

## A.1 FLOOD CHECKLISTS

Floods are defined as the overflowing of the normal confines of a stream or other body of water, or the accumulation of water over areas that are not normally submerged. Floods include river (fluvial) floods, flash floods, urban floods, pluvial floods, sewer floods, coastal floods, and glacial lake outburst floods (4). Floods can significantly affect the functioning of a health care facility of any size, and depending on its severity may result in inability of a facility to function. There is medium confidence that projected increases in heavy rainfall would contribute to increases in local flooding in some regions (7).

### CHECKLIST FOR ASSESSING VULNERABILITY TO FLOODS

FLOODS		Vulnerability level		
<b>High:</b> unprepared; unable to respond (Higher risk) <b>Medium:</b> basic or incomplete preparation; low level of response (Medium risk) <b>Low:</b> prepared; able to respond (Lower risk)		High	Medium	Low
HEALTH WORKFORCE	<b>Is the health workforce,</b>			
	<i>(Human resources)</i>			
	provided with programmes for supporting staff with regards to mental health, injuries, medical treatment and related support measures?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	equipped with an emergency plan for shift relay or replacement of health professionals to ensure that staff get adequate rest?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	prepared with a contingency plan for accessing additional health workforce to strengthen performance capacity?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	provided with an information system to manage occupational safety and health in the facility during a flood?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	equipped with an emergency plan to protect health workers from multiple biological and chemical hazards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	provided with a postflood employee recovery assistance programme according to staff needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	equipped with a coordinated plan, including volunteers on standby, to assist during an emergency or to support health professionals?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	provided with full personal protective equipment, especially for clean-up crews (including waterproof safety boots, goggles, work gloves and masks)?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	provided with safe water and food during an event?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>(Capacity development)</i>			
	trained on public health and climate change hazards including health impacts related to floods?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	equipped with knowledge, experience, training and resources to manage flood risk reduction at the facility and in the local communities?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	engaged in the development of plans and responses to flood risk?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	prepared and able to implement risk reduction actions for protecting themselves?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
prepared with a contingency plan for additional health workforce to strengthen performance capacity?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

