOH) in its civil works plan 2016–2020. Prioritization will be based on access issues, attention to remote areas, concerns around patient safety, and improvement of maternal and neonatal survival. The expected type of investments will include maternity wards and other infrastructure for emergency maternity and neonatal services, HCs, and hospitals. This component also includes project management, monitoring and evaluation.

Component 4: Contingent Emergency Response Component - CERC (US\$0 million). The objective of the contingent emergency response component, with a provisional zero allocation, is to allow for the reallocation of financing in accordance with the IDA

Immediate Response Mechanism (IRM) to provide an immediate response to an eligible crisis or emergency, as needed.

Cambodia identified the first confirmed case of COVID-19 on January 27, 2020, following the outbreak of the disease in Wuhan, Hubei Province, China. As of March 24, 2020, the Ministry of Health (MOH) has confirmed 91 COVID-19 cases, and most of them are imported. In response to COVID-19, MOH has quickly updated its existing pandemic response strategy in a new document entitled “National Action Plan: Preparing for and Responding to COVID-19 in the Kingdom of Cambodia, February to August 2020” (COVID-19 Master Plan), which has included four strategic objectives: (1) to reduce and delay transmission, (2) to minimize serious disease and reduce associated deaths, (3) to ensure ongoing essential health services particularly during epidemic peak periods; and (4) to minimize social and economic impact through multisectoral partnerships. In March 2020, a high level Inter-ministerial Committee was established to oversee the implementation, monitoring and evaluating of the Master Plan. On March 23, 2020, the government of Cambodia requested the World Bank to urgently activate the Contingent Emergency Response Component (CERC) of the H-EQIP and reallocate an undisbursed balance of US\$14 million IDA to support the implementation of the Master Plan. As by the project design, the CERC had a provisional zero allocation. The CERC is being activated to allow for additional financing in accordance with the IDA Immediate Response Mechanism (IRM) to provide an immediate response to COVID-19 pandemic.

The following environmental and social safeguards instruments were prepared by Ministry of Health (MOH) as the implementing agency of Cambodia H-EQIP project:

An **Environmental Management Framework (EMF)** was prepared to establish procedures for screening all proposed sub-projects/investments for their potential adverse environmental impacts; specified measures for managing, mitigating and monitoring environmental and social impacts during project operation; and outlined training and capacity-building arrangements needed to implement the EMF provisions. The EMF proposed a generic Environmental Management Plan (EMP) applying Environmental Codes of Practice (ECOPs) to mitigate potential impacts during construction and renovation. The EMF also included deployment of Healthcare waste management (HCWM) plan to address solid and liquid wastes that will be generated by the HCFs.

An **Indigenous Peoples Planning Framework (IPPF)** was also prepared for H-EQIP in view of the fact that there is presence of indigenous peoples in the project areas. The IPPF consists of a social assessment which was conducted in a culturally appropriate manner with free prior and informed consultation. IPPF proposes the development of an Indigenous Peoples’ Plan (IPP) which aims to ensure that indigenous peoples’/ethnic minorities are provided with culturally appropriate project benefits and increased opportunities for participation in the project, in particular in relation to the two main project objectives: (1) health quality improvements related to strengthening health service deliver; and (2) health equity improvements.

A **Resettlement Policy Framework (RPF)** was also prepared to address any resettlement impacts and issues that may occur for sub-projects identified during implementation. Screening criteria and relevant protocols are included as part of the Framework. The Framework defines terms and provides guidance for involuntary acquisition of land or other assets (including restrictions on asset use), and establishes principles and procedures to be followed to ensure equitable treatment for, and rehabilitation of, any persons adversely affected.

This document (called CERC section) is developed as an addendum to the existing EMF and IPPF of the Cambodia H-EQIP (the Project). It describes additional information on the environment and social safeguard requirements for activities to be financed under CERC to support the implementation of the National Action Plan for Preparing for and Responding to Novel Coronavirus (COVID-19) in the Kingdom of Cambodia. The MOH will be the project

owner, implementing through the project implementation unit (PIU) at national level (see below under institutional arrangement). The safeguard implementation is supported by the Department of Preventive Medicine (PMD) under MOH.

The guidance and procedures included in the CERC section of EMF and IPPF are aligned with the Emergency Response Manual (ERM) that was prepared during the project implementation, and contains the environmental and social requirements, if the CERC is activated. They take into account the Bank's safeguard requirement for the CERC (Bank's Guidance on CERC, October 2017).

2. Identification of potential activities that the CERC could finance

This component will finance expenditures on a positive list of goods and/or specific works, goods, services and emergency operation costs required for emergency recovery as identified in the Table 1. What the CERC may finance will be within mandate of the MOH. The location of the contingency activities will be nationwide when needed.

Table 1: Positive list of goods, services and works

Item
Goods
<ul style="list-style-type: none"> • Medical equipment and supplies, including but not limited to rehydration fluids, antibiotics, antivirals, ventilators, respiratory care equipment, IV pumps, referral equipment, isolation area equipment • Cleaning supplies including hand hygiene and disinfectants • Personal Protective Equipment (PPE) stockpiles, including masks, gowns and gloves • Morgue Packs • Non-perishable foods, bottled water and containers • Tents for advanced medical posts, temporary housing, and classroom/daycare substitution • Equipment and supplies for temporary housing/living (gas stoves, utensils, tents, beds, sleeping bags, mattresses, blankets, hammocks, mosquito nets, kit of personal and family hygiene, etc.) and school • Gasoline and diesel (for air, land and sea transport) and engine lubricants • Spare parts, equipment and supplies for engines, transport, construction vehicles • Lease of vehicles (Vans, trucks and SUVs) • Equipment, tools, materials and supplies for search and rescue (including light motor boats and engines for transport and rescue) • Tools and construction supplies (roofing, cement, iron, stone, blocks, etc.) • Equipment and supplies for communications and broadcasting (radios, antennas, batteries) • Water pumps and tanks for water storage • Equipment, materials and supplies for disinfection of drinking water and repair/rehabilitate of black water collection systems • Temporary toilets • Groundwater boreholes, cargos, equipment to allow access to affected site, storage units • Any other item agreed on between the World Bank and the Recipient (as documented in an Aide-Memoire or other appropriate formal Project document)
Civil works
Minor works for enhancement of health services infrastructure to adapt to the COVID-19 crisis including, but not limited to improve hospitals and health centers (such as painting, fixing toilet door and water tap, etc.)
Services
<ul style="list-style-type: none"> • Consulting services related to emergency response including, but not limited to urgent studies and surveys necessary to determine the impact of the disaster and to serve as a baseline for the recovery and reconstruction process, and support to the implementation of emergency response activities • Feasibility study and technical design related to COVID-19 emergency responses; • Technical Assistance in developing TORs, preparing Technical Specifications and drafting tendering documents (Bidding Documents, ITQ, RFP) related to COVID-19 emergency responses; • Non-consultant services including, but not limited to: drilling, aerial photographs, satellite

images, maps and other similar operations, information and awareness campaigns.
Training
<ul style="list-style-type: none"> • Conduct necessary training related to emergency response including, but not limited to activities in the positive list in the table 1 and the Implementation of the Emergency Action Plan (EAP) • Training on rapid needs assessment and other related assessments
Emergency Operating Costs
<ul style="list-style-type: none"> • Incremental expenses by the Government for a defined period related to preparing for prevention or to early recovery efforts arising as a result of the impact of an eligible emergency. This includes, but is not limited to operational costs¹ and rental of equipment.

It is important to mention that the activities or subproject that will be financed by the CERC should avoid activities or subproject with complex environmental and social aspects (for example resettlement and adverse impacts to indigenous peoples), because the CERC objective is to support immediate priority activities. To ensure that adverse impacts will not occur given the nature of emergency, the items and activities identified in Table 2 below are prohibited

Table 2: Prohibited Activities for CERC

<ul style="list-style-type: none"> • Activities of any type classifiable as Category A pursuant to the World Bank's Operational Policy (OP) 4.01 • Activities that have potential to cause any significant loss or degradation of critical natural habitats whether directly or indirectly; • Activities that could adversely affect forest and forest health; • Activities that could affect sites with archaeological, paleontological, historical, religious, or unique natural values; • Activities that will result in the 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; • Use of goods and equipment on lands abandoned due to social tension / conflict, or the ownership of the land is disputed or cannot be ascertained; • Use of goods and equipment to demolish or remove assets, unless the ownership of the assets can be ascertained, and the owners are consulted; • Uses of goods and equipment involving forced labour, child labour, or other harmful or exploitative forms of labour; • Uses of goods and equipment for activities that would affect indigenous peoples, unless due consultation and broad support has been documented and confirmed prior to the commencement of the activities; • Uses of goods and equipment for military or paramilitary purposes;

¹ As per Financing Agreement, "Operating Costs" means the reasonable costs of goods and non-consulting services required for the day-to-day coordination, administration and supervision of Project activities, including leasing and or routine repair and maintenance of vehicles, equipment, facilities and office premises, fuel, office supplies, utilities, consumables, communication expenses (including postage, telephone and internet costs), website maintenance, translation, printing and photocopying expenses, bank charges, publications and advertising expenses, insurance, Project-related travel, subsistence and lodging expenses, and other costs directly related to the Project, but excluding salaries, bonuses, fees and honoraria of equivalent payment of members of the Recipient's civil service."

COVID-19 Emergency Response activities. In response to the COVID-19, the MOH has updated Cambodia's existing pandemic response strategy in a new document entitled "National Action Plan: Preparing for and Responding to Novel Coronavirus (COVID-19) in the Kingdom of Cambodia, February to August 2020". The Plan states that the extent of geographic spread of COVID-19 within Cambodia will influence the set of response actions required at any given stage. Response actions fall along a continuum between two strategic approaches, namely Containment and Mitigation. Containment refers to stopping or slowing down the spread of a new disease. Mitigation refers to the set of public health options that Cambodia can take to minimize the health, social and economic impact of the epidemic once COVID-19 is widely circulating in the country. At the time of writing, the overall immediate health risk assessment from COVID-19 to Cambodia is considered moderate to high. Cambodia is currently in the Containment Phase.

The CERC will support the implementation of "National Action Plan: Preparing for and Responding to Novel Coronavirus (COVID-19) in the Kingdom of Cambodia, February to August 2020". Activities to be financed include:

- (i) Procurement of Medical Supplies and Equipment: needed for activities outlined in the COVID-19 National Action Plan such as (i) case management; and (ii) infection prevention and control. Specifically, items procured will include (i) drugs and medical supplies and medical equipment for case management and infection prevention; (ii) equipment, reagents, testing kits, and consumable supplies for laboratories; and (iii) ambulances for referral suspected and confirmed COVID-19 cases to designated hospitals. This component will also allow for flexibility to allocate resources for the purchasing of essential pharmaceutical (insulin, antibiotics, etc.) and medical supplies as the availability in the country becomes reduced due to the economic impact of the pandemic and the existing mechanisms are insufficient to address the critical health system needs.
- (ii) Establishment and operation of Quarantine, Isolation and Treatment Centers in all 25 provincial referral hospitals nationwide.
- (iii) Preparedness, Capacity Building and Training including (i) coordination at the national, provincial and district levels; (ii) EOC functionalization (including sub-national coordination and support for preparedness (EOC functionalization, training, supervision); (iii) human resources for supportive supervision and subnational support; (iv) financing of operating costs, such as vehicle rental, fuel and other administrative-related costs for supportive supervision and monitoring; (v) support for screening people entering in to the country at designated points of entry (airports, border crossings, etc.); (vi) strengthening call/hotline centers; (vii) strengthening community- and event-based surveillance for COVID-19; and (viii) building diagnostic capacity for COVID-19 at the subnational (provincial) level. In addition, this component will support (i) risk communication and community engagement; (ii) behavioral and sociocultural risk factors assessments; (iii) production of RCCE strategy and training documents; (iv) production of communication materials; and (v) monitoring and evidence generation.
- (iv) Coordination and Monitoring including: (i) support for procurement, financial management, environmental and social safeguards, monitoring and evaluation, and reporting; (ii) recruitment and Training of project management unit and technical consultants; and (iii) operating costs.

3. Environmental and Social Safeguards Compliance

All activities financed through the CERC are subject to World Bank safeguards policies, keeping in mind that paragraph 12 of the [IPF Policy](#) applies once the CERC is triggered. This Addendum is prepared to supplement the parent project's EMF and IPPF. The EMF and IPPF

Addendum included information on the CERC, to align with the ERM, and to supplement the existing Project’s environmental and social safeguards instruments, where needed. This EMF and IPPF Addendum describes the potential emergencies and the types of activities likely to be financed and evaluates the potential risks and mitigation measures associated with them and institutional arrangements for oversight of any required additional Environmental and Social (E&S) due diligence and monitoring. All activities financed through the CERC are subject to the WB’s Environmental, Health and Safety (EHS) Guidelines² including those on “healthcare facilities”, “waste management”, “hazardous materials management”, and “construction and decommissioning”.

Activities financed under the CERC will be limited to provision of critical goods, services and minor civil works to better address the COVID-19 crisis outlined in a positive list in the CERC ERM. Land acquisition leading to involuntary resettlement is not anticipated. It is further not anticipated to support activities which might have adverse impacts on ethnic groups considered indigenous people under the World Bank’s Operational Policy on indigenous people (OP 4.10). It is also unlikely that changes to the existing safeguards instruments of the project will be required. However, if necessary, the safeguards instruments will be updated if the Emergency Action Plan (EAP) do not fall within the scope of the existing instruments. It is unlikely that emergency works will trigger new safeguards policies, however, if required, new instruments will be prepared, consulted upon and disclosed upon clearance by the World Bank; per the requirements of the Bank’s Investment Financing Policy, a Level Two restructuring would be prepared.

4. Potential environmental and social impacts and mitigation measures

4.1 Social Impacts and Risks and Mitigation

Implementation of the activities will be positive and urgently needed. The proposed activities (see Table 1) are the provision of emergency goods and services. The potential negative impacts are expected to be moderate, localized, and temporary that can be mitigated through the implementation of the existing safeguards instruments of the Project and close supervision.

