
# HOSPITAL SAFETY INDEX

## PHILIPPINE EVALUATION FORMS

**Reduce Risk.**
**Protect Health Facilities.**
**Save lives.**

December 2016

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Hospital Safety Index
Philippine Evaluation Forms for Hospital Levels 1 to 3


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# MESSAGE

Congratulations to the Health Emergency Management Bureau of the Department of Health (DOH), in collaboration with the World Health Organization, for introducing the new Hospital Safety Index to be used in the assessment of the hospitals in the country.

Health facilities are vital to saving lives, providing care during emergencies, and aiding community recovery. In many countries, hospitals are the last shelter for disaster victims seeking refuge and the care they desperately need. Thus, these hospitals should be safe from, and resilient to, disasters.

This echoes one of the seven target activities of the Sendai Framework for Disaster Risk Reduction 2015–2030, which is to "Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030." The Sendai Framework is "the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters."

Thus, the Hospital Safety Index becomes a very important tool for moving closer to the goal of hospitals that are less vulnerable but are safer and better prepared for emergencies and disasters. Developed by national experts, the tool will provide health authorities and other hospital stakeholders with a method for conducting rapid and inexpensive evaluations of hospitals' safety and readiness to respond to emergency.

The hospital is an important factor in achieving two of the goals in the Philippine Health Agenda: achieving the best possible health outcomes for all Filipinos across the board, and that all Filipinos feel respected and empowered in their every interaction with the health system.

To realize its goals, the strategy called **ACHIEVE** will be utilized:

- **A** – Advance primary care and quality
- **C** – Cover all Filipinos against financial health risk
- **H** – Harness the power of strategic health human resource
- **I** – Invest in digital health and data for decision-making
- **E** – Enforce standards, accountability and transparency
- **V** – Value clients and patients
- **E** – Elicit multi-sector, multi-stakeholder support for health

With this in mind, the DOH hopes that the Hospital Safety Index fulfills its role of identifying hospitals that still needs to be refitted and those that are resilient. Let us move forward to attain All for Health towards Health for All! *Mabuhay*!

**Paulyn Jean B. Rosell-Ubial, MD, MPH, CESO II**
Secretary of Health

# MESSAGE

According to the World Risk Index Report of 2015, the Philippines ranks 3rd among 171 countries with highest disaster risk for natural hazards. In the aftermath of typhoons, storm surges, earthquakes and other hazards, the demand for health services rapidly increases and may overwhelm the capacities of the health care system, especially the hospitals.

In order to meet this surge of demands, hospitals must be safe – that is, they are resilient enough to remain accessible and functioning even during disasters. The Hospital Safety Index of the World Health Organization helps health facilities to assess their safety and avoid becoming collateral damage of disasters. This tool helps decision makers to allocate the necessary resources to priority risk reduction strategies.

Hospital chiefs and other stakeholders must put this manual to good use, giving attention not only to the physical and functional integrity of their facilities but also to upholding the dignity of their patients suffering from disasters. Ensuring hospital safety is not a singular event but rather a gradual and constant process. Attaining it will require high cost but this is far outweighed by the averted loss of lives.

On behalf of the Department of Health, I extend our deep gratitude to the WHO for their continuous support in this initiative and I urge everyone to be our partner for building and sustaining safe hospitals.

All for Health towards Health for All!

**Gerardo V. Bayugo, MD, MPH, CESO III**
Undersecretary of Health
Office for Technical Services
Department of Health

# PREFACE

There has been a continuing effort in the enrichment of the safe hospital tool at the global level that the Department of Health has considered the coherence of the Safe Hospital Assessment Tool that was published in 2011.

This Hospital Safety Index Evaluation Forms for the Philippines ensures that global and country perspectives have been tailored and considered. This is the product of a series of conducted workshops, participated by members of the Technical Working Group for Safe Hospitals from the Department of Health, academe and private practitioners. A pilot testing of the tool in a DOH retained hospital, a local government hospital, and a private hospital was conducted to assess its applicability and practicality. Though it was meant to test the tool, the results and findings during the pilot testing were already used by the hospital management in their plans of action in improving and ensuring that they comply and adhere to standards of safe hospitals.

The following pages of this publication will guide you in the completion of every assessment form and its four modules: the Hazards Affecting the Safety of the Hospital and the Role of the Hospital in Emergency and Disaster Management, the Structural, Non-Structural, and Emergency and Disaster Management. This publication also intends to introduce the practice of self-assessment that aims to help the hospitals in conducting evaluations within their institutions in addition to those that the external, trained evaluators will provide. An Evaluator's Guide will come with this Hospital Safety Index to serve as a reference on how this will be used.

With the assistance from the World Health Organization and strong commitment from the members of the Technical Working Group, we envision that by 2017 we will be able to conduct series of trainings and orientations on the Hospital Safety Index and scale up the coverage of the hospital assessment all over the country.

As we look forward to safer hospitals in times of emergencies and disasters, we encourage everyone from the health sector to take the responsibility of bringing Hospital Safety Index implementation into a reality and consider it part of the hospital regular pursuit for a safer hospital place that will continue to provide access to health services.

**Gloria Balboa, MD., MPH, MHA, CESO III**
Director IV
Health Emergency Management Bureau
Department of Health

# ACKNOWLEDGEMENT

The finalization and production of the Hospital Safety Index Evaluation Forms would not have been possible without the support and collaboration of numerous organizations, institutions, and individuals. Their participation—from the start during the workshops to the pilot testing and series of meetings—has greatly contributed in putting together the pieces to form this solid and tangible product.

To the Chairpersons and members of the Technical Working Committee of Hospital Safe from Disaster who gave their time to share their inputs and expertise; to the private institution and organizations that selflessly shared their proficiency with commitment and interest; to the management and staff of East Avenue Medical Center, Ospital ng Sampaloc, and Manila Medical Center that welcomed and accommodated the assessment team during the testing of the tool; this is a consolidated effort and triumph.

To Dr. Arnel Rivera, Dr. Ronald Law, Engr. Aida Barcelona, and Ms. Mara Blaise Cervania of Health Emergency Management Bureau who, despite the heavy demands of work, have given uncompromising effort to ensure that this endeavor becomes a reality and a success.

To the World Health Organization, Dr. Nevio Zagaria, Dr. Gerardo P. Medina, Ms. Julie M. Villadolid, Ms. Gisela Orinion, and WHO consultants Dr. Alistair Humphrey and Engr. Robert Donnan for the technical assistance and untiring support to ensure that ideas and knowledge shared are captured in the finalization of this material.

Also our gratitude to Undersecretary Gerardo Bayugo for the support extended to us to produce this document.

# Section I.
# Introduction

# THE HOSPITAL SAFETY INDEX

While Safe Hospitals programmes aim to reinforce the safety and ensure the functionality of all health facilities for emergencies and disasters, the Hospital Safety Index is a tool designed for the assessment of the safety of tertiary, university or major referral hospitals since they play a most critical role in the response to emergencies and disasters. They also represent the highest level of care for cities or regions of the country, and often represent a significant investment by public, private and nongovernmental sectors in health care. A specific tool has been developed by PAHO for small to medium size health facilities.

Ensuring the functionality of hospitals and making them safe in the event of disasters poses a major challenge, not only because of the high number of hospitals and their high cost but because there is limited information about current levels of safety and emergency and disaster management in hospitals.

Hospitals represent more than 70% of public spending on health in countries. Most of this spending is for specialized health personnel and sophisticated and costly equipment. It is critical that hospitals continue to work during emergencies and disasters since people immediately go to the nearest hospital for medical assistance when emergencies occur, without considering whether the facilities might not be functional. Consequently it is vital to identify the level of safety and functionality a hospital will have if an emergency or disaster occurs. Hospital evaluations aim to identify elements that need improvement in a specific hospital or network of hospitals, and to prioritize interventions in hospitals that, because of their type or location, are essential for reducing the mortality, morbidity, disability and other social and economic costs associated with emergencies and disasters.