FLOODS		Vulnerability level		
<b>High:</b> unprepared; unable to respond (Higher risk) <b>Medium:</b> basic or incomplete preparation; low level of response (Medium risk) <b>Low:</b> prepared; able to respond (Lower risk)		<b>High</b>	<b>Medium</b>	<b>Low</b>
<b>HEALTH WORKFORCE</b>	<b>Is the health workforce,</b>			
	prepared with a contingency plan for continuing to provide services at other facilities or in the local communities (health primary care), if necessary?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	trained to detect posttraumatic stress disorder among staff to take prompt action?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	trained to manage hazardous chemicals in emergency situations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	trained to an appropriate standard to maintain the correct level of safety of electrical power supply, in both routine and emergency/disaster situations?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>(Communication and awareness raising)</b>			
	provided with a safe internal communication system, specially in emergency situations?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	informed on how to use and follow a surveillance system to track health outcomes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	aware of contingency plans for accessing and leaving the facility during flood emergencies, and health workforce transportation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	regularly participating in community disaster planning committees to: improve knowledge on how to reduce risks, be prepared and respond to floods, and recover better than before through adaptation measures?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	prepared with clear messaging about water and food safety during and after a flood?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	prepared with clear messaging, and staff trained on exit and evacuation routes that are clearly marked and free of obstacles to enable emergency evacuation)?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	equipped with a flood plan or programme with clear instructions on how to proceed during flood emergency situations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	equipped with a community health educational programme to assist the community to reduce vulnerabilities to flood impacts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
equipped with a community health educational programme to improve community health in the face of flood risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>WATER, SANITATION AND HEALTH CARE WASTE</b>	<b>Does the health care facility,</b>			
	<b>(Monitoring and assessment)</b>			
	have an updated assessment plan to map risks to the sanitation infrastructure in place, and to identify where services could be disrupted from floods?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	verify water safety conditions, including updated risk assessments to map water resources and water supplies for the facility?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a quality monitoring plan for drinking water during and after the event?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	regularly assess its sanitation system for any possible damage in the event of flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	monitor sewer overflows in order to fix pumps in advance of the flood season?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	regularly verify safety conditions and proper functioning of all elements of the water distribution system, including storage tanks, cisterns, valves, pipes and connections, and water disinfection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have information on water system installation that ensures lower risk of contamination?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	conduct a waste audit to reduce waste as much as possible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>(Risk management)</b>				
have a natural floodwater infiltration system to reduce risk of facility flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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<b>High:</b> unprepared; unable to respond (Higher risk) <b>Medium:</b> basic or incomplete preparation; low level of response (Medium risk) <b>Low:</b> prepared; able to respond (Lower risk)		High	Medium	Low
WATER, SANITATION AND HEALTH CARE WASTE	<b>Does the health care facility,</b>			
	have anti-mosquito breeding measures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a schedule for emptying latrines in advance of the flood season to avoid overflows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a safe health care waste storage place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a safe waste disposal system before, during and after floods?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have an established safe management approach to health care waste transport (including hazardous waste) in case of floods?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have chemical, radioactive and biological hazardous waste stored in a safe place and on a level above the ground floor?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have water storage tanks appropriately covered to prevent access or contamination, and safety located for flooding events?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have onsite water purification equipment to provide safe drinking water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have nonreturn valves installed on water supply pipes to prevent backflows?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have waste pits able to withstand flood events?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a surveillance system for diseases related to water quality and sanitation?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	keep waste sealed in rubbish bins to avoid rodents?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>(Health and safety regulation)</i>			
	have an emergency water supply plan?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	staff who are trained to an appropriate standard to maintain the correct level of safety of water quality controls, use of supplies and alternative sources?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a water safety plan in place, in case of water contamination?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a mechanism or regulation to carry out sanitary inspections of water supply, and when necessary, establish a temporary ban on use, until improvements are made?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a contingency plan to ensure effective and timely delivery of safe water during floods and emergencies over the short- and long-term?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a plan to provide and maintain adequate cleaning and disinfection supplies (such as chlorine, filters or other water treatment technology, rapid water testing kit) for water safety?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
have an emergency plan for maintenance and restoration of waste management systems?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ENERGY	<b>Does the health care facility,</b>			
	<i>(Monitoring and assessment)</i>			
	regularly assess its energy system to ensure that it can cope with flood events?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have an emergency backup generator (including fuel, where relevant) that is able to cover at least all critical service areas and equipment during and after a flood event?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	periodically check emergency backup generators (including fuel, where relevant)?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
assess whether renewable energy (if available, such as solar) is sufficient to power critical equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
identify priority areas within the facility which would require emergency power during and after a flood event?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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ENERGY	<b>Does the health care facility,</b>				
	<i>(Risk management)</i>				
	have a secure place to protect the backup generator (e.g. an elevated place; including fuel or battery storage, where relevant) from flood waters?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have adequate daylight to ensure proper visibility during a power outage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have power-operated doors that can easily be opened manually to permit exit in case of power failure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have appliance thermometers in the refrigerator and freezer to determine if food, vaccines and other essential refrigeration-dependent medical supplies are safe?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have a clear guidance to alert staff on safety measures (e.g. never restore power when the power is off, until a professional inspects and ensures the integrity of the electrical system; do not use electrical equipment that has been exposed to flood waters until checked by an electrician; unless power is off, never enter flooded areas or touch electrical equipment if the ground is wet)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<i>(Health and safety regulation)</i>				
	have an emergency plan for power outages in the short- and long-term (before, during and after a flood)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	work with energy utility agencies to prevent suspension of electricity services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have a management plan for intermittent energy supplies or system failure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have a plan or regulation to determine ways to reduce overall energy use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have an emergency plan to ensure availability of adequate lighting, communication and information systems, and refrigeration and sterilization equipment during a flood?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	INFRASTRUCTURE, TECHNOLOGIES, PRODUCTS AND PROCESSES	<b>Does the health care facility,</b>			
		<i>(Adaptation of current systems and infrastructures)</i>			
have knowledge, experience (considering previous damages) and resources (including human, material, financial, supplies chain and logistics) to manage flood risk reduction?*		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
provide greater advocacy on health workforce education to cover climate change risks and responses?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
work with the local government to support vulnerable local populations to actively participate in risk reduction management, policy making, planning and implementation?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
conduct climate risk and vulnerability assessments for all facility sectors to identify risk scenarios, vulnerabilities and the facility's response capacity?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
utilize the assessed information as a basis to plan and prioritize measures to reduce risk impact?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
in their annual planning consider how climate risks may change in the future?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
have resources available to adopt risk reduction measures on the building and its infrastructure, technologies, products and processes?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
regularly update these assessments, considering emerging scientific information?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
have a schedule to inspect the facility regularly, both internally and externally, for signs of deterioration (e.g. cracks or sinking structural elements) to avoid or reduce flood impacts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