The CERC will not support civil works and other activities that will result in the 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 should not be supported. Therefore, every effort should be made to eliminate activities that may result in such impacts.

Furthermore, if activities impact communities of ethnic groups considered indigenous under the World Bank’s policy on indigenous people, then indigenous peoples plans (IPPs) will be prepared in line the IPPF or the project. Due consultation and broad community support must be documented and confirmed prior to the commencement of the activities for all activities directly impacting ethnic groups. In addition, construction works or uses of goods and equipment involving forced labor, child labor, or other harmful or exploitative forms of labor are prohibited.

Training, communication and public-awareness activities will need to include special provisions to ensure that they meet requirements established at the project’s safeguards instruments and the guidance coming from the following sources of the World Health Organization (WHO):

- Risk communication and community engagement (RCCE) readiness and response to the 2019 novel coronavirus (2019-nCoV)

²https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

- Guide to preventing and addressing social stigma associated with COVID-19
- Key Messages and Actions for COVID-19 Prevention and Control in Schools

In any case, special attention will be paid to ensure that the benefits of the project activities will reach the most vulnerable locations and/or disadvantaged groups of the country including, among others, women, disabled people, sexual orientation and gender identity (SOGI), etc.

4.2 Environmental Impacts and Risks and Mitigation

4.2.1 Potential environmental impacts associated with goods and services

Activity	Risks and Impacts	Mitigation Measures
Minor rehabilitation and repair	Noise, dust, vibration, solid waste generated from rehabilitation and repair works Injury during rehabilitation or repair of existing facilities	Apply ECOPs in the existing EMF and ESHGs to implementation of projects.

4.2.2 Potential environmental impacts associated with goods and services

Activity	Risks and Impacts	Mitigation Measures
Purchase and stocking of emergency rooms, clinics and other medical facilities, including with Laboratory equipment, supplies or goods.	Surfaces of imported materials may be contaminated and handling during transportation may result in spreading.	Projects should ensure that adequate handwashing facilities with soap (liquid), water and paper towels for hand drying (warm air driers may be an alternative), plus closed waste bin for paper towels are available. Alcohol-based hand rub should be provided where handwashing facilities can not be accessed easily and regularly. Also ensure awareness campaigns and reminder signs are regularly posted around site to encourage workers regularly wash hands when handling goods, and that they do not touch their face. The awareness campaigns and signs should be designed different languages and in a manner that is culturally appropriate, and accessible to ethnic minorities groups, vulnerable groups and elderly. If concerned (for example when dealing with goods that have come from countries with high numbers of infected people) a surface or equipment may be decontaminated using disinfectant. After disinfecting, workers should wash hands with soap and water or use alcohol -based hand rub A label containing information on how materials/medical facilities/equipment should be safely handled should be available on site.

<p>Purchase of PPE for healthcare workers and health facility cleaners</p>	<p>Incorrect standard or quality of PPE leads to spread of infection to healthcare workers and cleaners.</p>	<p>The healthcare workers shall be provided with medical personal protective equipment (PPE) includes:</p> <ul style="list-style-type: none"> Medical mask Gown Apron Eye protection (goggles or face shield) Respirator (N95 or FFP2 standard) Boots/closed work shoes <p>WHO interim guidance on rational use of PPE for coronavirus disease 2019 provided further details on the types of PPE that are required for different functions.</p> <p>The project health facilities should establish and apply procedures for use of PPE in line with WHO guidelines and National guidelines for Infection Prevention and Control healthcare facilities</p> <p>Information/instruction on how PPE should be used safely handled should be made available on site. (See Appendix 1.C)</p>
<p>Hand wash stations</p>	<p>Inadequate handwashing facilities are provided for handling.</p>	<p>Project health facilities should ensure that adequate handwashing facilities with soap (liquid), water and paper towels for hand drying (warm air driers may be an alternative), plus closed waste bin for paper towels are available.</p> <p>If water and soap handwashing facilities are not possible, alcohol-based hand rubs may be provided.</p> <p>The project health facilities should establish and apply procedures for hand hygiene in line with WHO guidelines and National guidelines for Infection Prevention and Control healthcare facilities Sign boards on how to do proper hand wash should be stick at each hand wash stations (See Appendix 1.A)</p>
<p>Alcohol-based hand sanitizers</p>	<p>Alcohol-based hand rubs may not be as affective at controlling infection as hand washing with soap and water.</p>	<p>Alcohol-based hand sanitizers are not considered as effective as hand washing with soap and water, and should therefore only be used in locations where full hand washing facilities can not be provided. Advice should be provided to remind users where full handwashing facilities can be found. The project health facilities should establish and apply procedures for hand hygiene by alcohol in line with WHO guidelines and National guidelines for Infection Prevention</p>

		and Control healthcare facilities Sign boards on how to do proper hand wash should be stick at each hand wash stations (See Appendix 1.A)
Medical waste contaminated with COVID-19 virus	The collection, processing, treatment and disposal of medical wastes becomes a vector for the spread of the virus.	<p>All health care facilities should prepare waste management plans in accordance with the national requirements that outline waste segregation procedures, on site handling, collection, transport, treatment and disposal, and training of staff. Wastes should be segregated at the point of generation by risk, including segregation of organic, recyclables, biological infectious and hazardous health care wastes which are temporary stored for pickup of contracted waste management company on site. Transport routes including elevators should also be defined and marked for infected wastes and other types of wastes. Instructions related how to handle medical waste safely should be made to relevant people handling medical waste including health and waste workers. (see the Appendix 1.H Healthcare Waste Management)</p> <p>The treatment of healthcare waste produced during the care of COVID-19 patients should be collected safely in designated containers and bags, treated and then safely disposed.</p> <p>Open burning and incineration of medical wastes can result in emission of dioxins, furans and particulate matter, and result in unacceptable cancer risks under medium (two hours per week) or higher usage.</p> <p>If small-scale incinerators are the only option available, the best practices possible should be used, to minimize operational impacts on the environment.</p> <p>Single-chamber, drum and brick incinerators do not meet the Best Available Techniques (BAT) requirements under Stockholm Convention. Small-scale incineration should be viewed as a transitional means of disposal for health-care waste.</p> <p>Alternative treatments should be designed into longer term projects, such as steam treatment methods. Steam treatment should preferably be on site, although once treated, sterile/non-infectious waste may be shredded and disposed of in suitable waste facilities.</p>

<p>Hazardous materials used and generated during the provision of COVID-19 diagnosis, care and treatment services</p>	<p>Hazardous chemicals in the hospitals and health care centers are limited to small volumes of laboratory reagents, chemicals, solvents, medicinal gases etc.</p>	<p>The hospitals and health facilities should develop a hazardous material management procedure that defines: inventory of hazardous materials in the health care facilities, proper labeling of hazardous materials, safe handling, storage and use of hazardous materials, use of protective equipment procedure for managing spill, exposures and other incidents, procedure for reporting of incidents. Hazardous materials should be handled in accordance with the accepted practices. Only trained personnel should handle the materials and precautions taken when handling materials by using required protection equipment such as ventilation hoods and personal protective equipment. (See Appendix 1A)</p>
<p>Water, sanitation, hygiene and waste management for COVID-19</p>	<p>COVID-19 virus is transmitted through inappropriate sanitation arrangements or through drinking water and contaminated waste.</p>	<p>Health facilities shall 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. Health facilities shall establish and apply good practices line with WHO guidance on water, sanitation and waste management for COVID-19 and National guidelines for Infection Prevention and Control healthcare facilities (See Appendix 1H)</p>
<p>Identification and diagnosis</p>	<p>There is possible social discrimination/stigmatization against some vulnerable groups (the poor, the elderly, those with preexisting conditions, and religious minority groups) in the delivery of identification and diagnosis services.</p> <p>Collection of samples and testing for COVID19 could result in spread of disease to medical workers or laboratory workers, or during the transport of potentially affected samples.</p>	<p>Identification of disadvantaged and vulnerable groups in project areas will be made with a view to provide equitable access to the identification and diagnosis services.</p> <p>Information on how to protect oneself from Covid-19, the symptom of Covid-19 infection, where and how to get tested should be made available and accessible to minority groups, other vulnerable groups and the elderly by using different languages (including sign language), and in a manner that is culturally appropriate to their respective groups and specific needs.</p> <p>Collection of samples, transport of samples and testing of the clinical specimens from patients meeting the suspect case definition should be performed in accordance with WHO interim guidance Laboratory testing for coronavirus disease 2019 (COVID-19) in suspected human cases. Tests should be performed in appropriately equipped</p>

		<p>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 should be followed. There is still limited information on the risk posed by COVID-19, but all procedures should 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) need to be handled and stored as described in WHO document 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>
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4.2.3 Potential environmental impacts associated with technical assistance

Activity	Risks and Impacts	Mitigation Measures
Policy advice for strengthening health services and primary health care, including through training of front-line health workers	Advice and guidance changes regularly as more becomes known about how the virus responds to treatment and is transmitted.	TORs to include specific requirement for regular review of information and guidance, including WHO, CDC and other governmental websites.
Access to global expertise	Information on COVID-19 is being updated regularly. The latest advice should be available and taken during any Technical Assistance programs.	Refer to WHO, CDC websites and other locations as necessary to remain up to date on causes of spread and treatment of infected patients.
Improve access to support and treat the disadvantaged vulnerable groups	Some vulnerable groups (especially the elderly or those with pre-existing medical conditions) may be severely affected by COVID-19, and may need additional support to access treatment.	TORs should require specific actions to be identified to ensure disadvantaged and vulnerable groups have effective treatment, whether in medical facilities or in the community, and how they can best access support and treatment and other related services Similarly, where IP communities are involved, need to follow ESS7 and IPF

		policy Para 12 on emergency provision.
Identification and diagnosis	Identification and diagnosis advice results in the spread of the COVID-19.	WHO guidance on transport of samples and on testing laboratories should be followed when advising on activities related to identification and diagnosis. TORs for the TA should contain provisions/specific action related to identification and diagnosis of minority groups and other vulnerable groups and the elderly.

4.2.4 Potential environmental and social impacts during the operation of Quarantine, Isolation and Treatment Centers

Activity	Risks and Impacts	Mitigation Measures
Quarantine, Isolation and Treatment of infected cases	<p>Given scarce resources available, some vulnerable groups (the poor, the elderly, those with preexisting conditions, and religious minority groups) may be excluded from the quarantine, isolation, treatment services.</p> <p>There is a possibility for infectious microorganisms to be introduced into the environment if they are not contained within the laboratory or the quarantine facilities due to accidents/emergencies e.g. a fire response or natural phenomena event (e.g., seismic). The expected healthcare infectious/hazardous waste also includes wastes generated from COVID-19 patients. Medical wastes can also include chemicals and other hazardous materials used in diagnosis and treatment. The contamination of the laboratory and quarantine facilities, and equipment may result from laboratory procedures: performing and handling of culture, specimens and chemicals. If the contamination is due to a highly infectious agents, it may cause severe human disease, present a serious hazard to workers, and may present a risk of spreading to the community. In sum, the medical wastes from COVID-19 could cause a high environmental and social risk, if they are not properly handled, treated or disposed.</p>	<p>Special considerations need to be made to vulnerable groups in delivering these services.</p> <p>Health facilities should establish and apply Standard Precautions including:</p> <ul style="list-style-type: none"> - Hand Hygiene (HH); - Respiratory hygiene/cough etiquette. - Use of personal protective equipment (PPE); - Handling of patient care equipment, and soiled linen; - Environmental cleaning; - Prevention of needle-stick/sharp injuries; - Appropriate Health Care Waste Management; <p>(See Appendix 1: Standard Precautions)</p> <p>In addition, health facilities should establish and apply Transmission based precautions (contact, droplet, and airborne precautions) as well as specific procedures for managing patients in isolation room/unit. (See Appendix 3 and Appendix 4)</p>

5. Safeguard instruments

The CERC supported activities will be nation-wide in scope. Activities financed under the CERC will be limited to provision of critical goods and services, as well as repair,

rehabilitation and enhancement to adapt to the COVID-19 crisis of health services infrastructure outlined in a positive list in the CERC ERM. These activities are similar to those supported under the parent projects which environmental and social risks and impacts are assessed to be moderate and limited to the sites. The contents of the project's EMF, IPPF will also apply for the CERC supported activities. It will not be the case of the project's RPF since no land acquisition is expected. Impacts from CERC activities can be well covered by adoption of the parent project instruments and additional measures proposed in section 4.2 for COVID-19 specific impacts.

Generic Infection Prevention and Control and Waste Management Plan (IPC&WMP). Each Provincial Referral Hospital, which establish and operate a Quarantine, Isolation and Treatment Center, shall develop and implement an IPC&WMP, which set-forth procedures for preventing and controlling infections in the hospital environment and healthcare waste management. These procedures include standard precautions including waste management; transmission-based or additional precautions; specific procedures for managing patients in isolation room/unit. Generic procedures, which are in line with the National guidelines for infection prevention and control for healthcare facilities, have been elaborated in the Appendix. The hospital IPC plan will also describe the organization structure and human resources for implementation, monitoring and evaluation of the IPC program in the hospital.

Indigenous Peoples Plan (IPP). Based in the contents of the project's IPPF Indigenous Peoples' Plans (IPPs) will need to be prepared in certain circumstances and sub-project locations to ensure that indigenous peoples'/ethnic minorities are provided with culturally appropriate project benefits and increased opportunities for participation in the project benefits.

The contents of the **Resettlement Policy Framework (RPF)** will not apply for this component since, as stated in Table 2 of this Addendum on Prohibited Activities for CERC. the activities which will result in the 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 will not be eligible for financing.