Detailed vulnerability studies typically include in-depth analysis of hazards and of structural, nonstructural, health-system and hospital vulnerability. Each of these aspects requires the input of specialists who have experience in disaster reduction. Vulnerability studies generally take several months to complete and may cost the hospital tens of thousands of dollars.

For that reason, the Hospital Safety Index is a very important tool for moving closer to the goal of hospitals that are less vulnerable but safer and better prepared for emergencies and disasters. The Hospital Safety Index was devised and revised by national experts to provide health authorities and other hospital stakeholders with a method for conducting rapid and inexpensive evaluations of hospitals. A checklist helps to assess different items and safety ratings for a hospital. A scoring system assigns the relative importance of each item which, when calculated, gives a numeric value to the probability that a hospital can survive and continue to function in an emergency or disaster.

The Hospital Safety Index not only estimates the operational capacity of a hospital during and after an emergency, but it provides ranges that help authorities determine which hospitals most urgently need actions to improve their safety and functionality. Priority might be given to a hospital which has a poor level of safety which would put the lives of occupants at risk during an emergency or disaster.

The Hospital Safety Index is not only a tool for making technical assessments, but also provides a critical approach to emergency and disaster risk management for the health sector, with a focus on prevention, mitigation and preparedness for emergency response and recovery. It is not an “all or nothing” approach to hospital safety, but allows for improvement in a hospital over time. The index does not replace an in-depth vulnerability assessment or other studies, but it helps authorities to determine quickly what actions and measures can improve safety and what capacity the hospital has to respond to The Hospital Safety Index is not only a tool for making technical assessments, but also provides a critical approach to emergency and disaster risk management for the health sector, with a focus on prevention, mitigation and preparedness for emergency response and recovery. It is not an “all or nothing” approach to hospital safety, but allows for improvement in a hospital over time. The index does not replace an in-depth vulnerability assessment or other studies, but it helps authorities to determine quickly what actions and measures can improve safety and what capacity the hospital has to respond to emergencies and disasters.

# BRIEF DESCRIPTION OF THE EVALUATION FORMS

## Form 1. General information about the hospital

This form includes general information about the hospital being evaluated and its treatment and operating capacity:

- General information: name and address of the hospital; contact details; names of senior management and emergency/disaster management staff; number of beds; hospital bed occupancy rate; number of personnel; diagram of the facility and its surroundings; role in the health services network etc.
- Hospital treatment and operating capacity: number of beds by services (e.g. medicine, surgery, intensive care); medical, surgical and nonclinical staff; operating theatres; emergency and disaster operations; expansion capacity in case of emergencies and disasters.

This form should be completed by the hospital's emergency or disaster committee before the evaluation. If possible, it should be accompanied by a diagrams and maps of the hospital, its local setting and the distribution of services within the hospital, with a legend describing them.

## Form 2. Safe Hospitals Checklist

The checklist is used to make a preliminary diagnosis of the hospital's safety and capacity to provide services in the event of emergencies and disasters. It contains 151 items, each of which has three safety rating levels: low, average and high.

The checklist is divided into four sections or modules:

Module 1: Hazards affecting the safety of the hospital and the role of the hospital in emergency and disaster management
Module 2: Structural safety
Module 3: Non-structural safety
Module 4: Emergency and disaster management

Issues to keep in mind while using the checklist are as follows:

- The contents of the checklist and the elements being evaluated are formulated for application in large complex hospitals. They may also be described as general hospitals, university hospitals, tertiary referral hospitals or specialized hospitals.
- Module 1 is used to determine the hazards that may directly affect the safety of the hospital and those for which the hospital may be expected to provide health services in response to emergencies and disasters. Module 1 and the hazards identified are not included in the calculation of a hospital's safety index.
- The evaluation team should evaluate the hospital against the items in modules 2, 3 and 4, with reference to both the hazards identified in Module 1 and the maximum capacity of the hospital for emergencies and disasters identified in Form 1 (General Information about the Hospital).
- Each item in modules 2, 3 and 4 has a value that reflects its importance in relation to other items in the same module. Items with the most relevance are shaded or highlighted and are weighted more heavily than other items. The evaluation results in a score for each module.
- The values assigned to each item are in accordance with established standards (e.g. WHO manuals, regional or national standards, local construction codes, and institutional standards and rules).
- Evaluation of items is applied most strictly in the critical areas of the hospital where the demand for treatment is greatest in emergencies and disasters.
- The calculation of each hospital's safety index is based on the weighting of the respective modules. Two models are recommended for calculating the index. In order to facilitate comparison between hospitals, it is essential that the same model is applied to all hospitals covered by the evaluation.

  - Model 1: The values for structural components represent 50% of total values in the index, nonstructural components represent 30%, and functional capacity represents 20%. This model is proposed for countries or regions where there is a higher risk of structural and nonstructural failure, as in high earthquake-prone or high-wind areas.
  - Model 2: All three modules are weighted equally: i.e. each module contributes 33.3% to the calculation of the safety index. This model is proposed for countries or regions where earthquakes and high winds are not considered to be likely hazards.
- For the evaluation process to be considered complete, all items must be analyzed. Where indicated in each module, it is possible leave an item blank if it is not considered relevant to the hospital concerned. However, a comment should always be provided to show that the item was considered.
- The checklist includes instructions for filling out each of the items. Only one box for each item being evaluated should be marked with an "X" (low, average, or high).

## The four modules of the checklist

### Module 1. Hazards affecting the safety of the hospital and the role of the hospital in emergency and disaster management

The first module allows for a rapid description of external and internal hazards or dangers and geotechnical properties of soils at the site of the hospital that may affect the safety or functioning of the hospital. The module also identifies those hazards which could lead to emergencies and disasters for which the hospital would be expected to provide health services in emergency response. These events may not directly affect the safety of the hospital; however the hospital should be prepared for such events.

### Module 2. Structural safety

#### 2.1 Prior events and hazards affecting structural safety

#### 2.2 Building integrity

Evaluating structural safety of the hospital involves assessment of the type of structure and materials, and previous exposure to natural and other hazards. The objective is to determine if the structure meets standards for providing services to the population even in cases of major emergency or disaster, or whether it could be affected in a way that would compromise structural integrity and functional capacity.

Safety in terms of prior events involves two elements. The first is whether the facility has been exposed to hazards in the past, and its relative vulnerability to hazards. The second is whether the facility was affected or damaged in the past and how the damage was repaired.

The evaluators attempt to identify potential risks in terms of the type of design, structure, construction materials, critical components of the structure and structural risk reduction measures.

Structural systems and the quality and quantity of construction materials provide the stability and resistance of a building against natural forces. Making adjustments in a structure for the range of hazards which may affect the hospital is essential, since a structural solution can be valid for one hazard but not for another (e.g. for earthquakes but not for cyclones or floods).

### Module 3. Non-structural safety

#### 3.1 Architectural safety

#### 3.2 Infrastructural protection, access and physical security

#### 3.3 Critical systems

#### 3.4 Equipment and supplies

Non-structural elements are critical to the functioning of the hospital. Architectural elements are distinct from structural elements as they do not form

part of the load-bearing system of the hospital buildings. They also include emergency access and exit routes to and from the hospital, critical systems (e.g. electricity, water supply, waste management, fire protection), medical, laboratory and office equipment (whether fixed or mobile), supplies used for analysis and treatment, and so forth.