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INFRASTRUCTURE, TECHNOLOGIES, PRODUCTS AND PROCESSES	<b>Does the health care facility,</b>			
	evaluate the condition and safety of structural and nonstructural elements impacted by previous exposure to flood?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a safe location for critical services and equipment in a flood emergency situation?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a safety plan to prevent medical and laboratorial equipment and supplies, and food packages to be exposed to flood waters?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have procedures to store food and bottled water on shelves that will be safely out of the way of contaminated water in case of flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have an effective emergency risk communication plan to reduce risks and impacts for health workers and patients?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a contingency plan in place for safe and efficient personnel evacuation (including health staff and patients) before, during and following a flood?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a clear and consistent mechanism for secure evacuation of health workers and patients?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a plan to transfer critical equipment and medical supplies to another health care facility or to a secure storage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	explore the relationship between social learning and adaptation measures in the face of flood threats to identify and implement the best behavioural responses from successful health facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have evaluation tools (e.g. forms) to identify damages and minimum needs in terms of health workers and medical supplies to ensure continuous functioning of services?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a mechanism for providing prompt maintenance and repair of equipment required for essential services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have a plan for relocating medical devices, medicines, mobile equipment and other supplies and services in case of operational disruption or outbreaks and epidemics that overwhelm the facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have walls protected and insulated against moisture and mold?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	assess the performance and vulnerabilities of each critical part of the facility (structural and nonstructural elements) that can be affected by floods?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have measures to remove mosquito breeding sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have roof drainage systems for rainfall?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have rooftop structures and equipment revised for anticipated increased rainfall?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have roofs that are leak-proof and insulated?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	have machine rooms that are resistant to flooding or rooftop damage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ensure removal of equipment and power supplies from basements and ground floor level to avoid damage from flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
have a coordinated mechanism across the health sector in different levels of government, to manage the response and risks resulting from public health emergencies and disasters (including sharing of resources and supplies, transferring of patients, and health workforce support)?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
have established procedures for procuring, and safely transporting and storing medical devices, pharmaceuticals, vaccines, laboratorial supplies, parenteral nutrition and blood supplies, and other essential medical supplies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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<b>High:</b> unprepared; unable to respond (Higher risk) <b>Medium:</b> basic or incomplete preparation; low level of response (Medium risk) <b>Low:</b> prepared; able to respond (Lower risk)		High	Medium	Low	
INFRASTRUCTURE, TECHNOLOGIES, PRODUCTS AND PROCESSES	<b>Does the health care facility,</b>				
	have established procedures or plans for procuring, transporting and storing bottled water and food supplies during an emergency?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have a space within or external to the facility for the storage and stockpiling of additional supplies, considering ease of access, security, temperature, ventilation, light exposure and humidity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have a plan to house staff at the health care facility if shelter is required (sleeping areas, food, water)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have an established postflood recovery plan of all infrastructure facilities (structural and nonstructural elements)?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<i>(Promotion of new systems and technologies)</i>				
	have an information system between the health sector and meteorological services to communicate about climate hazards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have an established plan to review, evaluate and catalogue climate risks related to floods for the health care facility's location?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have an established plan to review, evaluate and catalogue risks related to floods for the health care facility's supply chain?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have electronic patient health records to make available to other receiving health care facilities, in case of evacuation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have information and communication systems safely secured with backup arrangements (via cloud, satellite) to satisfy the facility's demand?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	ensure information and communication flow between the health workforce and policy makers, particularly during high-stress situations and demands created by emergencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have an established, clear and consistent knowledge transfer procedure for a public health emergency?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have identified capacities, resources and needs to better cope and manage floods?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	perform site and building maintenance procedures that include specifications on how the weather may affect the safety and continued functioning of the facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have an information system for tracking and monitoring diseases following flood events?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<i>(Sustainability of health care facility operations)</i>				
	have adaptive governance capacity regarding evaluation and measures for risk identification, risk reduction and response?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have partnerships established between the facility, community and local authorities to reduce vulnerabilities in the surrounding areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	have a secure storage for hazardous chemicals to avoid their damage or release during a flood event?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
have a defined and sustained budget as part of core budgeting for emergency preparedness and response to flood events?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
have an access route for public transportation which is likely to remain operational during or immediately following a flood event?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
review building code design baselines against rainfall volumes, and map each risk?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
have trees planted in a secure place that will not block access to the facility or fall on the building during an event?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

FLOODS		Vulnerability level		
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<b>Does the health care facility,</b>				
have estimates of the consumption (such as amount used per week) of essential medical, pharmaceutical, nutritional and laboratorial supplies, personal protective equipment, food, etc., using the most likely flood scenario?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
undertake risk assessments of the supply chain for essential medical and nonmedical products?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
have a secure plan to ensure continuity of the facility's supply and delivery chain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
have secure access to essential backup services, such as sterilization, laundry and cleaning services, via multiple agreements with different facilities to maintain functioning of critical services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
have secure access to essential backup food sources via multiple agreements with different vendors, and through cooperative agreements with other facilities to maintain functioning of critical services?*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Note: For WASH and health care waste details see WASH FIT (3).