6. Implementation arrangement and coordination

Cambodia's National Pandemic Preparedness Plan was updated in 2019. Clear Coordination, Command and Control structures were put in place for a multisectoral, whole-of-government, whole-of-society response involving government departments, agencies and civil society organizations. The government strengthened and tested its preparedness efforts and set up the national preparedness and response coordination mechanism through a National Public Health Emergency Operation Center (EOC). The coordination mechanism is established as follows:

- (i) The Ministry of Health, as the lead technical agency, is responsible for planning and oversight of the health sector response. The MoH's Department of Communicable Diseases (CDC) serves as the MoH coordinating department in COVID-19 response, and the Director and Deputy Director of CDC serve as national level spokespersons.
- (ii) The Minister of Health advises the Prime Minister on technical issues and on the activation and stand-down of activities for epidemic response.
- (iii) In addition to the above existing arrangement, the Inter-Ministerial Committee for Combating Covid-19 was established on 10 March 2020. Chaired by the Minister of Health, the Inter-Ministerial Committee consists of 15 members from relevant ministries/authorities. The Inter-Ministerial Committee is charged with: (1) develop a response plan of COVID-19 to the pandemic evolution of the virus; (2) implement the plan approved by the Royal of Government; (3) conduct monitoring and evaluation of the implementation of combating COVID-19; (4) To conduct eventual operational re-planning based on real situation of the COVID-19 pandemic; (5) report routinely to the

Royal of Government on the evolution of COVID-19; and (6) attend the meetings following the invitation of the chairperson.

- (iv) Provincial health departments and provincial and referral hospital directors are responsible for health sector response planning.

The MOH will work in close collaboration with the Inter-Ministerial Committee for Combating Covid-19, providing support for the technical discussions whether activate the CERC, preparation of the CERC activation package and implementation of the EAP. The key responsibilities of MOH with respect to the activation of the CERC and the implementation of the EAP are as follows:

- a) Coordination with health authorities at province and district level via provincial and district councils for the emergency response, as appropriate;
- b) Provide direction and guidance to relevant authorities and local administration at all levels; and
- c) Assessment and research of the situation.

The MOH, through the Department of Preventive Medicine (PMD) is responsible for safeguards implementation for H-EQIP. The PMD will also responsible for safeguards implementation of CERC activities. The PMD will identify based on the activities and works proposed in the EAP and guideline described earlier, the environmental and social instrument required for the environmental and social management.

The MOH's H-EQIP Implementing Agency is the lead agency within the GoC responsible for the implementation of CERC funded emergency activities, including all aspects related to procurement, financial management, monitoring & evaluation and safeguard compliance. CERC funded emergency activities are also project activities and shall be treated similarly to regular activities under other project components in terms of implementation. The Implementing Agency will identify based on the activities and works proposed in the EAP, the potential environmental and social negative impacts, and the safeguards instruments required for the environmental and social management. In the case of the procurement of civil works that require mobilization of contractors, the bidding documents must include standard codes of conduct for workers and supervisors, specifying appropriate conduct and sanctions related to community relations, gender-based violence, child protection, human trafficking, and sexual exploitation and abuse.

Other relevant line agencies may provide technical assistance to the Implementing Agency related to the finalization of procurement bidding documents and the technical supervision of the EAP. The GoC may strengthen its implementation and supervision capacity through the engagement of technical consultants to support the governmental agencies in the finalization of bidding documents and site supervision of works. The technical consultants shall work closely with and report to the Implementing Agency. Particularly, the Ministry of Finance (MEF) with support of the line ministries will be responsible for:

- d) Ensuring the delivery of the EAP outputs and the accomplishments of outcomes;
- e) Reviewing progress reports as submitted by the Implementing Agency and act thereon if needed; and
- f) Providing guidance as needed.

Below is a table that summarizes the specific steps associated with the activation, implementation, and closing and evaluation of the CERC, the assigned responsibilities and estimated time:

Table 2: Steps for implementation

Step	Actions	Responsible
1	Decision to trigger CERC: In the event of an official declaration of emergency, based on preliminary damage and needs assessment, the MEF will inform the Bank about its interest of triggering CERC	MEF
2	Identification of emergency activities: Following MEF's decision to trigger CERC, the Implementing Agency will seek support from the Bank in the selection of a list of emergency response activities within the Positive List based on results of the preliminary assessment/estimation of needs. Summary information will be prepared on proposed activities, including the nature and amount of goods, the location and type of the proposed emergency services/works and their preliminary technical specifications, estimated costs and safeguard implications.	MEF / WB / Implementing Agency & governmental agencies
3	Request of activation: The MEF will send a letter requesting the activation of the CERC to WB. This letter shall include the description of the event, the needs, indication of funding source and amount to be reallocated, and list of activities to be carried out in response to the emergency.	MEF / Implementing Agency
4	WB review and non-objection: The World Bank will provide non-objection upon review of activation request grants no-objection.	WB
5	Reallocation: The World Bank processes the reallocation of funds from Project components to CERC.	WB

6	<p>Implementation of Emergency Activities: The Implementing Agency starts to manage the implementation of approved emergency activities.</p> <p><i>a. Procurement:</i> Major activities under this step include, inter-alia, (i) analysis of procurement implementation capacity and methods (i) preparation of technical specifications and bills of quantities for critical goods, works and non-consulting services, (ii) recruitment of a consultant/consulting firm for design/supervision of emergency subprojects, if needed; and (iii) procurement of goods, works and non-consulting services for implementation of emergency activities.</p> <p><i>b. Financial Management and Progress Reporting:</i> The Implementing Agency team will follow the Project’s FM and reporting procedures as defined in the Financing Agreement and detailed in the Project’s Operations Manual.</p> <p><i>c. Safeguards Implementation:</i> the PMD safeguards team will follow guideline in the project EMF and CERC EMF Addendum for safeguards management of approved emergency activities.</p> <p><i>d. Monitoring and Evaluation:</i> The oversight and reporting mechanisms established for the Project will also be applied. An annually external financial audit firm will audit the annual financial statements of the whole Project, including those financed through Disbursement Category 5.</p>	Implementing Agency
7	<p>Final reporting: a final report will be prepared by the project manager responsible for FM a procurement once all emergency activities are finished and submitted to the WB.</p>	Project manager responsible for FM and procurement

7. Consultation and disclosure plan

The safeguards instruments for the Cambodia H-EQIP project were presented and consulted by the MOH on November 05, 2015 in Phnom Penh. Key suggestions coming from the stakeholders included the need for the project investments on infrastructure to consider integration of necessary utilities (e.g. water supply, health care waste management etc.), emergency exit and fire truck access, measures to minimize impacts to patients during construction and measures to prevent impact to nearby residents during operation phase.

Under H-EQIP project, a grievance mechanism has been established and operated. Each Commune Council will have an opportunity to comment on annual commune reviews of project implementation performance. Any grievances may be addressed as part of the review process. If project-affected persons are not satisfied with project implementation, they also can seek satisfaction through the Provincial Health Departments (PHDs) or its designated officials. If this does not result in resolution of issues, project-affected persons can also make grievance verbally or in written form to district-level officials responsible for project facilitation and information dissemination. If this does not result in resolution of issues, project-affected persons can make grievance verbally or in written form to the provincial governor and ultimately to the national level MOH. At each level, specified authorities should record receipt of grievances and reply to the project affected person or persons within ten days after receiving the grievances. Project affected persons will be exempted from any administrative or legal charges associated with

pursuing grievances. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may also submit complaints to the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB noncompliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projectsoperations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

In addition to the above H-EQIP's existing grievance mechanism, a special grievance redress mechanism, to be established under the Cambodia COVID-19 Emergency Response Project (P173815), will be adopted for the CERC in a bid to receive and address Covid-19 related concerns, inquiries and grievances. Overall, the specific GRM for the CERC will include the following steps:

- Step 1: Grievance discussed with the respective health facility/treatment centers
- Step 2: Grievance raised with the respective municipal/provincial referral hospitals
- Step 3: Grievance raised with the MOH's Grievance Redress Committee
- Once all possible redress has been proposed and if the complainant is still not satisfied then they should be advised of their right to legal recourse.

This addendum for the CERC section of the Cambodia H-EQIP project to address the National Action Plan for Preparing for and Responding to Novel Coronavirus (COVID-19) has been disclosed at the MOH and World Bank's webpage.

APPENDIX 1:

INFECTION PREVENTION AND CONTROL MEASURES:

STANDARD PRECAUTIONS

Infection Prevention and Control measures are:

- Standard precautions; and
- Transmission-based or additional precautions.

Standard precautions must be applied to all patients at all times, regardless of the diagnosis or infectious status as any patient can carry or have infectious disease without having symptoms.

Transmission-based or additional precautions are specific to the mode(s) of transmission of the pathogens (airborne, droplet and/or contact). Transmission-based MUST be ALWAYS applied in addition to standard precautions to be effective.

Assessing the risk of exposure Level

Each HCW need to assess the risk of being in contact with body fluid before performing their task(s), such as:

- “which procedure will I perform?”,
- “will I have a risk or not to have a contact with body fluid/blood, or with infected equipment?” Based on the answer, the HCW will apply standard precautions.

Furthermore, if the patient present specific symptoms or has been already diagnosed, HCFs staff need to select the additional precautions on top of the standards one.

For example, when a HCW takes blood sample, they have to wear disposable gloves for standard precautions. If the patient present some respiratory symptoms like flu, the HCW will wear in addition to the gloves (standard precaution), a surgical mask for additional precaution.

Selection of standard precautions is based on procedures and level of risk of contact with body fluid (example full blood, serum, sputum, urine...).

Standard precautions include:

1. Hand Hygiene (HH);
2. Use of personal protective equipment (PPE) when handling body fluid;
3. Appropriate handling of patient care equipment, and soiled linen;
4. Environmental cleaning management;
5. Prevention of needle-stick/sharp injuries;
6. Appropriate Health Care Waste Management (HCWM); and
7. Respiratory hygiene/cough etiquette.

1A. HAND HYGIENE PROCEDURE

HCFs staff and care givers should perform hand hygiene, when arriving at work/HCFs and before leaving work/HCFs, as well as before eating and after using the toilet/ latrine. Additionally, for anyone who is providing care to patients, the “Five moments for hand hygiene” must be respected.



Recommendation

Routine Hand Hygiene

Hand hygiene must be performed before and after every episode of patient contact.

- Before touching a patient
- Before a procedure
- After a procedure or body substance exposure risk
- After touching a patient
- After touching patient’s surroundings

Note: Hand hygiene **MUST** also be performed after taking off PPE.

1a – Hand Washing with Soap and Water

Hand washing with
Soap and Water

Duration:
40-60 seconds



1. Wet hands with water
2. Apply adequate soap on palms
3. Rub palm to palm
4. Rub the back of both hands
5. Rub palm to palm interlacing the fingers
6. Rub the back of your fingers by interlocking the hands
7. Rub the thumbs
8. Rub palms with fingertips
9. Clean hands with clean water
10. Dry hands with clean towel
11. Turn off tap faucet using towel
12. Your hands are safe

The infographic illustrates the 12 steps of handwashing with soap and water. Each step is accompanied by a circular image showing the correct technique, with arrows indicating the direction of movement. The background is blue with decorative water droplets and sparkles.

1b - Hand Hygiene with Alcohol-based Hand Rub (AHR)

Hand washing with Alcohol-based Hand Rub

Duration:
20-30 seconds



- 

1 Apply AHR on palms
- 

2 Rub palms to palms
- 

3 Rub the back of both hands interlacing the fingers
- 

4 Rub palm to palm interlacing the fingers
- 

5 Rub the backs of fingers by interlocking the hands
- 

6 Rub the thumbs
- 

7 Rub palms with fingertips
- 

8 Once dried, your hands are safe

1B. RESPIRATORY HYGIENE

Respiratory hygiene and cough etiquette is a standard precaution that should be applied by all patients, visitors and HCWs to contain respiratory secretions (e.g. when coughing, sneezing...) to avoid spreading respiratory infections.



Cover nose and mouth when coughing, sneezing with tissue or mask.

If no tissues are available, cough or sneeze into the inner elbow rather than hand.

Do not "spit" in environment (use tissue instead).

Dispose used tissue and/or masks in the nearest bin after use.



Avoid shaking hands when sick. Use «traditional greeting» instead.

Perform hand hygiene after contact with respiratory secretions.



HCF should promote respiratory hygiene and cough etiquette by:

- Educating HCF staff, patients, family members, and visitors on the importance of containing respiratory droplet/ aerosol and secretions to prevent the transmission of infectious disease (e.g. influenza, tuberculosis, bacterial pneumonia ...).
- Posting signs informing that patients and family members with acute febrile respiratory illness use respiratory hygiene/cough etiquette (e.g. poster).
- Prepare equipment in triage area for patient and family to apply respiratory hygiene. For instance, in Out-Patient- Department (OPD) and Emergency Room (ER), make mask, tissue, rubbish bin, and AHR ava

1C. PERSONAL PROTECTIVE EQUIPMENT PROCEDURES

HCWs must select the appropriate PPE after having assessed the risk of contact with body fluid.

The following is not a sequence of PPE. It is procedure for each PPE item.

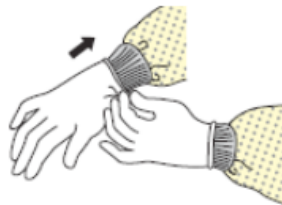
It is when the HCW remove the PPE that he/she may contaminate himself/ herself. Therefore wear PPE in a logical order, to be able to take off from the most contaminated item (higher risk) to the less contaminated item (lower risk).

Any PPE procedure must start by performing hand hygiene first.

When removing PPE, the last step is to thoroughly perform hand hygiene.

1. Gloves

Put On



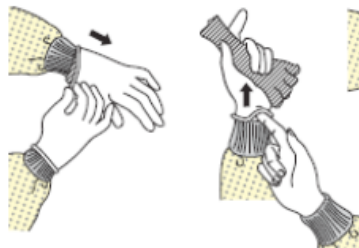
Putting on gloves

Put On

1. Carefully put on disposable gloves (to avoid breaking the gloves)

When wearing long sleeves gown, gloves cover the wrist of the gown

Take Off



Removing gloves

Take Off

! Outside part of gloves is contaminated!