## Module 4. Emergency and disaster management

**4.1 Coordination of emergency and disaster management activities**

**4.2 Hospital emergency and disaster management response and recovery planning**

**4.3 Communication and information management**

**4.4 Human resources**

**4.5 Logistics and finance**

**4.6 Patient care and support services**

**4.7 Evacuation, decontamination and security**

This module considers the level of preparedness of a hospital's organization, personnel and essential operations to provide patient services in response to an emergency or disaster.

How the hospital is prepared and organized to respond in emergency/disaster situations is central to evaluating a hospital's capacity to function during and after a disaster. In this module, evaluators check the level of organization for coordination of the hospital's response to emergencies and disasters, available plans and capacities for evacuation and response (including patient-care services, mass casualty management, triage and decontamination), human, finance and logistical resources for disaster preparedness and response, communication and information management, availability of staff, and safety and security of the staff.

The hospital administrators should provide evaluators with any documentation that is relevant to the hospital's emergency/disaster management capacities.

# Section II.
# Hospital Safety Index Evaluation Forms

# FORM 1

## GENERAL INFORMATION ABOUT THE HOSPITAL

**Please note:**

1 This form should be completed by the hospital, preferably by the Hospital Emergency/Disaster Management Committee before the evaluation.

2 If necessary, you may photocopy this form or print additional copies from the USB drive included in the folder

# GENERAL INFORMATION ABOUT THE HOSPITAL

1. **Name of the hospital:** _____
2. **Address:** _____
3. **Names of hospital senior managers** (e.g. chief executive, medical director, nursing director, administration director):

   _____

   _____

   _____

   _____

4. **Names and contact details of hospital emergency/disaster managers** (e.g. chair of emergency/ disaster management committee, coordinator, manager of security/fire services)

   _____

   _____

   _____

   _____

5. **Telephone** (include area/city code): _____
6. **Website:** _____

   **E-mail:** _____
7. **Total number of beds:** _____
8. **Average bed occupancy rate** (in normal situations): _____
9. **Total number of personnel:** _____
   a. **Number of clinical staff** (e.g. physicians, nurses, medical technologists) _____
   b. **Number of nonclinical staff** (e.g. executive management, administration, engineers, information technology) _____
10. **General description of the hospital: e.g. institution to which it belongs** (e.g. ministry, private entity, university), type of establishment (e.g. tertiary referral hospital, specialized services), role in the network of health services, role in emergencies and disasters, type of structure, total population served, catchment area (routine services/emergencies and disasters) etc.

    _____

    _____

    _____

    _____

**11. Physical distribution:**

List and briefly describe the main buildings in the hospital. Provide maps and diagrams of the hospital site and the local setting, including the physical distribution of the services, in the box below. Use additional pages, if necessary.

12. **Hospital treatment and operating capacity:** Indicate the total number of beds and staff for daily routine services, and additional capacities to expand services in emergencies and disasters to obtain the maximum hospital capacity, according to the hospital's organization (by department or specialized services). The number of staff available can be used for responding to Item 132: Staff availability.

**a. Internal medicine**

| Department or service | Routine capacity (number of beds) | Maximum hospital capacity for emergencies/disasters (number of beds) | Planned number of staff | Actual number of available staff | Observations |
|---|---|---|---|---|---|
| General medicine | | | | | |
| Paediatrics | | | | | |
| Cardiology | | | | | |
| Pulmonology | | | | | |
| Neurology | | | | | |
| Endocrinology | | | | | |
| Haematology | | | | | |
| Gastroenterology | | | | | |
| Dermatology | | | | | |
| Burns unit | | | | | |
| Physiology and rehabilitation | | | | | |
| Psychiatry/psychology | | | | | |
| Others, specify | | | | | |
| Others, specify | | | | | |
| Others, specify | | | | | |
| **Total** | | | | | |

### b. Surgery

| Department or service | Routine capacity (number of beds) | Maximum hospital capacity for emergencies/disasters (number of beds) | Planned number of staff | Actual number of available staff | Observations |
|---|---|---|---|---|---|
| General surgery | | | | | |
| Obstetrics and gynaecology | | | | | |
| Orthopedics and traumatology | | | | | |
| Urology | | | | | |
| Otolaryngology | | | | | |
| Ophthalmology | | | | | |
| Neurosurgery | | | | | |
| Plastic surgery | | | | | |
| Cardiovascular surgery | | | | | |
| Others, specify | | | | | |
| Others, specify | | | | | |
| **Total** | | | | | |

### c. Intensive care unit (ICU)

| Department or service | Routine capacity (number of beds) | Maximum hospital capacity for emergencies/disasters (number of beds) | Planned number of staff | Actual number of available staff | Observations |
|---|---|---|---|---|---|
| General intensive care | | | | | |
| General intermediate care | | | | | |
| Cardiovascular ICU | | | | | |
| Paediatrics ICU | | | | | |
| Burns ICU | | | | | |
| Others, specify | | | | | |
| **Total** | | | | | |

### d. Operating theatres

| Department or service | Number of operating theaters - routine | Maximum number of theatres of hospital (for emergencies/ disasters) | Observations |
|---|---|---|---|
| Septic surgery | | | |
| Aseptic surgery | | | |
| Paediatrics surgery | | | |
| Obstetrics and gynaecology surgery | | | |
| Emergency surgery | | | |
| Others, specify | | | |
| **Total** | | | |

### e. Clinical and non-clinical support services

| Department, unit or service | Planned number of staff | Actual number of available staff | Observations |
|---|---|---|---|
| **Diagnostic services** | | | |
| **Blood bank services** | | | |
| **Pharmacy** | | | |
| **Medical engineering and maintenance** | | | |
| **Building/critical systems engineering and maintenance** | | | |
| **Decontamination** | | | |
| Security | | | |
| Other, specify | | | |
| Other, specify | | | |

### f. Emergency and disaster operations

| Department, unit or service | Planned number of staff | Actual number of available staff | Observations |
|---|---|---|---|
| Hospital emergency/ disaster operations/ incident management (command, control, coordination) | | | |
| Logisticians | | | |
| Communications and information officers | | | |
| Administration (human resources, finance officers) | | | |
| Media spokespersons | | | |
| Ambulance staff | | | |
| Advanced medical post/hospital dispatch teams | | | |
| Others, specify | | | |
| **Total** | | | |

## 13. Areas likely to increase operating capacity

Indicate the characteristics of the locations, areas and spaces that can be used to increase hospital capacity in case of emergencies or disasters. Specify square meters, available critical systems and any other information that can be used to evaluate the suitability for expanding space and capacity for hospital medical and other services in emergencies and disasters. Include access, security and critical services, such as water, power, communications, waste management, heating, ventilation and air-conditioning.

| Locations/areas | Area $m^2$ | Water | | Electricity/ power | | Telephone/ communications | | Observations |
|---|---|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | Yes | No | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| Locations/areas | Area m² | Waste management | | Heating, ventilation and air-conditioning | | Other | | Observations |
|---|---|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | Yes | No | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Note: Specify the adaptability of use in each space (hospitalization, triage, ambulatory care, observation, staff welfare areas etc.).

**14. Hospital Statistics**

i. Leading causes of Morbidity

ii. Leading causes of mortality

iii. Leading causes of consultation ER/OPD

iv. Leading causes of admission

**15. Other health facilities within its catchment areas:**

**a. Other hospitals within the catchment areas.**

| Name of Hospital | Address | Ownership (Gov/Private) | Class (General/Specialty) | Service Capability | | |
|---|---|---|---|---|---|---|
| | | | | Level 1 | Level 2 | Level 3 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**b. Other health facilities within the catchment areas, regardless of numbers:**

| Type of Health Facilities | Yes | No |
|---|---|---|
| Lying in clinics, birthing clinics | | |
| Laboratories | | |
| Blood Banks | | |
| Halfway homes | | |
| Dialysis clinics | | |
| Health centers | | |
| Others: | | |

**16. Additional information (including history of prior emergencies and disasters the hospital had to cope with):**

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Name/signature (Chairperson/Head, Hospital Emergency/Disaster Management Committee) _____

_____

# FORM 2

## HOSPITAL SAFETY CHECKLIST

**Notice:**

This form should be distributed to all members of the evaluating team. If necessary, you may photocopy this form or print additional copies from the USB drive included in the folder, or from the website.