\*For further details see Hospital Safety Index (2).

## IMPACTS CHECKLIST FOR FLOOD EVENTS

HEALTH WORKFORCE		
LEVEL OF IMPACT		
MAJOR	MODERATE	MINOR
<ul style="list-style-type: none"> <li><input type="checkbox"/> Deaths or life-threatening injuries or illness (e.g. drowning, hypothermia and infectious diseases, such as diarrhoeal diseases, leptospirosis, cholera, vectorborne diseases)</li> <li><input type="checkbox"/> Health professionals are not able to arrive at or depart from the health care facility</li> <li><input type="checkbox"/> Large loss of work capacity</li> <li><input type="checkbox"/> Cessation of critical programmes or services</li> <li><input type="checkbox"/> Significantly reduced performance capacity of health workforce needing additional support (local, regional or national)</li> <li><input type="checkbox"/> Effects on mental health of staff due to disaster trauma, loss of a family member, friends or patients</li> <li><input type="checkbox"/> Increased demand for health services from infectious diseases (water-, food- and vector-borne diseases), animal bites (including poisonous animals), respiratory infections, zoonotic diseases (rodentborne diseases such as, hantavirus pulmonary syndrome, leptospirosis), noncommunicable diseases, electrical shock and toxic chemicals exposure</li> <li><input type="checkbox"/> Increased health workforce overload and stress</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Serious harm, injury or illness requiring hospitalization or medical treatment</li> <li><input type="checkbox"/> Health professionals have difficulty in arriving at or departing from the health care facility</li> <li><input type="checkbox"/> Reduction in health workforce functions</li> <li><input type="checkbox"/> Restrictions to provide services and programmes</li> <li><input type="checkbox"/> Unable to provide adequate care to patients</li> <li><input type="checkbox"/> Increased work overload along with stress</li> <li><input type="checkbox"/> Facility overcrowding</li> <li><input type="checkbox"/> Increased infectious disease cases among health workers from water and health care waste contamination</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Minor injuries to health workers, not requiring immediate medical treatment</li> <li><input type="checkbox"/> Difficulty in providing usual treatment and medication</li> <li><input type="checkbox"/> Reduced primary services at home for communities</li> <li><input type="checkbox"/> Service delivery and programme delays</li> </ul>

WASH AND HEALTH CARE WASTE		
LEVEL OF IMPACT		
MAJOR	MODERATE	MINOR
<ul style="list-style-type: none"> <li><input type="checkbox"/> Damage to water supply and storage infrastructure</li> <li><input type="checkbox"/> Disruption of wastewater and sewage systems</li> <li><input type="checkbox"/> Water contamination</li> <li><input type="checkbox"/> Shortage of safe water</li> <li><input type="checkbox"/> Unable to provide hygiene services</li> <li><input type="checkbox"/> Damage to waste storage causing environmental contamination by biological and chemical hazards</li> <li><input type="checkbox"/> Lost sharps containers and hazardous waste bins</li> <li><input type="checkbox"/> Damage to emergency water sources</li> <li><input type="checkbox"/> Toilets unavailable</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Temporary water supply interruption</li> <li><input type="checkbox"/> Reduced capacity to provide safe water for drinking or cooking</li> <li><input type="checkbox"/> Reduced capacity to provide disinfection or sterilization processes</li> <li><input type="checkbox"/> Cross-contamination from damages to sewage system</li> <li><input type="checkbox"/> Reduced water quality as animal faeces and sewage get washed into surface water</li> <li><input type="checkbox"/> Reduced capacity to maintain waste collection and treatment systems</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Reduced capacity to access drinking water</li> <li><input type="checkbox"/> Reduced capacity to use toilets, showers, etc.</li> <li><input type="checkbox"/> Reduced capacity to use laundry and dishwashing machines</li> <li><input type="checkbox"/> Reduced capacity to provide cleaning services (floor, toilets, patient rooms, emergency rooms)</li> <li><input type="checkbox"/> Heavy sediment and pollution loads make treatment ineffective</li> <li><input type="checkbox"/> Possible rodent infestation around rubbish bins</li> </ul>