1. Grasp outside of glove with opposite gloved hand; peel off

2. Hold removed glove in gloved hand or discharge in waste container

3. Slide fingers of un-gloved hand under remaining glove at wrist

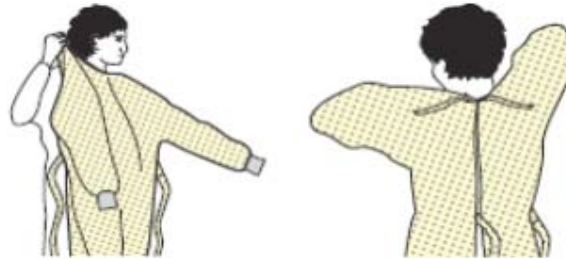
4. Peel glove off

5. Discard gloves in waste container

2. Gown

Put On

1. Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
2. Fasten in back of neck and waist



Take Off

1. Unfasten ties
2. Gown front and sleeves are contaminated!
3. Pull away from neck and shoulders, touching inside of gown (only if not wearing gloves)
4. Turn gown inside out
5. Fold or roll into a bundle and discard



Note: Reusable gown should be clean/ disinfected before being reuse

3. Surgical Mask

Put On

1. Secure ties or elastic bands at middle of head and neck
2. Fit flexible band to nose bridge
3. Fit snug to face and below chin



Put On



Take Off



Take Off

! DO NOT TOUCH with hands the front of mask, it is contaminated!

1. Grasp ties or elastics and take off
2. Discard in waste container

4. Eyes protection (safety glasses, goggles or face shield)

4.1 Procedure for goggle or face shield

Put On



Goggle

face shield

Put On

Place goggle or face-shield over eyes and face, and adjust to fit

Take Off



! DO NOT TOUCH, with hands front of the eyes protection, it is contaminated!

1. Take off, by handling the head band, elastics
2. Place in designated receptacle for reprocessing or in waste container for single use (e.g. face shield).

4.2 Procedure for safety glasses

Put On



Place item over face and eyes and adjust to fit

Take Off

! DO NOT TOUCH with hands front of the eyes protection, it is contaminated!

To take off, handle by ear pieces

Place in designated receptacle for reprocessing or in waste container for single use (e.g. face shield).

Take Off



1D. PATIENT-CARE EQUIPMENT CLEANING AND DISINFECTION PROCEDURE

All medical devices are either single-use or reusable ones. Single-use equipment must be discarded, while all reusable equipment must be properly processed between use and between patients, to prevent infections. For proper reprocessing of equipment, all items need to be cleaned with detergent (liquid soap) and water before disinfection and sterilization, to get rid of the organic matter e.g. blood and mucus that may neutralize chemical disinfectant and affecting the efficiency of the disinfectant.

Instruments and other items may be classified based on the risk of transmitting infection into critical, semi-critical or non-critical, depending on the sites.

Category	Application	Type of processing	Example of items
Critical	Sterile tissues or the blood system	Sterilization (by heat or chemicals)	Dressing and suture instruments, surgical instruments, delivery sets, diagnostic catheters, dental instruments, bronchoscopes, cystoscopes, etc.
Semi-critical	Mucous membranes or non-intact skin	High-level disinfection (HLD) & intermediate level disinfection	Laryngoscope blades, vaginal specula, instruments for MVA, respiratory therapy and anaesthesia equipment. dental impressions, endoscopes, gastroscopes, etc.
Non-critical	Intact skin	Cleaning, low level Disinfection (depending on contact with the type of patient)	bedpans, toilets, urinals, blood pressure cuffs, ECG leads, thermometers, stethoscopes, beds, bedside tables

Patient-care equipment cleaning procedure

- Prepare all cleaning and disinfecting equipment and solution
- Cleaner wear PPE: rubber gloves and boots, impermeable apron. when there is a risk of splash in the face, staff must wear eyes protection and surgical mask.
- Take off any gross soiling on the instrument by rinsing in clean water
- Take instrument apart – fully and immerse all parts in detergent solution, and clean all channels and bores of the instrument
- Ensure all visible soil is take off from the instrument – follow manufacturers’ instructions,
- Rinse thoroughly with clean water
- Dry the instrument (let it dry to– on a clean rack or hang if tubing or items with lumens, away from other dirty items)
- Inspect to ensure the instrument is cleaned

Patient-care equipment disinfecting procedure

- Prepare disinfectant solution according to the volume of medical instruments, following notice of disinfectant, cleaner wearing PPE. The following table shows the most common sources of chlorine in Cambodia, and the amount of water to add to obtain a 0.5% or 0.05% solution.

Product	Available Chlorine	How to dilute 0.5%	How to dilute 0.05%
Sodium hypochlorite 5% (liquid bleach) If % is different to this, adjust recipe accordingly	5%	1 part bleach to 9 parts water	1 part bleach to 99 parts water
Sodium hypochlorite 6% (liquid bleach)	6%	1 part bleach to 11 parts water	1 part bleach to 119 parts water
Chloramine tablets (1 g liberates 250 mg chlorine) If amount of chlorine liberated is different to this, adjust % and hence recipe accordingly)	25%	20 grams to 1 liter water (20 tablets)	2 grams to 1 liter water (2 tablets)
Tablets that release 100 mg of chlorine	100 mg	50 tablets per 1 liter of water	5 tablets per 1 liter of water
Tablets that release 250 mg of chlorine	250 mg	20 tablets per 1 liter of water	2 tablets per 1 liter of water

- Immerse the cleaned equipment completely in the disinfectant solution. Soak in the solution, duration will depend on the disinfectant recommendations and dilutions. For example: Sodium hypochlorite 0.05%: soak during 30 minutes
- Rinse thoroughly with clear or sterile water (depending on the required level of disinfection and the use of the equipment)
- Sterile water for semi-critical instrument (HLD)
- Clean water for non-critical instrument (low level of disinfectant)
- Let it dry (on a rack)
- Pack the disinfected equipment and store in a clean area

1E. SOILED LINEN MANAGEMENT PROCEDURE

Soiled linen, from patients and HCWs should be cleaned, and disinfected/sterilised when necessary in HCF laundry. To ensure a safe and sanitary environment for laundry staff, PPE should be available, as well as the supply of clean water, and hygienic laundry place.

The basic principles of linen management are as follows:

- In laundry room, the staff should be protected and wear at least: gloves, surgical mask, and impermeable apron, and close shoes or rubber boots. Where there is no laundry machine, and staff is washing by hands, the staff need to wear eyes protection (e.g. safety glasses)
- Place used linen in bag for linen at the point of generation. Do not rinse in patient care area.
- Any linens soiled with blood/bodily fluid are considered infectious.
- Separate infected linen from non-infected linen, and put it in a bag for infectious linen (e.g. yellow impermeable bag). Keep it separated during transport.
- Handle all linen with minimum agitation to avoid aerosolization of patho-genic microorganisms.
- Mattresses and pillows should be covered with plastic and be wiped over with a neutral detergent (refer to environment cleaning). If there is no plastic cover, wash them by hands.

Principles for reprocessing soiled linen:

	Non-infectious linen	Infectious linen	Infectious drapes from operating room
Overview	Linens from non-infectious patient and without blood/body fluid	All linens from infectious patients and/ or with blood/body fluid	All drapes from operating room are infectious.
PPE required when handling linen	Disposable gloves	Disposable gloves (Other PPE may be required depending on route of transmission).	Rubber gloves (Other PPE may be required depending on route of transmission)
Sorting used linen	Place in bag for linens. Separate linens soiled with bodily fluid and put in infectious linens bag.	Place all used linen in bag for infectious linen (e.g. yellow impermeable bag) at the point of generation	Place all drapes in bag for infectious linen (e.g. yellow impermeable bag) at the point of generation.
PPE required in laundry room, when using laundry machine	Gloves Surgical mask; Impermeable apron; Close shoes or rubber boots	Rubber gloves; Surgical mask Eye protection; Impermeable gown or non-impermeable gown with impermeable apron; Rubber boots	Rubber gloves; Surgical mask; Eye protection; Impermeable gown or non-impermeable gown with impermeable apron; Rubber boots
PPE required in laundry room, for hand washing	Rubber gloves, eyes protection, surgical mask, impermeable apron rubber boots,	MUST NOT be hand washed. If not laundry machine available, wash by hands with caution Always wear eyes protection as using disinfectant	MUST NOT be hand washed. If not laundry machine available, wash by hands with caution Always wear eyes protection as using disinfectant

Washing process with hot water (at least 70°C)	Detergent (Laundry liquid or powder) Rinse Dry (dryer or sun & iron)	Detergent (Laundry liquid or powder) Rinse Dry (dryer or sun & iron)	Detergent (Laundry liquid or powder) Rinse Dry (dryer or sun & iron) Bring clean and dried drapes to the central of sterilization
Washing process with warm or cold water (less than 70°C)	Wash with deter-gent (Laundry liquid or powder), Rinse Dry (dryer or sun & iron)	Detergent (Laundry liquid or powder) Rinse Soak in clean water with sodium hypo-chlorite 0.5% for 30 minutes ¹⁰ Wash again with detergent and water, and dry (dryer or sun & iron)	Detergent (Laundry liquid or powder) Rinse Soak in clean water with sodium hypo-chlorite 0.5% for 30minutes Wash again with detergent and water, and dry (dryer or sun & iron) Bring dried drapes for packaging and sterilization.
Note		If there is no other option (no laundry machine), for infectious linen/ surgical drape, before being wash by hand, they need to be decontaminated at first (soak in disinfectant solution e.g. bleach 0.05% or autoclaved), then they MUST be cleaned rinsed and disinfecting, and sterilisation for sterile drapes, to avoid contamination of patient	

1F. ENVIRONMENTAL CLEANING PROCEDURE

Most areas of HCFs, are low risk zone (non-infectious zone), these area should be cleaned daily, with detergent solution (soapy water) to remove dirt and organic material and dissolve or suspend grease, oil, and other matter so it can easily be removed by scrubbing. In high-risk areas where heavy contamination is expected and risk of cross-contamination by the staff and other patients, surfaces need to be cleaned with soapy water, rinsed, and let it dry, before being disinfected (e.g. sodium hypochlorite (chlorine) solution 0.05%). High risk areas are for instance, operating rooms, pre- and postoperative recovery areas, intensive care units (ICUs), isolation room, laboratory, toilets and latrines; or area with blood/ body fluid spills.

When cleaning, cleaners are at risk and need to be properly trained. They also must wear appropriate PPE, at least rubber gloves, rubber boots, uniform or apron. When there is risk of splash in the face, wear surgical mask and eyes protection.

Principles of Environmental Cleaning

- Apply hand washing / hygiene and wear appropriate PPE (at least rubber gloves, rubber boots, uniform or apron. When risk of splash in the face, wear surgical mask and eyes protection).
- Prepare fresh cleaning and household solution once a day; and change solution whenever they appear to be dirty.
- Perform cleaning and disinfecting patient environment at least once a day.
- Clean first with detergent (soapy water), rinse with water, let it dry in non-patient area (e.g. including corridor, laundry room etc.)
- In high risk area (patient care area), following cleaning procedure, disinfect surface by using household disinfectant (e.g. bleach 0.05% solution, alcohol 70% for small object, or follow manufacture recommendations).
- Every day clean all patients' rooms, units, cleaner's rooms
- Cleaning with a moistened cloth helps to avoid contaminating the air and other surfaces
- Clean from the less contaminated to the most contaminated area (e.g. start from corridor, then patient' room, and last finish to clean bathroom and toilet)
- After patient discharge, clean and disinfect patient room very well, including all equipment that has been in contact with patient (e.g. bed, bed table...) as soon as possible
- After use, all cleaning equipment (e.g. mop, brush, bucket, cloth...) must be cleaned, disinfected and dried before storage, and be reused.
- In general, do not spray (i.e. fog) occupied or unoccupied clinical areas with disinfectant. This is a potentially dangerous practice that has no proven disease control benefit.

Cleaning up Spills

- Clean up spills of potentially infectious fluids immediately, to preventing the spread of the infection and also prevents accidents.
- Small spills of blood of other body fluids should be wiped with paper towel (staff using disposable gloves), then clean with soapy water, rinse and disinfect.

Appropriate handling of bedding

- Mattresses and pillows with plastic covers should be cleaned with detergent, after departure of each patient.
- In isolation unit and intensive care unit, as well as infectious wards (e.g. TB..) disinfecting should follow cleaning procedure.

1G. PREVENTION OF NEEDLE-STICK/SHARP INJURIES

In healthcare settings, injuries from needles or other sharp instruments are the number-one cause of occupational exposure to blood-borne infections. All staff that come in contact with sharps - from doctors and nurses to those who dispose of the trash - are at risk of infections.

Improper disposal of sharps also poses a great threat to members of the community.

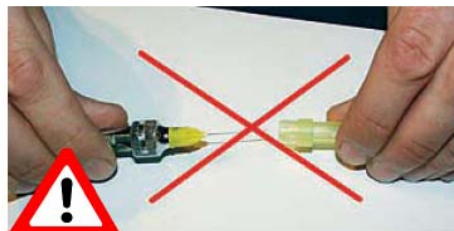
The term *sharps* refers to any sharp instrument or object used in the delivery of healthcare services - including hypodermic needles, suture needles, scalpel blades, sharp instruments, intravenous (IV) catheters, and razor blades. Needle stick/sharp injury means the skin is accidentally punctured by a used needle/ sharp (e.g. scalpel). The injury is a port of entry for blood-borne diseases, such as hepatitis B (HBV) and hepatitis C (HCV), HIV etc. Exposure to patient's body fluid also put HCWs at risk of infection. Therefore, they are encouraged to strictly comply with IPC precautions related to body fluid.