# MODULE 1: Hazards Affecting the Safety of the Hospital and the Role of the Hospital in Emergency and Disaster Management

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **1.1 Hazards** | | | | | | |
| **1.1.1 Geological Hazards** | | | | | | |
| **Earthquakes**<br>Refer to regional and local hazard maps or other hazard information, and rate the level of earthquake hazard for the hospital's location (including catchment area) in terms of geotechnical soil analyses. Determine whether the hospital should be prepared to respond to an emergency or disaster due to earthquakes (based on exposure of the catchment population or the specialized role of the hospital for the treatment of injured patients). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Volcanic activity and eruption**<br>Refer to regional and local hazard maps or other hazard information, and rate the level of volcanic hazard for the hospital's location. This should take into account proximity to volcanoes, volcanic activity, routes of lava flow, pyroclastic flow and ash fall. Determine whether the hospital should be prepared to respond to an emergency or disaster due to volcanic activity and eruption (based on exposure of the catchment population or the specialized role). | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **Dry mass movement – landslides**<br>Refer to regional and local hazard maps or other hazard information for the region, and rate the level of landslide hazard for the hospital's location. Note that landslides may be caused by unstable soils. Determine whether the hospital should be prepared to respond to an emergency or disaster due to landslides (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Tsunamis**<br>Refer to regional hazard maps or other hazard information, and rate the level of tsunami hazard caused by submarine seismic or volcanic activity for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to tsunamis (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Other geological hazards (e.g. rock falls, subsidence, debris and mudflows**<br>(Specify) _____<br>Refer to regional and local hazard maps or other hazard information to identify other geological phenomena not listed above. Specify the hazard and rate the corresponding hazard level for the hospital. Determine whether the hospital should be prepared to respond to an emergency or disaster due to the identified geological hazards (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **1.1.2 Hydro-meteorological hazards** | | | | | | |
| 1.1.2.1 Meteorological hazards | | | | | | |
| **Cyclones/hurricanes/typhoons**<br>Refer to regional hazard maps or other hazard information, and rate the hazard level for the hospital location in terms of cyclones, hurricanes and typhoons. Determine whether the hospital should be prepared to respond to an emergency or disaster due to cyclones, hurricanes or typhoons (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Tornadoes**<br>Refer to regional hazard maps or other hazard information, and rate the tornado hazard level for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to tornadoes (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Local storms**<br>Rate the hazard level for the hospital in relation to flooding and other damage due to intensive (or torrential) rainfall from local storms based on the history of such events. Determine whether the hospital should be prepared to respond to an emergency or disaster due to local storms (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Other meteorological hazards (e.g. sand-storms, wind gusts)**<br>(Specify) _____<br>Rate the hazard level for the hospital in relation to risk of other meteorological hazards based on the history of such events. Determine whether the hospital should be prepared to re¬spond to an emergency or disaster due to other meteorologi¬cal hazards (based on exposure of the catchment population | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **1.1.2.2 Hydrological hazards** | | | | | | |
| **River floods**<br>Refer to regional and local hazard maps or other hazard information, and rate the river flood hazard level of the hospital's location (including catchment area) in terms of river floods (and other watercourses, such as creeks). Determine whether the hospital should be prepared to respond to an emergency or disaster due to river floods (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Flash floods**<br>Refer to regional and local hazard map, other hazard information and past incidents, and rate the flash flood hazard level for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster based on flash floods (due to exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Storm surge**<br>Refer to regional hazard maps or other hazard information, and rate the storm surge hazard level associated with risks of cyclones, hurricanes, typhoons and other storms for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to storm surge and related floods (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **Wet mass movements – landslides**<br>Refer to regional and local hazard maps or other hazard information, and rate the level of hazard due to landslides caused by saturated soils for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to landslides caused by saturated soils (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Other hydrological hazards (e.g. high tides, avalanches, coastal floods)**<br>(Specify) _____<br>Refer to regional and local hazard maps or other hazard information to identify other hydro-meteorological hazards not listed above. Specify the hazard and rate the corresponding hazard level for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to other hydrological hazard (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| 1.1.2.3 Climatological hazards | | | | | | |
| **Extreme temperature (e.g. heat wave, cold wave, extreme winter conditions – dzud)**<br>Refer to regional and local hazard maps or other hazard information, and rate the level of hazard due to extreme temperature or weather condition. Specify the hazard and rate the corresponding hazard level for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to extreme temperatures (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **Wildfires (e.g. forests, croplands, populated areas)** Refer to regional and local hazard maps or other hazard information, and rate the wildfire hazard level for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to wildfires (based on exposure of the catchment population or the specialized role of the hospital for the treatment of burns patients). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Drought** Refer to regional and local hazard maps or other hazard information, and rate the drought hazard level for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to drought (based on exposure of the catchment population or the specialized role of the hospital for the treatment of malnutrition). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Other climatological hazards including those attributable to climate change (e.g. sea-level rise)** (Specify) _____ Rate the hazard level for the hospital in relation to the risk of other climatological hazards based on hazard maps, the history of such events and hazard modelling. Determine whether the hospital should be prepared to respond to an emergency or disaster due to other climatological hazards (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **1.1.3 Biological hazards** | | | | | | |
| **Epidemics, pandemics and emerging diseases**<br>With reference to any risk assessments, past incidents at the hospital and specific pathogens, rate the hazard level of the hospital related to epidemics, pandemics and emerging diseases. Determine whether the hospital should be prepared to respond to an emergency or disaster due to epidemics, pandemics and emerging diseases (based on exposure of the catchment population or the specialized role of the hospital for the treatment of patients with infectious diseases). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Foodborne outbreaks**<br>With reference to any risk assessments and past incidents at the hospital location (including catchment area), rate the hazard level of the hospital related to foodborne outbreaks. Determine whether the hospital should be prepared to respond to an emergency or disaster due to food-borne outbreaks (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Pest attacks (e.g. infestations)**<br>With reference to any risk assessments and past incidents at the hospital, rate the hospital's exposure to hazards from pest attacks or infestations (flies, fleas, rodents, etc.). Determine whether the hospital should be prepared to respond to an emergency or disaster due to pest attacks or infestations (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **Other biological hazards**<br>(Specify) _____<br>With reference to any risk assessments, rate the hazard level for the hospital in relation other biological hazards. Determine whether the hospital should be prepared to respond to an emergency or disaster due to other biological hazards (based on exposure of the catchment population or the specialized role of the hospital for the treatment of patients exposed to biological hazards). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Human-made hazards** | | | | | | |
| **1.1.4 Technological hazards** | | | | | | |
| **Industrial hazards (eg. Chemical, radiological)**<br>Refer to regional and local hazard maps of industrial facilities or other hazard information and any past incidents involving industrial hazards, and rate the industrial hazard level for the hospital's location and potential contamination of the hospital's systems. Determine whether the hospital should be prepared to respond to an emergency or disaster due to industrial hazards (based on exposure of the catchment population or the specialized role of the hospital for the treatment of patients exposed to industrial hazards). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Fires (e.g. building)**<br>Refer to local hazard maps or other hazard information on building fires inside and outside the hospital and any past incidents involving building fires, and rate the fire hazard level for the hospital. Determine whether the hospital should be prepared to respond to an emergency or disaster due to building fires (based on exposure of the catchment population or the specialized role of the hospital for the treatment of burns patients). | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|---|
| | | No Hazard | Low | Average | High | | |
| **Hazardous materials (chemical, biological, radiological)** Refer to local hazard maps or other hazard information on hazardous materials (incidents and spills) inside and outside the hospital and any past incidents involving hazardous material spills or leaks, and rate the hazardous material hazard for the hospital and the potential contamination of its systems. Determine whether the hospital should be prepared to respond to an emergency or disaster due to hazardous materials (based on exposure of the catchment population or the specialized role of the hospital for the treatment of patients exposed to hazardous materials). | **Chemical** | ☐ | ☐ | ☐ | ☐ | ☐ | |
| | **Biological** | ☐ | ☐ | ☐ | ☐ | ☐ | |
| | **Radiological** | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Power outages** Refer to any past incidents involving power outages for the hospital location, and rate the power outage hazard for the hospital. Determine whether the hospital should be prepared to respond to an emergency or disaster due to power outages. | | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Water supply disruption** Refer to any past incidents involving the disruption of the water supply for the hospital location, and rate the hazard for the hospital. Determine whether the hospital should be prepared to respond to an emergency or disaster due to disruption of the water supply. | | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **Transportation incidents (e.g. air, road, rail, water transport)**<br>Refer to records of past major transport incidents, and determine whether the hospital should be prepared to respond to an emergency or disaster due to transport incidents (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Other technological hazards (e.g. air pollution, structural collapses, food/water contamination, nuclear)**<br>(Specify) _____<br>Refer to regional and local hazard maps, or other hazard information and past incidents to identify other technological hazards for the hospital. Specify the hazard and rate the cor¬responding hazard level for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to other technological hazards (based on exposure of the catchment population or any specialized role of the hospital for the treatment of patients exposed to other technological hazards). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **1.1.5 Societal hazards** | | | | | | |
| **Security threat to hospital building and staff**<br>Refer to risk/threat assessments and past security incidents affecting the hospital and staff, and rate the security hazard level to the hospital and staff. Determine whether the hospital should be prepared to respond to an emergency or disaster due to security threats to the hospital building and staff. | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Armed conflicts**<br>Refer to risk assessments of armed conflicts and past incidents that have affected the hospital, and rate the hospital's hazard level in relation to armed conflicts. Determine whether the hospital should be prepared to respond to an emergency or disaster due to armed conflicts (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **Civil unrest (including demonstrations)**<br>Refer to risk assessments and past incidents of civil unrest that have affected the hospital, and rate the hospital's hazard level in relation to demonstrations and civil unrest. Determine whether the hospital should be prepared to respond to an emergency or disaster due to demonstrations and civil unrest (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Mass gathering events**<br>Determine whether the hospital should be prepared to respond to an emergency or disaster due to mass gatherings (based on exposure of the catchment population). | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Displaced populations**<br>Refer to risk assessments and rate the hospital's hazard level in terms of people who have been displaced as a result of conflict, community unrest and other sociopolitical circumstances, or due to high levels of immigration. Determine whether the hospital should be prepared to respond to an emergency or disaster due to displaced populations. | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Other societal hazards (e.g. explosions, terrorism)**<br>(Specify) _____<br>Refer to risk assessments, regional and other hazard information and past incidents to identify other societal hazards. Specify the hazard and rate the corresponding hazard level for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to other societal hazards (based on exposure of the catchment population or any specialized role of the hospital in treatment of patients exposed to societal hazards). | ☐ | ☐ | ☐ | ☐ | ☐ | |