ENERGY		
LEVEL OF IMPACT		
MAJOR	MODERATE	MINOR
<ul style="list-style-type: none"> <li><input type="checkbox"/> Power failure</li> <li><input type="checkbox"/> Shutdown of cold storage systems</li> <li><input type="checkbox"/> Interruption in providing health care services that require electricity such as dialysis, oxygen therapy, diagnosis equipment</li> <li><input type="checkbox"/> Loss of vaccines, laboratorial supplies, drugs, parenteral nutrition and blood supplies, pharmaceuticals, food supply, and other essential refrigeration-dependent medical supplies</li> <li><input type="checkbox"/> Damage to emergency generator or other sources of energy</li> <li><input type="checkbox"/> Disruption of the fuel supply chain</li> <li><input type="checkbox"/> Disruption of energy-dependent water pumping and treatment systems</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Temporary power supply interruption</li> <li><input type="checkbox"/> Difficulty in providing critical health care service deliveries (dialysis, oxygen therapy, diagnosis equipment), causing patients to be evacuated to other health facilities</li> <li><input type="checkbox"/> Reduced capacity to provide services that need electricity (laundry, dishwashing machines, etc.)</li> <li><input type="checkbox"/> Reduced capacity to provide disinfection services that need electricity (autoclave, microwave, water boiler)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> No ambient cooling</li> <li><input type="checkbox"/> Loss of food or difficulty in refrigerating food</li> <li><input type="checkbox"/> Reduced capacity to follow boil water advisories</li> </ul>

INFRASTRUCTURE, TECHNOLOGIES, PRODUCTS AND PROCESSES		
LEVEL OF IMPACT		
MAJOR	MODERATE	MINOR
<input type="checkbox"/> Flood damage or destruction of structural components (full or parts of the facility) <input type="checkbox"/> Partial destruction by floods causing land erosion <input type="checkbox"/> Blocked transport systems and flooded ambulance stations <input type="checkbox"/> Damage to building access <input type="checkbox"/> Damage to machine room <input type="checkbox"/> Damage to critical equipment <input type="checkbox"/> Damage of internal and external communication and information systems <input type="checkbox"/> Loss or damage of health care facility essential supplies (medications, medical devices, drugs, laboratorial supplies, blood, pharmaceuticals, vaccines) <input type="checkbox"/> Interruption of complex and emergency health care services (surgery, complex treatments, urgent care) <input type="checkbox"/> Disruption of health care services delivery and operation <input type="checkbox"/> Cessation of services or prolonged disruption of services due to loss or damage <input type="checkbox"/> Breakdown of routine health care services (such as ambulatory, immunization, maternity room, pharmacy, medication for chronic diseases, dental, and other primary services) <input type="checkbox"/> Interruption of diagnosis due to equipment damage <input type="checkbox"/> Contamination of medical devices, instruments and equipment <input type="checkbox"/> Interruption of supply chains <input type="checkbox"/> Long-term effect on the environment needing external assistance/interventions <input type="checkbox"/> Damage to internal transportation systems (elevators, ramps, corridors) <input type="checkbox"/> Increased immediate and long-term costs to recover from damage	<input type="checkbox"/> Disruption to communication and information systems and assets <input type="checkbox"/> Damage to road, disrupting access to health care facility <input type="checkbox"/> Difficulty in transporting patients due to damaged or disabled transportation systems <input type="checkbox"/> Reduced capacity to deliver health care services due to damage and reduced supplies <input type="checkbox"/> Temporary suspension of service deliveries <input type="checkbox"/> Damage to paper medical record storage <input type="checkbox"/> Reduced capacity to access clinical and laboratorial supplies <input type="checkbox"/> Increased hospitalization rates requiring extra medical supplies and health workforce <input type="checkbox"/> High demand for cleaning services in all facility buildings after flood event requiring extra personal protective equipment <input type="checkbox"/> Increased demand in costs for repairing or buying damaged or lost medical equipment and devices, needed for short-term recovery <input type="checkbox"/> Increased costs due to necessary postflood repairs <input type="checkbox"/> Increased costs for repairing all damaged administrative equipment and furniture	<input type="checkbox"/> Localized disruption of services with minor loss and damage <input type="checkbox"/> Damage or loss to health care facility documents and records <input type="checkbox"/> No lasting effects on the external health care facility environment <input type="checkbox"/> Minimal impact on local operations and equipment that do not compromise health care service deliveries <input type="checkbox"/> Minimal impact on the supply chain, which can continue to support health care facility needs <input type="checkbox"/> Possible mold, indoor and outdoor, requiring special cleaning-up or essential personal protective equipment for cleaners <input type="checkbox"/> Increased demand for providing cleaning and disinfection supplies

Sources for tables of vulnerabilities and impacts: (1-3,8,21,29,32,41-48).