The main causes of needle stick/sharp injury include:

- Recapping of needles (identified as the most common cause)
- Unsafe handling of sharp waste (identified as the second most common cause)
- Reuse of safety box
- Manipulation of used sharps (bending, breaking, or cutting needles).
- Unnecessary injections
- Lack of supplies: disposable syringes, sharps-disposal container/safety box
- Failure to place needles in sharps containers immediately after injection
- Passing sharps from hand to hand (e.g. during surgery)
- Lack of management of sharp wastes
- Lack of awareness of the problem
- Lack of training for staff

Principle of the disposal of used needles/sharps

- Never recap needle/sharp



- Dispose of needles and syringes immediately after use in the safety box.
- Close the safety box, whenever the containers become $\frac{3}{4}$ full.
- Safely dispose the safety box (e.g. via incinerator with temperature at least of 800o Celsius)
- When it is not immediately disposed, keep safety boxes in appropriate storage, for infectious waste.

Refer to “Healthcare Waste Management Guidelines 2011” and “National Injection Safety Guidelines 2014”, for more information.

Safety Box or Sharp disposal container

Safety boxes MUST be puncture and leak resistant. They should be conveniently located in any area where sharp objects are frequently used (such as injection rooms, treatment rooms, operating theatres, labour and delivery rooms, and laboratories).



| *Figure 52*
Disposal of needles:
incorrect (left) and correct
(right) disposal of needles

1H. HEALTHCARE WASTE MANAGEMENT PROCEDURE

While approximately 80% of the wastes generated in a HCF are general waste, the remaining 20% comprise wastes that contain harmful microorganisms which can infect hospital patients, HCFs staff and the general public, as well as sharp objects and hazardous substances that can result in injuries, poisoning and pollution.

Categorization of healthcare wastes

Healthcare waste is broadly categorized into two main groups, namely medical wastes and general wastes.

1. General wastes or household waste

- Any waste that are solid or semi-solids generated from HCFs that are non-toxic and non-hazardous and are not contaminated with medical wastes. These are the food wastes, paper, plastics, textiles, non-toxic metals, glass and garden wastes.
- In the event that general wastes are contaminated or mixed with any medical wastes, the general wastes shall be classified as medical wastes and managed accordingly.

2. Medical wastes

- Any waste which consists completely or partly of human or animal tissue, blood or other body fluids, excretions, drugs or other pharmaceutical products, swabs or dressings, syringes, needles or other sharps instruments, ... all wastes that are hazardous or can cause infection to any person coming into contact with it.
- Any other wastes generated from healthcare activities which may be hazardous or toxic.
- The categories of medical wastes are:

- 1) Infectious wastes
- 2) Pathological wastes
- 3) Sharps wastes
- 4) Pharmaceutical wastes
- 5) Genotoxic wastes
- 6) Chemical wastes
- 7) Wastes with high content of heavy metals
- 8) Pressurized containers
- 9) Radioactive wastes



Proper healthcare waste management includes (1) waste segregation, (2) collection and handling, (3) stock in a safe temporary storage, (4) safe treatment and disposal.

1. Organize waste segregation:

All HCFs shall organize waste segregation at sources. Each type of waste should be contained in designated, color coded and labelled bags and containers. These are:

- green bin: general waste or household waste
- yellow bin: infectious waste, main part of the medical waste
- brown bin: chemical and pharmaceutical wastes, wastes with high content of heavy metals
- red bin: genotoxic waste, radioactive waste
- black bin: pressurized containers

Waste Category	Colour of Container & Markings	Proposed Symbol
Infectious waste	Yellow, marked black	
Pathological wastes	Yellow, marked red	
Sharps "safety-box"	Yellow, marked "SHARPS"	
Chemical & pharmaceutical waste	Brown, marked "HAZARDOUS"	
Wastes with high content of heavy metals	Brown, marked with the specific heavy metal content and "HAZARDOUS"	
Genotoxic waste	Red, marked "CYTOTOXIC"	
Radioactive waste	Red	
Pressurized containers	Black	
General waste	Green	

2. Handling

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

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

Emptying waste containers

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

Staff should wear utility gloves, heavy duty apron and boots when collecting waste.

Do not collect medical waste from patient-care areas by emptying it into open carts or wheelbarrows, as this may lead to spills and contamination of the surroundings, may encourage scavenging of waste, and may increase the risk of injury to staff, patients, and visitors.

Handle medical waste as little as possible.

Never put your hands into a container that holds medical waste.

3. Stock in a safe temporary storage

Following segregation, medical wastes should be placed in a designated, safe (locked) and temporary storage at HCFs. Different health care waste should be streamed separately in standard storage equipment. Storage time of infectious waste should not exceed 48 hours. Anatomical waste should be buried or disposed daily.

The central storage area must be:

- Located separately from the general waste storage areas.
- Should be clearly identifiable.
- Away from food preparation, public access and egress route.
- Arranged to store waste for landfill and waste for incineration waste separately.
- Well ventilated and well lit.
- Located on well drained, impervious hard-standing.
- Provided facilities for washing down and disinfection.

4. Treatment and disposal of medical waste

General wastes can be removed to the regular community waste-disposal (land field). Infectious waste can be treated by the following methods:

Incineration. Two-chambered incinerators with proper temperature, required chimney heights should be used. The temperature must be at least of 800°C to ensure minimal emission of toxic gases at the primary chamber. Appropriate location and high chimney (higher than nearby roofs) are required. Pressured gas containers, radioactive wastes, radiographic wastes, halogenated plastics like PVC, mercury, cadmium and ampoules of heavy metals should never be incinerated. Several provinces in Cambodia have installed two-chambered incinerators for

medical waste treatment in the centralized model. Health centers and district hospitals are recommended to transport sharp waste to these incinerators for treatment.

Single-chamber, drum and brick incinerators cannot meet the best available technology requirements of the Stockholm Convention on Persistent Organic Pollutants, of which Cambodia is signatory. Emissions of toxic and persistent organic pollutants (dioxin, furans, etc.) from these small-scale incinerators may result in human exposure at levels associated with adverse health risks. The project will not finance new small-scale onsite incinerator. If existing on-site incinerators are used, mitigation measures will be taken to control emissions to air in line with WBG EHS for healthcare facilities and WHO's guidelines for safe management of waste generated from healthcare activities. The good practices as follow:

- Waste reduction and segregation to minimize quantities of waste to be incinerated;
- Siting incinerators away from patient wards, residential areas or where food is grown;
- A clearly described method of operation to achieve the desired combustion conditions and emissions; 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 fuel and waste) to maintain appropriate temperatures, proper disposal of ash and equipment to safeguard workers;
- Periodic maintenance to replace or repair defective components;
- Improved training for operators and improved management including the availability of an operating and maintenance manual, visible management oversight, and regular maintenance schedules.

Autoclave. Autoclave used to decontaminate infectious waste is required for laboratory (Level BS2+ and BSL3). They are available in some laboratories in Cambodia. All laboratory equipment, materials and fluids must be decontaminated in the autoclave, before being discharged out of the laboratory.

Sharp pit and Placenta pit: Placenta and small anatomical waste should be disposed to placenta pit and sharp waste should be disposed to sharp pit where there is no effective incineration.

Secured landfill. This is the minimal approach to sharp waste disposal, which should be used only in remote and underdeveloped areas. Even in difficult circumstance, the health facility should establish the following basic principles:

- Locates the burial site away from the groundwater supply sources
- Restrict access to the disposal site by unauthorized persons
- Line the burial site with a material of low permeability, such as clay, dung and river silt, if available, to prevent pollution of shallow groundwater and nearby wells.
- Bury sharp waste and infectious waste only
- Each layer of waste should be covered by a layer of soil to prevent odors, rodents and insects.

5. Waste water collection and treatment

a. Overall requirements

Health and environmental workers should always wear heavy utility gloves and shoes when handling or transporting liquid medical waste of any kind. When carrying or disposing of

liquid medical waste, they should be careful to avoid splashing the waste on yourself, others, or on the floor and other surfaces.

Carefully pour liquid waste down a sink, drain, flushable toilet, or latrine. If this is not possible, bury it in a pit along with solid medical waste. Moderate quantities of mild liquid or semi-liquid pharmaceuticals such as solutions containing vitamins, cough syrups, intravenous solutions, eye drops (but not antibiotics or cytotoxic drugs), may be diluted in a large flow of water and discharged into municipal sewers. Pharmaceutical wastes shall not be disposed of into slow-moving or stagnant water. Pharmaceutical wastes shall not be disposed of into slow-moving or stagnant water.

All facilities should have appropriate drainage. If the facility does not link to a treated municipal water drainage system, then all drainage should be treated locally. This includes appropriate septic and filtration systems. Highly infectious waste should be disinfected by proper disinfectants or autoclaved before they are disposed of either by incineration or non-incineration processes. Unless there is an adequate waste-water treatment plant, blood should be disinfected before discharged to a sewer.

b. Management of faecal waste and wastewater in COVID-19 outbreak

There is no evidence that the COVID-19 virus has been transmitted via sewerage systems with or without wastewater treatment. Further, there is no evidence that sewage or wastewater treatment workers contracted the severe acute respiratory syndrome (SARS), which is caused by another type of coronavirus that caused a large outbreak of acute respiratory illness in 2003. As part of an integrated public health policy, wastewater carried in sewerage systems should be treated in well-designed and well-managed centralized wastewater treatment works. Each stage of treatment (as well as retention time and dilution) results in a further reduction of the potential risk. A waste stabilization pond (an oxidation pond or lagoon) is generally considered a practical and simple wastewater treatment technology particularly well suited to destroying pathogens, as relatively long retention times (20 days or longer) combined with sunlight, elevated pH levels, biological activity, and other factors serve to accelerate pathogen destruction. A final disinfection step may be considered if existing wastewater treatment plants are not optimized to remove viruses. Best practices for protecting the health of workers at sanitation treatment facilities should be followed. Workers should wear appropriate personal protective equipment (PPE), which includes protective outerwear, gloves, boots, goggles or a face shield, and a mask; they should perform hand hygiene frequently; and they should avoid touching eyes, nose, and mouth with unwashed hands.

- *Sanitation and plumbing*

People with suspected or confirmed COVID-19 disease should be provided with their own flush toilet or latrine that has a door that closes to separate it from the patient's room. Flush toilets should operate properly and have functioning drain traps. When possible, the toilet should be flushed with the lid down to prevent droplet splatter and aerosol clouds. If it is not possible to provide separate toilets, the toilet should be cleaned and disinfected at least twice daily by a trained cleaner wearing PPE (gown, gloves, boots, mask, and a face shield or goggles). Further, and consistent with existing guidance, staff and health care workers should have toilet facilities that are separate from those used by all patients.

WHO recommends the use of standard, well-maintained plumbing, such as sealed bathroom drains, and backflow valves on sprayers and faucets to prevent aerosolized faecal matter from entering the plumbing or ventilation system, together with standard wastewater treatment.²¹ Faulty plumbing and a poorly designed air ventilation system were implicated as contributing factors to the spread of the aerosolized SARS coronavirus in a high-rise apartment building in Hong Kong in 2003.²² Similar concerns have been raised about the spread of the COVID-19 virus from faulty toilets in high-rise apartment buildings.²³ If health care facilities

are connected to sewers, a risk assessment should be conducted to confirm that wastewater is contained within the system (that is, the system does not leak) before its arrival at a functioning treatment or disposal site, or both. Risks pertaining to the adequacy of the collection system or to treatment and disposal methods should be assessed following a safety planning approach,²⁴ with critical control points prioritized for mitigation.

- *Toilets and the handling of faeces*

It is critical to conduct hand hygiene when there is suspected or direct contact with faeces (if hands are dirty, then soap and water are preferred to the use of an alcohol-based hand rub). If the patient is unable to use a latrine, excreta should be collected in either a diaper or a clean bedpan and immediately and carefully disposed of into a separate toilet or latrine used only by suspected or confirmed cases of COVID-19. In all health care settings, including those with suspected or confirmed COVID-19 cases, faeces must be treated as a biohazard and handled as little as possible. Anyone handling faeces should follow WHO contact and droplet precautions and use PPE to prevent exposure, including long-sleeved gowns, gloves, boots, masks, and goggles or a face shield. If diapers are used, they should be disposed of as infectious waste as they would be in all situations. Workers should be properly trained in how to put on, use, and remove PPE so that these protective barriers are not breached.²⁵ If PPE is not available or the supply is limited, hand hygiene should be regularly practiced, and workers should keep at least 1 m distance from any suspected or confirmed cases.

If a bedpan is used, after disposing of excreta from it, the bedpan should be cleaned with a neutral detergent and water, disinfected with a 0.5% chlorine solution, and then rinsed with clean water; the rinse water should be disposed of in a drain or a toilet or latrine. Other effective disinfectants include commercially available quaternary ammonium compounds, such as cetylpyridinium chloride, used according to manufacturer's instructions, and peracetic or peroxyacetic acid at concentrations of 500–2000 mg/L.

Chlorine is ineffective for disinfecting media containing large amounts of solid and dissolved organic matter. Therefore, there is limited benefit to adding chlorine solution to fresh excreta and it is possible that this may introduce risks associated with splashing.

- *Safely disposing of greywater or water from washing PPE, surfaces and floors.*

Current WHO recommendations are to clean utility gloves or heavy duty, reusable plastic aprons with soap and water and then decontaminate them with 0.5% sodium hypochlorite solution after each use. Single-use gloves (nitrile or latex) and gowns should be discarded after each use and not reused; hand hygiene should be performed after PPE is removed. If greywater includes disinfectant used in prior cleaning, it does not need to be chlorinated or treated again. However, it is important that such water is disposed of in drains connected to a septic system or sewer or in a soakaway pit. If greywater is disposed of in a soakaway pit, the pit should be fenced off within the health facility grounds to prevent tampering and to avoid possible exposure in the case of overflow.

APPENDIX 2:

INFECTION PREVENTION AND CONTROL MEASURES:

TRANSMISSION BASED PRECAUTIONS

While standard precautions are applied for all patients, depending on the risk assessment (e.g. splash of fluids on body, face...) and performed procedures (e.g. withdrawing blood...), transmission-based (additional) precautions are applied depending on the route of transmission of the pathogen, in addition to standard precautions.