| | Hazard Level | | | | Should the hospital be prepared to respond to this hazard? If yes, mark the box. | Observations (evaluators ' comments |
|---|---|---|---|---|---|---|
| | No Hazard | Low | Average | High | | |
| **1.2 Geotechnical properties of soils** | | | | | | |
| **Liquefaction**<br>With reference to the geotechnical soil analysis at the hospital site, rate the level of the facility's exposure to hazards from saturated and loose subsoil. | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Clay soils**<br>With reference to soil maps or other hazard information, rate the hospital's exposure to hazards from clay soil. | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Unstable slopes**<br>Refer to geological maps or other hazard information and specify the hospital's exposure to hazards from the presence of slopes. | ☐ | ☐ | ☐ | ☐ | ☐ | |

Comments on the results of Form 2, Module 1:

_____

_____

_____

_____

_____

Name/signature of evaluator(s) _____

_____

_____

_____

# MODULE 2: Structural Safety

Name of Hospital: _____ Date _____

Name of Evaluator: _____

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **2.1 Prior events and hazards affecting building safety** | | | | | |
| **1. Prior major structural damage or failure of the hospital building(s)**<br>Determine whether structural reports indicate that the level of safety has been compromised in the past by natural, technical or societal hazards or by other factors. Base this on events equivalent in severity to those that current standards of structural safety are intended to protect against.<br>Determine whether the structural safety has been compromised using evidence collected from staff interviews, reports, photographs or visual inspection.<br><br>IF SUCH AN EVENT HAS NOT OCCURRED IN THE VICINITY OF THE HOSPITAL, LEAVE BOXES BLANK. | Only complete this item if a past event has occurred of similar strength to the design strength that the building has been designed for i.e. most likely an earthquake or a typhoon event. INTERVIEW a long serving hospital employee to identify prior event/events has occurred. Evidence of original design event magnitude from the original drawings, past reports identifying damage and proposed repairs and inspection to confirm that repairs have not compromised the original building. | Major damage and no repairs<br><br>☐ | Major damage and building only partially repaired<br><br>☐ | Minor, or no damage or building has been fully repaired<br><br>☐ | |
| **2. Hospital built and/or repaired using current safety standards**<br>Assess prior construction work in the facility and the standards that were applied. Use the current safety standard (which may differ from the old standard). Search for evidence from contracts, or information gathered from interviewing, among others, procurement and maintenance staff and, if possible, construction personnel (e.g. design engineer, architect and/or contractor). Verify whether the building has been repaired, the date of repairs, and whether repairs were carried out using the appropriate standards for safe buildings at the time of the repairs. Check whether the standard used for the repairs differs from the current safety standard which is the reference for assessing this item. | Review of Structural drawings showing original design methodology and design details of building including floors, suspended floors, roofs, walls, columns and beams. Inspection of building to confirm that the building has been constructed generally in accordance with the design drawings. Evidence of building permits and structural certificates, construction contracts and interview with hospital staff who were involved in the original construction phase or building repairs. Where a building has been repaired review design drawings and contract documentation. Inspection of repair works to confirm that they comply with the repair details. | Current safety standards not applied to original building or to repairs where undertaken.<br><br>☐ | Current safety standards partially applied to original building or to repairs where undertaken.<br><br>☐ | Current safety standards fully applied to original building or to repairs where undertaken.<br><br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **3. Effect of remodeling or modification on the structural behavior of the hospital**<br>Verify whether modifications were carried out using current standards for safe buildings. Remodeling and modifications can be made using structural control – i.e. structural evaluation and proper rehabilitation or modification design that ensure good performance of the structure. It is unfair to rate as low a modified structure that meets the requirement of using an adequate structural design. Frequently, hospitals undergo modifications needed by different departments and services but without overall consideration of what effects they may have on the structure's resistance to hazards or future events, thus increasing the vulnerability of the facility and its occupants. For instance, filling in an open space between two columns with a masonry wall redistributes loads in a building, and a modification such as this could cause columns to fail. Check for documented evidence such as drawings or fitted drawings | Evidence of structural drawings and documentation associated with building extensions and/or modifications. Assess against current design standards and drawings to confirm that the alterations have not compromised the original building design. Interviews with hospital staff who may have been involved in these works. Inspection to confirm that the works have been constructed in accordance with the design drawings. | Major remodeling or modifications have been carried out with major compromising effect on the performance of the structure; | Moderate remodeling and/or modifications with minor effect on the performance of the structure | Minor remodeling and/or modifications; no modifications were carried out; or major remodeling and/or modification enhancing the structural behavior or having no negative effect. | |
| | | ☐ | ☐ | ☐ | |
| **2.2 Building integrity** | | | | | |
| **4. Structural system design**<br>Inspect visually, and/or through engineering drawings, the structural system design of the buildings for all types of hazards. Note that the term "design" also implies the application of the design in the construction of buildings. Assess the overall quality of the structural system design of the hospital buildings, as there is wide variance in the performance of buildings due to the designs and standards to which they have been built. Particular attention should be paid to buildings in earthquake-prone zones and areas of high wind. Poor structural design indicates that damage from hazards to the structure of the hospital may cause building failure and collapse. For instance, if no evidence of reinforcement is found for concrete or masonry systems, then the structural system design should be rated as "low". Moderate structural design provides partial protection and would cover situations where the effect of hazards may cause damage but this damage is not expected to cause building collapse. A good rating would indicate that the building should not collapse when affected by hazards. | Structural drawings showing design methodology - particularly floor and general arrangement plans. | Poor structural system design; | Moderate structural system design | Good structural system design. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **5. Condition of the building**<br>Inspect the building, both internally and externally, for signs of deterioration such as broken plaster, cracks or sinking structural elements, and should determine the causes. Assess the location of the cracks and their angle to determine the condition of the building. Determine the function of any damaged structural elements, in maintaining overall structural stability and strength. | Evidence of regular structural inspections and evidence of repair items identified being actioned. Direct building inspection to determine condition at time of inspection. INTERVIEW the hospital's maintenance staff | Cracks on the ground and first floors; Major deterioration caused by weathering or normal ageing;<br>☐ | Cracks on the ground and first floors; Some deterioration caused by weathering or normal ageing;<br>☐ | No deterioration or cracks observed.<br>☐ | |
| **6. Condition of the construction materials**<br>Inspect the building, both internally and externally, for signs of deterioration such as broken plaster, cracks or sinking structural elements, and should determine the causes. Assess the location of the cracks and their angle to determine the condition of the building. Determine the function of damaged structural elements in maintaining overall structural stability and strength. For example, the risk posed by a damaged column on the ground floor is not the same as the risk posed by a similarly damaged column on the top floor. (The condition of the building is closely related to type of construction materials used for structural elements.) A crack may occur for a variety of reasons; some indicate a serious problem (design, overload) and others do not (change in volume). If the building has been painted recently, check that cracks are not hidden. | Visual inspection to identify any current material damage. INTERVIEW hospital maintenance staff. | Rust with flaking; cracks larger than 3 mm (concrete), excessive deformations (steel and wood);<br>☐ | Cracks between 1 and 3 mm present (concrete), moderate and visible deformations (steel and wood) or rust with no flaking;<br>☐ | Cracks less than 1 mm (concrete), no visible deformations; no rust.<br>☐ | |
| **7. Interaction of nonstructural elements with the structure**<br>Determine whether nonstructural elements are completely tied to the structure – i.e. if "short columns" are present, if joints are flexible and if expansion joints have been used. INTERVIEW hospital maintenance staff. | Structural and Architectural drawings showing connection methodology and details between primary structure and non-structural walls | Partition walls rigidly attached to the structure, suspended ceilings or facades interacting with the structures, damage would have significant effect on the structure;<br>☐ | Some of the preceding nonstructural elements interacting with the structures, damage would not affect the structure;<br>☐ | No non-structural elements affecting the structure.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **8. Proximity of buildings (for earthquake-induced pounding)**<br>Inspect the exterior of the hospital to determine whether such problems might arise. Check whether the floor plates are aligned. Include the assessment of separation joints in buildings with multiple wings or distinct sections that are intended to perform as separate structures.<br>LEAVE BLANK IF NOT IN A SEISMIC ZONE | Structural and architectural drawings combined with direct observation of constructed building geometry. | Separation is less than 0.5% of the height of the shorter of two adjacent buildings; | Separation is between 0.5% and 1.5% of the height of the shorter of two adjacent buildings; | Separation is more than 1.5% of the height of the shorter of two adjacent buildings. | |
| | | ☐ | ☐ | ☐ | |
| **9. Proximity of buildings (wind tunnel effect and fire)**<br>Inspect the exterior of the hospital to determine whether wind tunnel problems might arise. | Structural and architectural drawings combined with direct observation of constructed building geometry and INTERVIEW hospital maintenance staff. | Separation less than 5m | Separation between 5m and 15m | Separation more than 15m. | |
| | | ☐ | ☐ | ☐ | |
| **10. Structural redundancy**<br>Review engineering drawings of the hospital building and verify at the site whether the structure meets the design criteria in the two principal orthogonal directions. It will be necessary to evaluate structural safety of other designs such as flat slab with flat beams and to note the safety level. In earthquake-prone areas, flat slab structural systems should not be permitted. | Structural and architectural drawings combined with direct observation of constructed building geometry | Fewer than three lines of resistance in each direction; | Three lines of resistance in each direction or lines without orthogonal orientation; | More than three lines of resistance in each orthogonal direction of the building. | |
| | | ☐ | ☐ | ☐ | |
| **11. Structural detailing, including connections**<br>Determine the characteristics of joints both through on-site observation and by reviewing the engineering drawings. If the building is located in a moderate or high seismic zone, more emphasis should be given to detailing evaluation work. Joints should be assessed for cracks or fractures, which would put the joints, and ultimately the structure, at risk. Prefabricated buildings should be given a "low" safety rating in earthquake-prone areas. | Structural and architectural drawings combined with direct observation of constructed building details | No evidence of engineered building records, or built according to an old design standard; | Built according to previous design standards and no retrofitting work to a current standard; | Built according to a current standard. | |
| | | ☐ | ☐ | ☐ | |
| **12. Ratio of column strength to beam strength**<br>Inspect columns and beams to ensure that columns are always stronger than beams | Structural and architectural drawings combined with direct observation of constructed building geometry. Undertake high level calculations as required. | Strength of beams is obviously greater than strength of columns; | Strength of beams is similar to strength of columns; | Strength of columns is greater than the beams | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **13. Safety of Foundations**<br>Make every effort to access the plans to determine the type of foundations . Take into account the information about soils at the site from the submodule on "Geological hazards" in Module 1. Carefully substantiate whether conditions which may lead to liquefaction are present at the hospital site | Structural and architectural drawings combined with direct observation of constructed building foundation geometry | No evidence that foundations were designed according to standards | Little evidence (drawings, soil survey) that foundations were designed according to standards; and/or there is evidence for moderate damage; | Strong evidence that foundations were designed according to standards with strong evidence of no damage | |
| | | ☐ | ☐ | ☐ | |
| **14. Irregularities in building structure plan (rigidity, mass, resistance)**<br>Look for inconsistencies in the hospital plan from the perspective of rigidity (shape and type of materials used for resistant vertical elements) as well as the distribution of mass (concentrated and distributed). Identify at the site and by using diagrams whether seismic joints divide the structure into regular parts or whether irregular configurations are present, such as L-shaped, T-shaped, U-shaped or cruciform plans, or more complicated configurations. Examine the framework and determine whether there are large openings in horizontal diaphragms due to interior patios or for access to stairs and elevators which make the structure more vulnerable to lateral loads and whether there are structural elements designed to mitigate them. | Structural and architectural drawings combined with direct observation of constructed building geometry. Shapes refers to building plan and structure refers to building frame including torsional stiffness. | Shapes are irregular and structure is not uniform; | Shapes on plan are irregular but structure is uniform; | Shapes on plan are regular and structure has uniform plan, and there are no elements that would cause significant torsion. | |
| | | ☐ | ☐ | ☐ | |
| **15. Irregularities in elevation of buildings**<br>Take note of any abrupt changes in the elevation of each building. Determine whether elements (such as columns and walls) are symmetrically distributed in height, to the edges, providing rotational rigidity. Take note of high concentrations of mass on upper floors of a hospital, owing to the placement of heavy items such as machinery, equipment and water tanks on upper floors which can increase inertial forces and cause excessive displacement. | Structural and architectural drawings combined with direct observation of constructed building geometry. Elevation refers to external elevation whilst irregular elements refers to discontinuities in columns etc. and concentrations of mass on the roof etc. | Significant discontinuous or irregular elements, significant variation in elevation of buildings | Several discontinuous or irregular elements, some variation in the elevation of buildings | No significant discontinuous or irregular elements, little or no variation in elevation of buildings. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **16. Irregularities in height of storeys**<br>Evaluators should check stiffness in height between the floors which can cause concentrations of tension in changes of level. A so-called 'soft floor' can be present due to significant changes in rigidity due to variations in height. Also be on the look out for short columns as a result of infill walls. | Structural and architectural drawings combined with direct observation of constructed building geometry | Height of storeys differs by more than 20%; | Storeys have similar heights (they differ by less than 20% but more than 5%); | Storeys are of similar height (they differ by less than 5%). | |
| | | ☐ | ☐ | ☐ | |
| **17. Structural integrity of roofs**<br>Assess the slope of the roof, roof overhangs and roof deck connections to resist uplift loads, and ensure that the roof is completely and securely fastened, welded, riveted or cemented. Look for large roof overhangs of more than 50 cm in high wind areas. They should also check that reinforced cast is in place so that concrete roof decks have exceptionally good wind performance. For steel roof decks, there should be screw attachment rather than puddle welds or powder-driven pins; for precast concrete decks, there should be anchor plates and nuts; and for wood-sheathed roof decks, there should be increased screws and fixations in the corner regions of the roof. | Structural and architectural drawings combined with direct observation of constructed building details | Monolith or flat light roofs, and/or large roof overhangs; | Pre-stressed concrete roof, gable roof with gentle slope, satisfactorily connected, no large roof overhangs; | Reinforced cast in place on concrete roof deck or hipped light roof, satisfactory connections, no large roof overhangs. | |
| | | ☐ | ☐ | ☐ | |
| **18. Structural resilience to hazards other than earthquakes and strong winds**<br>Assess the global structural performance and the resilience of the building structure for single or multiple hazards such as meteorological hazards, flooding and other hydrological hazards, landslides and other geological hazards with regard to the danger that these hazards could pose to the structural elements of the hospital. Verify whether the hospital is adequately designed to withstand other phenomena (e.g. landslides, rock falls, volcanic eruptions, floods, fires and explosions), and whether preventive or corrective measures necessary to improve the level of safety have been implemented. Identify any measures that have been adopted to reduce the risk to structural safety (e.g. anti-flood gates). Evaluators should assess the possible behavior of the complete building in light of all the other hazards in the area. | Structural and architectural drawings combined with direct observation of constructed building surrounds | Low structural resilience to hazards present at the site of the hospital; | Satisfactory structural resilience (taking account of structural risk reduction measures in place); | Good structural resilience (taking account of risk reduction measures in place). | |
| | | ☐ | ☐ | ☐ | |