Additional precautions are a set of procedures whose goal is to prevent communication of infectious disease transmitted in a certain manner.

There are three types of additional precautions:

1. Contact precautions
2. Droplet precautions
3. Airborne precautions

They may be combined for diseases that have multiple routes of transmission e.g. avian influenza (droplet and contact precautions are required).

For all type of isolation precautions:

- Implement all standard precautions.
- Place patient in a single room or in a room with another patient infected by the same pathogen - also called cohorting room.

In a cohort room, keep at least 1 meter distance between patient beds.

- Put a sign with the type of precautions (e.g. contact, droplet and/or airborne) and what PPE staff, visitors need to wear.
- Always limit the movement and transport of the patient from the room (e.g. use mobile X-Ray, where available, instead of transporting patient to X-Ray room)

If transportation is necessary, apply standard precautions to minimize the risk of transmission.

- Avoid crowded area (with other patients, to avoid NI), when transporting patients.
- Use dedicated patient care equipment (one equipment for one isolated patient); if not possible clean and disinfect item between patients.

2A. CONTACT PRECAUTIONS

Requirements	Contact Precautions
Single Room	Yes, or Cohort with patient with same pathogen in consultation with infection prevention and control focal point.
Negative Pressure	No
Hand Hygiene	Yes Hand cleaning with soap and water or AHR
PPE for staff/ visitor	
Gloves	Yes, If there is direct contact with the patient or their environment Rubber gloves, when cleaning, disinfecting
Gown/Apron	Yes, If there is direct contact with the patient or their environment.
Mask	Standard Precautions Use to protect face if splash or aerosol likely
Protective eyewear	Standard Precautions Use to protect eyes if splash likely to be generated
Rubber boots	Standard precautions When risk of infected liquid on the foot, walking where contaminated floor
Patient Equipment	Designated equipment (1 equipment/ 1 patient) Or if not possible clean and disinfect before to use to the next patient. To avoid infection of other patients (nosocomial infection) via contaminated equipment.
Transport of Patients (inside and outside of hospital)	<ul style="list-style-type: none"> • limit transport, only when necessary • Notify the area receiving patient. • choice un-crowded way to transport patient inside of hospital • transport staff need to wear PPE for contact precautions • PPE for patient: <ul style="list-style-type: none"> ◦ Put a drape on top of the patient (to avoid risk of contamination of the environment during the transport)

	<ul style="list-style-type: none"> ◦ If patient has also respiratory symptoms, patient should wear surgical mask during the transport • Clean and disinfect transport material or vehicle
After leaving the isolation room	<ul style="list-style-type: none"> • when transferring patient from outside to isolation unit, use the dedicated entrance for infectious patient, if available • Take off PPE in the ante-room (if ante-room is not available, in the dedicated area – e.g. corridor) and perform hand hygiene
Room Cleaning	<ul style="list-style-type: none"> • Refer to Annex 15 and Hospital Cleaning Procedure • Cleaner staff wear PPE for contact precaution plus rubber gloves, rubber boots and impermeable apron • May require additional cleaning with a disinfectant solution depending on the pathogen.
Remarks	<ul style="list-style-type: none"> • Everyone entering in the isolation room or unit, need to record their name and contact in the logbook. • Patient Medical Records/document, pen, mobile phone... must not be taken into the room. • Put a sign contact precaution room.

CONTACT PRECAUTIONS



Staff, Visitors, Family, must report to nursing desk before entering

Staff, Visitors, Family, must


- Perform hand washing before entering and when leaving
- Wear disposable gloves and gown/ apron before enter
- Leave patient care equipment, food in the room and inform unit staff
- When leaving the isolation room, take off PPE (in anteroom or designated area) and
- Perform hand hygiene

2B. DROPLET PRECAUTIONS

Requirements	Droplet Precautions
Single Room	<p>Yes or</p> <p>Cohort with patient with same pathogen (in consultation with infection control professional, or infectious diseases physician).</p> <p>It is recommended that single patient rooms be fitted with ensuite facilities. In the advent of no ensuite facilities, a toilet and bathroom should be dedicated for individual or cohort patient use.</p>
Negative Pressure*	No
Hand Hygiene	<p>Yes</p> <p>Hand cleaning with soap and water or water-free alcohol based skin cleanser.</p>
PPE for staff/ visitor	
Gloves	<p>Standard Precautions</p> <p>Use to protect for anticipated contact with blood and body substances.</p>
Gown/Apron	<p>Standard Precautions</p> <p>Use to protect where soiling or splashing are likely.</p>
Mask	<p>Yes</p> <p>Surgical Mask</p> <p>Take off mask after leaving patients room.</p>
Protective Eyewear	Yes
Handling of Equipment	<p>Standard Precautions</p> <p>Avoid contaminating environmental surfaces and equipment with used gloves.</p>
Transport of Patients	<ul style="list-style-type: none"> • Respiratory hygiene for coughing and sneezing patients suspected of having an infectious respiratory illness. • Surgical mask for patient when they leave the room.

	<ul style="list-style-type: none"> • Patients on oxygen therapy must be changed to nasal prongs and have a surgical mask over the top of the nasal prongs for transport (if medical condition allows). • Advise transport staff of level of precautions to be maintained (droplet precautions). • Notify area receiving the patient. • Clean and disinfect transport material or vehicle.
Alert	<ul style="list-style-type: none"> • When cohorting patients, they require minimum of one metre of patient separation. • Visitors to patient room must wear a surgical mask and protective eyewear (if unable to maintain 1 meter distance) and perform hand hygiene. • Patient Medical Records must not be taken into the room. • Signage of room.
Room Cleaning	<ul style="list-style-type: none"> • Refer to Annex 15 and Hospital Cleaning Procedure • May require additional cleaning with a disinfectant agent depending on organism. • Consult with infection control professional.

DROPLET PRECAUTIONS



Staff, Visitors, Family must report to nursing desk before entering

Staff, Visitors, Family must

- Perform hand washing before entering and before leaving the room
- Wear at least surgical mask and eyes protection when entering room
- Leave patient care equipment in the room and inform unit staff
- When leaving the isolation room, take off PPE (in anteroom or designated area)
- Perform hand washing

2C. AIRBORNE PRECAUTIONS

Requirements	Airborne Precautions
Single Room	<p>Yes</p> <p>Door closed</p> <p>It is recommended that single patient rooms be fitted with ensuite facilities. If no en-suite facilities, a toilet and bathroom should be dedicated for individual patient use.</p>
Negative Pressure*	Yes , if available otherwise single room with door closed and window open
Hand Hygiene	<p>Yes</p> <p>Hand cleaning with soap and water or water-free alcohol based skin cleanser</p>
PPE for staff/ visitor	
Gloves	<p>Standard Precautions</p> <p>Use to protect for anticipated contact with blood and body substances</p>
Gown/Apron	<p>Standard Precautions</p> <p>Use to protect where soiling or splashing are likely</p>
Mask	<p>Yes, N95 or P2 Mask (perform fit check each time a mask is worn to ensure it fits the face firmly with no gaps between the mask and the wearers face</p> <p>according to manufacturer instructions prior to entering room)</p> <p>Take off mask after leaving patient room</p>
Protective eyewear	<p>Standard Precautions</p> <p>Use to protect eyes if splash likely or where aerosol may be generated</p>
Handling of Equipment	<p>Standard Precautions</p> <p>Avoid contaminating environmental surfaces and equipment with used gloves</p>
Transport of Patients	<ul style="list-style-type: none"> • Surgical mask for patient when they leave the room • Patients on oxygen therapy must be changed to nasal prongs and have a surgical mask over the top of the nasal prongs for transport (if medical condition allows). • Advise transport staff of level of precautions to be maintained (airborne).

	<ul style="list-style-type: none"> • Respiratory hygiene for coughing and sneezing patients suspected of having an infectious respiratory illness. • Notify area receiving patient. • Clean and disinfect transport material or vehicle.
Alert	<ul style="list-style-type: none"> • Respiratory hygiene for coughing patients • Visitors to patient room must also wear P2 or N95 mask and perform hand hygiene • Signage of room indicating precautions to be applied • Patient Medical Records must not be taken into the room.
Room Cleaning	<ul style="list-style-type: none"> • Refer to Annex 15 and Hospital Cleaning Procedure. • May require additional cleaning with a disinfectant agent depending on the organism. • Consult with infection control professional.

AIRBORNE PRECAUTIONS



Staff, Visitors, Family, must report to nursing desk before entering

Staff, Visitors, Family must

- Perform hand washing before entering
- Wear particulate respirator (N95) before enter
- Leave patient care equipment in the room and inform unit staff
- When leaving the isolation room, take off PPE (in anteroom or designated area) and
- Perform hand washing

APPENDIX 3:

SPECIFIC PROCEDURES FOR MANAGING PATIENTS IN ISOLATION ROOM/UNIT

1. Preparation of isolation Room / unit

- Isolate infectious patient in a single room
- If there is no single room, isolate in the cohort room. In cohort room, always keep suspected cases separate from confirmed cases
- If single and cohort room, keep the single room for suspected cases and the cohort room for confirmed cases
- Avoid movement of infectious suspected and confirmed patients (only if crucial)
- Limit number of visitor (ideally only one)
- Staff help the visitor select PPE base on route of transmission, visitor must be trained for wearing PPE
- Put a clear sign of restrictive area and fence around isolation room/unit
- Set up isolation room/ unit as per standard
- Prepare the isolation room and ensure refurbishment of PPE/ material.

The following items should be kept on the trolley at all times so that PPE is always available for healthcare workers

Equipment	Stock present
Eye protection (visor or goggles)	
Face shield (provides eye, nose and mouth protection)	
Gloves <ul style="list-style-type: none">• reusable vinyl or rubber gloves for environmental cleaning• latex single-use gloves for clinical care	
Hair covers (optional)	
Particulate respirators (N95, FFP2, or equivalent)	
Medical (surgical or procedure) masks	
Gowns and aprons <ul style="list-style-type: none">• single-use long-sleeved fluid-resistant or reusable non-fluid-resistant gowns• plastic aprons (for use over non-fluid-resistant gowns if splashing is anticipated and if fluid-resistant gowns are not available)	
Alcohol-based hand rub	
Plain soap (liquid if possible, for washing hands in clean water)	
Clean single-use towels (e.g. paper towels)	
Sharps containers	
Appropriate detergent for environmental cleaning and disinfectant for disinfection of surfaces, instruments or equipment	
Large plastic bags	
Appropriate clinical waste bags	
Linen bags	
Collection container for used equipment	

2. HCWs/staff in the isolation room /unit

Apply IPC standard and adequate additional precaution(s) based on route of transmission

For emerging infectious disease (EID), with unknown route of transmission, apply standard precautions and all additional precautions (contact+ droplet+ airborne), until the route of transmission has been identified (staff will wear FULL PPE, maximum protective personal equipment)

Exclusively assigned trained staff (medical and non-medical)

- If HCW is not trained, he/she must not wear PPE and enter in the isolation room

Prior entering to the room:

- HCW must record their name and contact details
- Perform hand hygiene and wear PPE for identify route of transmission (following PPE procedure)

After contact with isolated patient:

- HCW must safely take off PPE, and thoroughly wash hands precautions (following PPE procedure)

a. PPE Procedure in Isolation room/ unit

The PPE to wear will depends on the type of isolation precautions; therefore several PPE procedures are possible. Keep in mind the steps of removing the PPE (from more contaminated to less), this will guide the step of putting on the PPE.

Example of PPE procedure when all PPE items are needed (based on assessment of the risk and route(s) of transmission.

A. Putting on PPE (when all PPE items are needed)



1

- Identify hazards and manage risk.
- Gather the necessary PPE.
- Plan where to put on and take off PPE.
- Do you have a buddy? Mirror?
- Do you know how you will deal with waste?



2

Put on a gown.

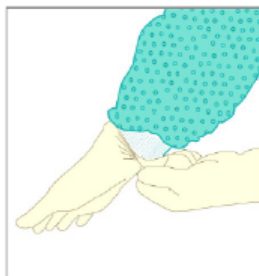


3

Put on particulate respirator or medical mask; perform user seal check if using a respirator.

4

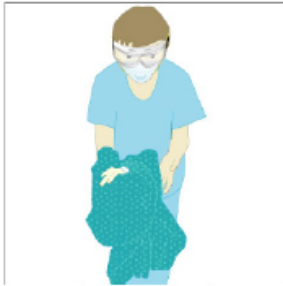
Put on eye protection, e.g. face shield/goggles (consider anti-fog drops or fog-resistant goggles). Caps are optional: if worn, put on after eye protection.



5

Put on gloves (over cuff).

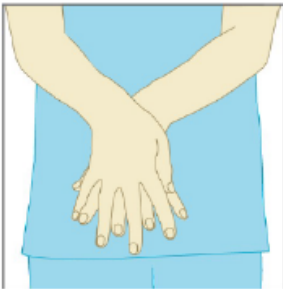
B. Taking off PPE



- 1** - Avoid contamination of self, others and the environment
- Remove the most heavily contaminated items first.

Remove gloves and gown:

- peel off gown and gloves and roll inside, out;
- dispose of gloves and gown safely.



- 2** Perform hand hygiene.



- 3** - Remove cap (if worn).
- Remove goggles from behind.
- Put goggles in a separate container for reprocessing.



- 4** Remove respirator from behind.



- 5** Perform hand hygiene.

b. Environment Cleaning / Disinfecting

Trained staff is wearing PPE depending on route of transmission, adding rubber gloves, impermeable apron, rubber boots.

- In isolation room, all surfaces (floor, table...) need to be cleaned, than disinfected once per day.
- When heavy contamination (blood, vomit, faeces) on surface and floor, take off spill, clean with detergent, disinfect with chlorine solution 0.5%.

Refer to the list of disinfectant to select those that will inactivated the pathogen. The most common hospital disinfectant include:

- Sodium hypochlorite (household bleach);
- Ethyl alcohol 70%;
- Phenolic compounds;
- Quaternary ammonium compounds;
- Peroxygen compounds.

Refer to dilution table, to prepare the detergent disinfectant solution (Refer to Appendix 1C. "Preparation of Sodium Hypochlorite Solution Procedure")

Some disinfectant solution, provide the two actions (detergent and disinfectant) in one product, follow instruction for that specific product.

c. Reprocessing reusable equipment

Clean with detergent, then soak into chlorine solution 0.05% for at least 30 minutes, rinse and let it dry in a clean area.

If using goggle or safety glasses, clean with detergent, then soak in chlorine solution 0.05% for 10 minutes (30 minutes can damage the goggle, glasses), thoroughly rinse (avoid irritation of eyes) and let it dry in a clean area, before reusing.

Refer to Annex 7 for Preparation of Sodium Hypochlorite Solution Procedure.

Contaminated equipment should be placed in clearly-labelled, leak-proof bags or closed container.

Transport of equipment bag/container from the anteroom to the cleaning/ utility room

- The trained staff wears disposable gloves and mask to transport the bag to the cleaning room.
 - Place the leak-proof bag into a new bag (double bag)
- or
- Disinfect the outside part of the container with e.g. chlorine solution 0.05%
 - Use a wheeled bin with a lid or trolley (covered trolley is preferred) to transport the bag. The staff must not carry the bag/container.

- Clean and disinfect all surfaces of the trollies or bins, after each use

Cleaning staff, like other staff need to check and record their temperature twice a day, and notify to chief of unit or IPC team, if any symptoms.

d. Soiled linen:

Soiled linen must be proceeding by trained staff wearing PPE (depending on the pathogen route of transmission). At least wear rubber gloves, impermeable apron, and rubber boots (refer to Appendix 1D appropriate handling of soiled linen)

Wash with detergent and disinfect linen daily.

If there is any solid excrement such as faeces or vomit,

- Remove carefully, and flush it down the toilet (if proper sewage) or in the sluice before linen is placed in its bag or container.
- If not proper sewage, remove carefully, discharge in waste bag,
- or decontaminate with disinfectant solution (concentration depending on the pathogen)

Soiled linen should be placed in clearly-labelled, leak-proof bags or closed container.

Transport of linen bag/container from the anteroom the laundry room

- Place the leak proof bag into a new bag (double bag) or
- Disinfect the outside part of the container with e.g. chlorine solution 0.05%
- The trained staff wears disposable gloves and mask to transport the linen bag to the laundry
- Use of a wheeled bin with a lid or trolley (covered trolley is preferred). The staff must not carry the bag/container.
- Clean and disinfect all surfaces of the trollies or bins, after each use

In the laundry room, trained staff wear PPE depending on the pathogen route of transmission, with rubber gloves, waterproof apron and rubber boots), wash infected linen with laundry machine:

- In hot water of 70°C: wash with detergent or disinfectant (30 minutes).
- In cold water (< 70°Celsius): wash with detergent, then disinfectant that are active in cold water. When using bleach, rinse in clean water, and dry before reuse.

Laundry staff, like other staff need to check and record their temperature twice a day, and notify to chief of unit or IPC team, if any symptoms

d. Management of Infectious Waste

Only trained staff, wearing PPE depending on the pathogen route of transmission, with rubber gloves, impermeable apron and rubber boots, must handling infectious waste in the isolation room/ IU (see Appendix 2 Transmission based Precautions)

Dispose needle/sharps in a sharp-proof container (as per standard precautions), and never re-cap needles and/or separate needle from syringe before disposing in the container.

Dispose infectious waste in a “biohazard” labelled waste bag, or leak-proof waste bag (refer Appendix 1G HCWM)

Management of solid infectious waste

Transport of infectious waste bag from isolation room/ unit to incinerator or designated pit:

- Put the waste bag in another clean bag (double bagging) before exiting the isolation area or decontaminate container/bag with the infectious waste, with chlorine solution 0.05%.
- Outside the isolation area, staff who is helping for double bagging, transport the decontaminated bags/containers, should wear at least gloves and disposable mask if outside the isolation zone.

When storing bag/container with infected waste, before being properly manage

- Do not stored them more than 24 hours
- The store place must be protected by a fence to prevent entry by animals, children, or untrained personnel

Management of waste bags with infected solid waste

- Incinerate bags with infectious wastes (high temperature > 800oC.)
- Disinfect infectious waste by autoclave
- Bury in a designated pit of appropriate depth (e.g. 2 metres)

Management of infected liquid waste (blood, faeces, urine and vomit, grey water, etc.)

With adequate PPE, depending on the pathogen route of transmission, adding eyes protection and surgical mask (if not worn)

- Flush liquid waste (e.g. urine, liquid faecal waste) into the sewage system, if there is an adequate system in place.
- Avoid splashing when disposing of liquid infectious waste to avoid possible generation of aerosols

When hospital does not have an adequate system

- Select adequate disinfectant solution for the pathogen
- In general, disinfect liquid waste with chlorine 0.05% or 0.5% depending on the pathogen before disposing (e.g. disinfect cholera with chlorine solution 0.5%)

Avoid splashing when pouring disinfectant solution

f. Handling of dead bodies

Discourage any local practices (touching/ being in contact with the corpse) by HCW, family, friends...

Dead body remains should not be sprayed, washed or embalmed.

PPE to safely handle dead body. Refer to route of transmission, with at least:

- Disposable gown with long-sleeves

- Waterproof apron
- Disposable, non-sterile gloves (over the cuffs of the gown)
- Surgical mask (wear particulate mask if autopsy)
- Eyes protection (preferable face-shield, or goggle)
- Rubber gloves
- Rubber boots

Put corpse in waterproof/ impermeable body bag immediately; and transfer to the mortuary as soon as possible after death.

Bury or incinerate corpse without delay

Surveillance of staff who handle dead body (need to check and record their temperature twice a day, and notify to chief of unit, IPC team if any symptoms)

g. Occupational health

Any staff and visitor who is entering in the isolation room/ isolation unit (IU), or has any contact with contaminated equipment, linen, waste, dead body MUST:

- Register their name and contact details in the log book of isolation room/ unit, for contact tracing purpose.
- Follow up health status, fever and other symptoms (refer to suspect case definition/ triage form)
- Take and record temperature twice daily, for the entire incubation period after the last contact
- Notify to chief of unit, IPC team, focal point if any symptoms

Have a good hygiene, drink plenty of safe drinking water, and rest to avoid mistake due to overwhelmed, severe fatigue.

Provide supervision and support from chief of IU, IPC focal point and director of hospital

Promote preventive medicine:

- No pregnant women should be working in isolation room/ unit
- Provide psychological support to the staff/team who work in isolation room/ unit
- Prevent heat illness/ dehydration (serious risk of heat illness while wearing PPE in tropical conditions)

For HCWs who are developing symptoms

Stop work immediately or do not report to work

Limit interactions with others

Exclude themselves from area,

Notify the chief of unit or focal point if any fever > 38°C. and/ or other symptoms (refer to case definition)

Exposed persons must receive follow-up care (e.g. antiviral therapy when available), counselling and psychological support

Inform supervisor, for contact tracing and follow-up of family, friends, co-workers and other patients, who may have been exposed to the disease through close contact with the infected HCW/staff.

Managing Blood/ Body fluid Exposure

Persons including HCWs with percutaneous or muco-cutaneous exposure to blood, body fluids, secretions, or excretions from a patient with suspected or confirmed infectious disease, should immediately and safely stop any current tasks, and leave the patient care area.

Safely take off PPE according to the steps in the procedure, in the anteroom

Treat affected exposed area:

- wash the affected skin surfaces or the percutaneous injury site with soap and water
- Irrigate mucous membranes (e.g. conjunctiva) with copious amounts of water or an eyewash solution, and not with chlorine solutions or other disinfectants.

Immediately report the incident to the chief of unit, IPC focal point (following hospital exposure procedure) as soon as the HCF staff exist the isolation room/ unit.

Exposed persons should be medically evaluated for:

- infectious disease (ID) (of isolated patient)
- other potential exposures (e.g., HIV, HCV) if sharp/needle-stick injury

Exposed persons must receive follow-up care, including:

- fever monitoring, twice daily
- period of recording symptoms will depend on the ID
- Counselling and psychological support

Immediate consultation with an expert in infectious diseases for any exposed person who develops fever, symptoms after exposure.

If fever appears and other symptoms, isolate HCF staff, and follow procedure for ID suspected until a negative diagnosis is confirmed

Or

People suspected of having infected should be cared for/isolated, and the same recommendations outlined in this document must be applied until a negative diagnosis is confirmed.

Conduct contact tracing and follow-up of family, friends, co-workers and other patients, who may have been exposed to Ebola virus through close contact with the infected HCW/ staff.

APPENDIX 4:
MANAGEMENT OF HAZARDOUS MATERIALS

1. **Chemical waste management**

a. *Segregation, collection and labelling.* Various chemical and pharmaceutical wastes should be segregated and collected separately: subcategories include mercury, batteries, cadmium-containing wastes, photochemicals, stains and laboratory reagents, cytotoxic drugs and other pharmaceuticals. All should be clearly labelled with the type of waste and the name of the major chemicals, with any necessary hazard labels attached to corrosive, flammable, explosive or toxic chemicals (see pictures below). Liquid chemical wastes should never be mixed or disposed of down the drain, but should be stored in strong leak-proof containers.

Chemical Hazard Symbols

	Corrosive (C) These substances attack and destroy living tissues, including the eyes and skin.	
	Highly flammable (F) These substances easily catch fire (flash point: 21–55 °C). Never store flammable substances together with explosive ones.	
	Toxic (T) These substances can cause death. They may have their effects when swallowed or breathed in, or when absorbed through the skin.	
	Harmful (Xn) These substances are similar to toxic substances but are less dangerous.	
	Explosive (E) An explosive is a compound or mixture susceptible to a rapid chemical reaction, decomposition or combustion, with the rapid generation of heat and gases with a combined volume much larger than the original substance.	
	Irritant (I) These substances can cause reddening or blistering of skin.	
	Extremely flammable (F+) Liquid substances and preparations that have an extremely low flash point (<21 °C) and therefore catch fire very easily.	
	Very toxic (T+) Substances and preparations that, in very low quantities, cause death or acute or chronic damage to health when inhaled, swallowed or absorbed via the skin.	
	Oxidising (O) These substances provide oxygen, which allows other materials to burn more fiercely.	

b. Storage

Pharmaceutical waste should be segregated from other wastes and local regulations followed for final disposal. In general, pharmaceutical wastes can be hazardous or non-hazardous, and liquid or solid in nature, and each should be handled differently. The classification should be carried out by a pharmacist or other expert on pharmaceuticals. Pharmaceutical waste with non-hazardous characteristics that can be stored in a non-hazardous storage area. Hazardous waste that should be stored in accordance with their chemical characteristics or specific requirements for disposal (e.g. controlled drugs or antibiotics).

- controlled drugs (should be stored under government supervision);
- disinfectants and antiseptics;
- anti-infective drugs (e.g. antibiotics);
- genotoxic drugs (genotoxic waste);
- ampoules with, for example, antibiotics.

Hazardous chemical waste should be stored in an enclosed area and separated from other waste storage areas. When storing liquid chemicals, the storage should be equipped with a liquid- and chemical-proof sump. If no sump is present, catch-containers to collect leaked liquids should be placed under the storage containers. Spillage kits, protective equipment and first-aid equipment (e.g. eye showers) should be available in the central storage area. The storage area itself should have adequate lighting and good ventilation to prevent the accumulation of toxic fumes.

To ensure the safe storage of chemical wastes, the following separate storage zones should be available to prevent dangerous chemical reactions. The storage zones should be labelled according to their hazard class. If more than one hazard class is defined for a specific waste, use the most hazardous classification:

- explosive waste
- corrosive acid waste
- corrosive alkali waste (bases)
- toxic waste
- flammable waste
- oxidative waste
- halogenated solvents (containing chlorine, bromine, iodine or fluorine)
- non-halogenated solvents.

Liquid and solid waste should be stored separately. If possible, the original packaging should be taken for storage too. The packaging used to store and transport chemical wastes offsite should also be labelled. This label should have the following information: hazard symbol(s), waste classification, date, and point of generation (if applicable). The storage area for explosive or highly flammable materials must be suitably ventilated above and below, with a bonded floor and constructed of materials suitable to withstand explosion or leakage³.

c. Treatment and disposal

Small quantities of hazardous chemical waste, e.g. residues of chemicals inside their packaging, may be dealt with by encapsulation, inertization, pyrolytic incineration or landfilling.

³ Refer to WHO's Guidelines for safe management of waste generated from healthcare activities.

- Encapsulation is the separate collection of high density hazardous waste (not infectious waste) in larger container, boxes or drums, the adding of an immobilizing material, the sealing of the container and the final controlled disposal on a landfill. Encapsulation should be only carried out if other disposal possibilities are not available. The collection container are carefully filled with the hazardous waste (e.g. heavy metal containing waste, batteries, etc.) and then filled up with a medium such as plastic foam, bituminous sand, cement mortar, or clay material. After the medium has dried, the containers are sealed and disposed of in landfill sites.

- Inertization. This method is mainly used for the stabilization of incinerator ash and for the inertization of crushed pharmaceuticals, solid chemicals and small amounts of liquid chemical waste. The crushed waste will be mixed with cement, lime or other substances in order to avoid the risk of mobilization of toxic substances into the groundwater. PPE must be available and worn. For the inertization of pharmaceutical waste, the packaging should be removed, the pharmaceuticals ground, and a mixture of water, lime, and cement added. A homogeneous mass is formed and cubes are produced which then can be transported to a suitable storage site. The typical proportions for the mixture are: 65% waste (e.g. crushed pharmaceutical waste); 15% lime; 15% cement; 5% water. The process is reasonably inexpensive and can be performed using relatively unsophisticated equipment. Other than personnel, the main requirements are a grinder to crush the pharmaceuticals, a concrete mixer, and supplies of cement, lime, and water.