# MODULE 3: Non-structural safety

Name of Hospital: _____ Date _____

Name of Evaluator: _____

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **3.1. Architectural safety** | | | | | |
| **19. Major damage and repair of nonstructural elements**<br>Verify whether the hospital's nonstructural elements were affected by any hazards, and whether repairs have been conducted to the appropriate standards of the time. Get historical accounts of damage to a facility; Ask for reports about the extent of nonstructural damage and the repairs; Talk with personnel who have worked the longest in the hospital get photographs/ Media reports of previous disasters if possible. Determine if the non-structural safety has been compromised using the evidence collected or from visual inspection of the damage and repairs.<br><br>IF SUCH AN EVENT HAS NOT OCCURRED IN THE VICINITY OF THE HOSPITAL, LEAVE BOXES BLANK. | Evidence of past reports identifying damage and proposed repairs, interview of long serving hospital staff involved in this work and direct observation to confirm that any repair works were adequately undertaken. | Major damage and no repairs completed<br>☐ | Moderate damage, building only partially repaired<br>☐ | Minor or no damage, or building fully repaired.<br>☐ | |
| **20. Condition and safety of doors, exits and entrances**<br>Check the condition of all hospital's doors, exits and entrances and their ability to resist wind, fire, and seismic and other forces. Doors should be completely attached to the frames with no obvious gaps. Doors and door frames are a good indication whether the adjacent structures have moved, especially if there are gaps, if the door is difficult to open, or if there is excessive wear. In the case of automated doors, check if there is a provision to open the door safely and if there are alternative manual operations. Doors, exits and entrances should be free of obstacles and wide enough to allow rapid movement of patients and hospital staff in emergency situations. Pay special attention to critical areas, such as emergency department, intensive care unit, operating theatres, etc. | Direct observation and inspection focusing on doors in critical areas and including assessment of safe materials used in construction, manual override to power operated doors, safe door swings, numbers of doors for room use, smoke doors in corridors are double swing, fire doors where required, alarms for improper use, adequate signage on the doors reflecting their use. | Doors, exits and entrances in poor condition, subject to damage which would impede the function of this and other elements, systems or operations; entrance width is less than 115 cm.<br>☐ | In fair condition, subject to damage but damage would not impede the function of this and other elements, systems or operations; or entrance width is less than 115 cm.<br>☐ | In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations; and entrance width is equal to or larger than 115 cm.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **21. Condition and safety of windows and shutters**<br>Windows, shutters and frames should be able to withstand appropriate forces such as wind or impact damage, especially in critical areas of the hospital. If frames are not secure, wind and rain can ingress into the building, damaging medical equipment, which may impact on patient care and the safety of staff and patients. Check the thickness and type of glass in the windows and the integrity of the frame with the wall. It is advisable to use windows with laminated glass or polycarbonate glazing in critical areas, especially for hospitals at high risk of earthquakes which often cause breakage of glass due to the significant deflexions of the building. Check wooden frames and shutters for rot, moisture and termite damage. | Direct observation focusing on windows in critical areas | Windows and shutters in poor condition, subject to damage which would impede the function of this and other elements, systems or operations (e.g. weak protective glazing). | In fair condition, subject to damage but damage would not impede the function of this and other elements, systems or operations. | n good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations; protective glass (e.g. polycarbonate glazing, blast film) has been added in critical wards. | |
| | | ☐ | ☐ | ☐ | |
| **22. Condition and safety of other elements of the building envelope (e.g. outside walls, facings)**<br>Review the technical and construction status of the elements of the building envelope, including outside walls and facings, which can be made of different materials such as masonry, glass, wood and aluminum as well as composite materials. The elements should be reviewed to ensure that they are not cracked, misshapen or loose. In earthquake-prone zones, facings should not be veneered but should be integrated into the wall and these walls should be appropriately braced to the structural elements so that they resist seismic and wind forces. If a building envelope has fixed sections of glass or wood, apply the same criteria as for windows and shutters made of these materials. Analysis should be more rigorous at hospital entrances and in the critical areas responsible for providing health and associated services in emergencies and disasters. | Direct observation focusing on critical areas | Building envelope in poor condition, subject to damage which would impede the function of this and other elements, systems or operations. | In fair condition, subject to damage but damage would not impede the function of this and other elements, systems or operations. | In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations. | |
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| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **23. Condition and safety of roofing**<br>Make a thorough assessment of the roof by visiting or observation. Check for impermeability of the roof, the safety and condition of equipment located on the roof, and drainage. Leakage from water systems on a roof can put a hospital, or sections of the hospital, out of service. The location, weight and safety of equipment on the roof can affect the roof's vulnerability to different natural forces. | Direct observation | Roofing in poor condition, subject to damage which would impede the function of this and other elements, systems or operations. | As column In fair condition, subject to damage but damage to element(s) would not impede the function of this and other elements, systems or operations. | In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations. | |
| | | ☐ | ☐ | ☐ | |
| **24. Condition and safety of railings and parapets**<br>This item is comparable to item No. 22 in significance, and the same criteria should be used to review these elements. Assess the safety and levels of protection provided by railings and parapets to stairways, corridors and walkways inside and outside the hospital, as well as roof access and roof perimeters, considering whether their failure could endanger occupants and hospital operations. | Direct observation. National building code. | Railings and parapets in poor condition, subject to damage which would impede the function of this and other elements, systems or operations. Railings do not comply with national building code. | Subject to damage but damage to element(s) would not impede the function of this and other elements, systems or operations. | Railings comply with National building code and are 1.2m high. No or minor potential for damage that would impede the function of this and other elements, systems or operations. | |