- Incineration. Certain combustible wastes, including many solvents, may be incinerated. However, incineration of large quantities of halogenated solvents (containing chlorine or fluorine for instance) should not be undertaken unless facilities have adequate gas-cleaning equipment. Any waste that cannot be safely and efficiently incinerated should be handled and disposed of by an organization or company specifically authorized to manage hazardous waste. This organization may eliminate the wastes in a rotary kiln, treat them chemically, or store them in a safe disposal facility engineered for hazardous chemicals.

2. Occupational Health and Safety for specific chemical hazards

a. Latex Hypersensitivity

Allergic responses to latex material have been identified as a substantial issue for HCWs. The response is varied and may rarely be fatal.

The main adverse effect is a hypersensitivity reaction, appears as an eczematous local contact allergic dermatitis. It is usually not due to latex itself but primarily to chemicals added to the rubber during glove manufacturing.

HCFs should identify who are hypersensitive and with which latex product.

What to do when a HCW shows latex hypersensitivity?

- provide powder-free latex gloves, which significantly reduce latex allergy
- provide non-latex gloves (e.g. nitrile gloves)

b. Disinfectants

Exposure to disinfectants and cleaning solutions is a common cause of chemical injuries among HCFs' staff, with housekeepers and maintenance workers at greatest risk. For instance, glutaraldehyde (e.g. to disinfect endoscope) irritates skin and mucous membranes and may cause allergic contact dermatitis, rhinitis, and asthma. Sodium hypochlorite (bleach, eau javel) is an irritant and, in high concentrations, may cause burns of the skin, mucous membranes and eyes. Soaps in handwashing is a common cause of skin irritation and less commonly contact dermatitis among nursing and medical staff. By using skin protecting lotions to prevent irritant contact dermatitis.

c. Ethylene oxide

Ethylene oxide is a colorless gas used to sterilize medical instruments. It has a distinctive sweet odor, but the average odor threshold is relatively high. Ethylene oxide is known as increasing risk of spontaneous abortion, mutagenicity, carcinogenicity (stomach, leukemia and other hematopoietic cancers) and neurotoxicity at higher exposure levels. Therefore a medical surveillance should focus on the hematopoietic, reproductive, renal, and nervous systems.

The area of highest exposure risk is in central sterilization areas, and risk reduction requires engineering controls and continuous or periodic air monitoring (preferably with an alarm system) as well as good work practices.

To prevent from chemical exposure, a good ventilation (e.g. open window, extraction fan) is necessary in the sterilization room, as well as a good maintenance of equipment, to avoid leak of gas. Regular monitoring of the air should be done, to ensure that there is no remaining ethylene oxide gas in the room. Instruments sterilized with ethylene oxide must be aerated in aeration cabinets before they are used. Additionally to prevent dermal absorption or inhalation of ethylene oxide, HCFs staff, must wear appropriate PPE (gloves and mask).

d. Formaldehyde (formol)

Exposure risk areas include autopsy rooms, pathology laboratories and dialysis units. The adverse (negative) effects of formaldehyde are mainly respiratory symptoms, dermatitis, and hepatitis.

The preplacement and periodic examinations of the HCWs in contact with formaldehyde, should include baseline and periodic pulmonary, dermal, and hepatic evaluations. In areas where spills are likely to happen, spill absorbent materials and appropriate personal protective equipment (PPE) should be available.

e. Glutaraldehyde

Glutaraldehyde is a commonly used solution for high disinfection (e.g. endoscope). Absorption may occur by inhalation, dermal contact or ingestion. The negative effects are often allergic eczema, mucous membrane irritation in humans, and foetotoxicity. Prevention includes, wearing appropriate PPE, and having good room ventilation.

f. Mercury

Mercury is present in various laboratories and some instruments, such as thermometer, sphygmomanometers, etc. It may also be present in gastrointestinal equipment and supplies, laboratory fixatives and reagents plumbing systems, batteries...

To prevent exposure, personnel should receive training in the hazard of mercury. Personnel involved in the clean-up of spills should be trained and use respirator and appropriate PPE.

When conducting surveillance of exposed staff with spill mercury, the chemical analyses should specify the concentration detectable, still when it is low.

g. Lead and Cadmium

Lead and cadmium are known for its acute and chronic effects on human health. It is a multi-organ system toxicant that can cause neurological, cardiovascular, pulmonary, bone, renal, gastrointestinal, haematological and reproductive effects.

Compounds containing lead are frequently encountered in cancer radiation therapy centres. Although these compound generally present little in the way of fume hazards, processes such as crushing and filing may introduce lead dust into the working environment. Proper work hygiene is essential to minimize the potential hazards.

h. Anaesthetic Gases

Possible adverse effects among personnel heavily exposed to anaesthetic agents include hepatotoxicity, reproductive hazards and perceptual, cognitive and motor skill impairment.

Particular attention to safe work practices and proper use and maintenance of anaesthetic gas systems will significantly reduce potential for exposure. Area and personal monitoring are necessary to assure adequate control. Anaesthesia personnel should not identify gases by smell. In case it happens, the staff should inform directly and problem needs to be fixed as a priority.

Room ventilation turnover and local exhaust ventilation should meet mandated guidelines; and monitoring of ventilation of operating room as well as maintenance book should be mandatory.

i. Methyl Methacrylate

Methyl methacrylate is an acrylic substance used as cement for dental and orthopedic implants. It is compounded by mixing a powder and liquids that are provided separately and has been associated with mucous membrane irritation and headache in operating room personnel. It is known to cause both allergic dermatitis and asthma.

To prevent side effect, functioning exhaust ventilation from the site of use and mixing in a closed container should be in place to limit exposure.

k. Hazardous Drugs

Many pharmaceutical agents have been reported to be carcinogenic, mutagenic or teratogenic in animal studies and limited human studies. Studies of occupational exposures have shown detectable levels of antineoplastic and other drugs, such as Pentamidine and Ribavirin, in the air of hospital pharmacies with no ventilation hoods, and in patient rooms with no environmental control measures (no extraction fan).

Pharmacy personnel and nurses working with chemotherapeutic drugs have been reported to have increased mutagenic agents in their urine. It was demonstrated, that it was a link with poor maintenance of equipment, including ventilation system, and work practices.

Institutions that are using cytotoxic (antineoplastic) and other hazardous drugs, should develop regulations to ensure the safety of personnel dealing with.

Nurses and pharmacists are particularly susceptible to exposure to antineoplastic agents, but other employees, such as housekeepers handling contaminated linens, can have a potential exposure.

To prevent exposure, education and strict adherence to good procedure are necessary. Pharmacists should use vertical exhaust hoods and wear appropriate PPE. Nursing staff need to wearing PPE (mask and gloves), and must practice meticulous technique to avoid spills, leaks and accidental needle-stick injuries; to avoid skin absorption and inhalation exposure.

It is recommended that for personnel involved with preparation and administration of anti-neoplastic, their medical check-up also include hematologic and reproductive

systems. Employees should be encouraged to immediately report any accidental exposures, following accident/ injuries procedure.

12. Benzene

Human exposure to benzene is well recognised as a major public health concern. It has been associated with a range of acute and long-term effects. Acute effects include headache, dizziness, sleepiness, confusion, tremors and loss of consciousness; and eye and skin irritant. Long-term adverse health effects and diseases, including cancer and aplastic anaemia. Benzene is highly volatile, and exposure occurs mostly through inhalation. Public health actions are needed to reduce the exposure of both workers and the general population to benzene.

To prevent from benzene exposure in the HCFs, use of benzene-containing products should be avoided, discourage indoor use of un-flued oil, and prohibit smoking inside building.

1. Peracetic acid

Peracetic acid is effective against bacteria, fungi, and viruses. It is used as a disinfectant in the food and medical industries, as a bleaching agent in the paper and textile industries, and in HCFs as a high level disinfectant, when sterilization process is not possible.

Peracetic acid is known to be occupational health hazard to its volatile property, with a risk of fire and explosion.

When exposed to peracetic acid, worker can have a risk:

Inhalation, following symptoms can occur:

- burning sensation,
- cough, and difficulty of breathing/shortness of breath,
- sore throat.

Skin: MAY BE ABSORBED! Redness. Pain. Blisters. Skin burns.

INGESTION: Abdominal pain, burning sensation, Shock or collapse.

EYES: Redness. Pain. Severe deep burns.

How to prevent:

- Do not have open flames, NO sparks, and NO smoking. NO contact with flammable substances. NO contact with hot surfaces.
- If above 40.5°C, use a closed system, ventilation, and explosion-proof electrical equipment. Do NOT expose to friction.
- To prevent exposure,
- Work in a well-ventilated area, with local exhaust, or breathing protection.
- Use protective gloves. Protective clothing.
- Use Face shield or eye protection in combination with breathing protection.
- Do not eat, drink, or smoke during work.

Please refer to “Laboratory Safety Manual for other hazards from other specific chemicals used in laboratories”.

3. Post-exposure procedure

Post-exposure procedure: Management of Chemical Exposure

1. *Immediate management/first aid*

+ Inhalation of volatile:

- Fresh air, rest. Stay half-upright position.
- Refer for medical attention.

+ Skin exposure:

- First rinse with plenty of water, then remove contaminated clothes and rinse again.
- Refer for medical attention.

+ In case of eyes exposure:

- First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then consult with a doctor.

+ In case of ingestion:

- Rinse mouth. Do NOT induce vomiting.

2. *Report the incident.*

3. *Document the accident.*

4. *Conduct risk assessment, counselling and provision of post-exposure prophylaxis.*

5. *Conduct monitoring and follow up of the exposed health worker.*

6. *Report and evaluate the programme.*

APPENDIX 4:

**DECISION ON ESTABLISHMENT OF THE INTER-MINISTERIAL COMMITTEE
FOR COMBATING COVID-19**



**KINGDOM OF CAMBODIA
NATION RELIGION KING**

Royal Government of Cambodia

No. 26 SSR

**DECISION
ON
ESTABLISHMENT OF THE INTER-MINISTERIAL COMMITTEE FOR COMBATING
COVID-19**

The Royal Government

- Having seen the Constitution of the Kingdom of Cambodia;
- Having seen Royal Decree No. NS/RKT/0918/925, dated 06 September 2018, on the appointment of the Royal Government of the Kingdom of Cambodia;
- Having seen Royal Kram No. NS/RKM/0618/012, dated 28 June 2018, promulgating the Law on the Organization and Functioning of the Council of Ministers;
- Having seen Royal Kram No. NS/RKM/0196/06, dated 24 January 1996, promulgating the Law on the Establishment of the Ministry of Health;
- Having seen Sub-Decree No.67 ANK/BK, dated 22 October 1997, concerning Organization and Functioning of Ministry of Health;
- Having seen Sub-Decree No. 129 ANK. BK, dated 17 September 2015, concerning health measures to prevent and respond to the international epidemic of disease at gateway;
- With reference to the request of the Minister of Health.

HEREBY DECIDES

Article 1.

Establish the Inter-ministerial Committee for combating COVID-19 which consists of the following composition:

1.	Minister of Health	Chair
2.	Secretary of State of the Office of the Council of Ministers	Vice-Chair
3.	Secretary of State of the Ministry of Interior	Vice-Chair
4.	Secretary of State of the Ministry of National Defense	Vice-Chair
5.	Secretary of State of the Ministry of Foreign Affairs and International Cooperation	Vice-Chair
6.	Secretary of State of the Ministry of Economy and Finance	Vice-Chair
7.	Secretary of State of the Ministry of Education, Youth and Sport	Member
8.	Secretary of State of the Ministry of Social Affairs, Veterans and Youth Rehabilitation	Member
9.	Secretary of State of the Ministry of Environment	Member
10.	Secretary of State of the Ministry of Information	Member
11.	Secretary of State of the Ministry of Public Works and Transport	Member
12.	Secretary of State of the Ministry of Tourism	Member
13.	Secretary of State of the Ministry of Labour and Vocational Training	Member
14.	Secretary of State of the State Secretariat of Civil Aviation	Member
15.	Governor of the Governing Board of Capital/Province	Member

Article 2.

The Inter-ministerial Committee for Combating COVID-19 has the following duties:

- To develop response plan of COVID-19 to the pandemic evolution of the virus;
- To implement the plan approved by the Royal of Government;
- To conduct monitoring and evaluation of the implementation of combating COVID-19;
- To conduct eventual operational re-planning based on real situation of the COVID-19 pandemic;
- To report routinely to the Royal of Government on the evolution of COVID-19;
- To attend the meetings following the invitation of the chairperson.

Article 3.

This Inter-ministerial Committee has a secretariat located at the Communicable Disease Control (CDC) Department of the Ministry of Health.

The Inter-ministerial Committee is entitled to establish other technical sub-committees based on its necessity by a decision of the Inter-ministerial Committee Chairperson.

Article 4.

The Inter-ministerial Committee shall utilize the national budget package and other funding sources from development partners and charities; and is entitled to use the Ministry of Health's stamp.

Article 5.

Any provisions contrary to this decision shall be abrogated.

Article 6.

The Minister in charge of the office of the Council of Ministers, the Minister of Economy and Finance, the Minister of Health, Ministers of all ministries and heads of all relevant institutions, and composition as stated in Article 1 shall undertake to implement this decision as their respective duties from the date of signature onward.

Phnom Penh, 10 March 2020

Prime Minister

(Signature and stamp)

Samdech Akka Moha Sena Padei Techo HUN SEN

Recipients:

- Ministry of Royal Palace
- General Secretariat of the Constitutional Council
- General Secretariat of the Senate
- General Secretariat of the National Assembly
- Cabinet of Samdech Akka Moha Sena Padei Techo Prime Minister
- Cabinet of Samdech, Excellencies Deputy Prime Ministers
- As [stated] in Article 6
- Royal Gazette
- Documentation Chronology