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| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **25. Condition and safety of perimeter walls and fencing**<br>The security and functionality of the hospital can be affected by the condition of surrounding walls and fencing that define the hospital grounds. Without some means of control at the perimeter, emergency and disaster conditions may invoke an influx of people to the hospital that may compromise hospital functions. Check perimeter in detail when surveying the hospital grounds and neighboring areas from an elevated position such as upper floors of the building or aerial photographs if available. | Direct observation. Aerial Photographs | Perimeter walls and fencing in poor condition, subject to damage which would impede the function of this and other elements, systems or operations<br>☐ | In fair condition, subject to damage but damage to element(s) would not impede the function of this and other elements, systems or operations<br>☐ | In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations.<br>☐ | |
| **26. Condition and safety of other architectural elements (e.g. cornices, ornaments, chimneys, signs)**<br>The criteria outlined for items 22, 23 and 24 can also be used to evaluate other architectural elements. Check other architectural elements of the hospital that have not been taken into account under previous items. Special attention should be given to the condition of anchors and supports of exterior architectural elements. For instance, chimneys should be structurally sound, be capable of resisting seismic or wind loads and have the stability required for their height, whether they are self-supporting or braced. Window boxes can fall and increase seismic loads. Examine how well signage inside and outside the hospital is anchored. | Direct observation. EXAMINE signage. | Other architectural element(s) in poor condition, subject to damage which would impede the function of this and other elements, systems or operations.<br>☐ | In fair condition, element(s) are subject to damage but damage would not impede the function of this and other elements, systems or operations.<br>☐ | In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **27. Safe conditions for movement outside the hospital buildings**<br>Pedestrians, ambulances and supply transport should be able to access the facility with the speed required during emergencies and disasters. This item also complements item 35 on access routes, which focuses on roads outside the hospital grounds, and item 36 which focuses on emergency exit and evacuation routes. Observe whether trees, lamp posts and unstable (fallen) monuments and architectural designs impede pedestrian and vehicle access to the facility. Wheelchair access is essential so the pavement within the hospital grounds should be checked for potholes, raised areas or other obstacles. | Review of all normal and emergency access routes within the hospital grounds combined with direct observation | Obstacles or damage to structure or road and walkways will impede vehicle and pedestrian access to buildings or endanger pedestrians. | Obstacles or damage to structure or road and walkways will not impede pedestrian access, but will impede vehicle access. | No obstacles, or potential for only minor or no damage that will not impede pedestrian or vehicle access. | |
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| **28. Safe conditions for movement inside the building (e.g. corridors, stairs)**<br>Verify that conditions are safe for movement throughout the facility. Interior corridors should be spacious and free of obstacles to ensure ease of movement for personnel, stretchers and medical equipment. Special attention should be given to stairways and exits because of their importance if evacuation occurs during earthquakes or other emergencies. Access for people with mobility or sensory impairments, as well as wheelchair access, should be considered. Adequate signage must be present to facilitate the movement of staff, patients and visitors. Areas with restricted access should be under the surveillance of hospital security personnel. | Review of documented emergency escape routes combined with direct observation. Department of Health requirements - Corridor width at > 2.44m where patients pass and >1.8m in other places | Not compliant with DoH requirements. Obstacles and damage to element(s) will impede movement inside the building and endanger occupants. | Obstacles or damage to elements will not impede movement of people but will impede movement of stretchers, wheeled equipment. | Fully compliant with DoH requirements. No obstacles, potential for no or minor damage which will not impede movement of people or wheeled equipment. | |
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| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **29. Condition and safety of internal walls and partitions**<br>Internal walls and partitions can be made of masonry, glass, wood, aluminum etc., and may be a combination of these materials. Review the technical and construction aspects of these elements to ensure they are not cracked, deformed or loose. Check the condition of these materials and the level of bracing against the hazards identified as potentially affecting the hospital. In earthquake-prone and high-wind areas, interior walls should be adequately braced by structural elements so that they can resist seismic shaking and wind forces. Internal (non-structural) walls should have seismic separation in earthquake prone areas. | Direct observation | Internal walls and partitions in poor condition, subject to damage which would impede the function of this and other elements, systems or operations. | In fair condition, element(s) are subject to damage but damage would not impede the function of this and other elements, systems or operations. | In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations. | |
| | | ☐ | ☐ | ☐ | |
| **30. Condition and safety of false or suspended ceilings**<br>There is a wide variety of false or suspended ceilings used in buildings. Those made of metal are the heaviest and cause the greatest damage if they fall. The level of bracing is a major determinant of the safety ratings for the hospital. Because the bracing is usually not visible, evaluators should request maintenance staff to take some ceiling sections apart so the condition of the ceilings and anchors, and the weight and stability of ceiling tiles, can be checked. Both angled and vertical bracing should be used to brace ceilings from horizontal seismic forces.<br>IF THE HOSPITAL DOES NOT HAVE FALSE OR SUSPENDED CEILINGS, LEAVE BOXES BLANK. | Direct observation including spot inspections within the ceiling cavity. Include a review of safety of light fittings within the ceiling, appropriate and safe materials adequately protected. | False or suspended ceilings in poor condition, subject to damage which would impede the function of this and other elements, systems or operations or Asbestos in ceiling. | In fair condition, element(s) subject to damage but damage would not impede the function of this and other elements, systems or operations | In good condition, including safety of light fittings, minimal potential for damage that would impede the function of this and other elements, systems or operations | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **31. Condition and safety of the elevator system**<br>Assess whether:<br>- elevators function properly<br>- meet load capacity<br>- test and maintenance records are available<br>- lift certification is updated and available<br><br>IF THERE ARE NO ELEVATORS, LEAVE BOXES BLANK. | Review of elevator maintenance records including up to date permit to operate an elevator combined with direct observation of critical equipment condition. | Elevator system in poor condition, subject to damage which would impede the function of this and other elements, systems or operations. | In fair condition, element(s) subject to damage but damage would not impede the function of this and other elements, systems or operations. | In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations. | |
| | | ☐ | ☐ | ☐ | |
| **32. Condition and safety of stairways and ramps**<br>Special attention should be given to the safety of stairways and ramps because of their importance in the case of evacuation. Ensure that stairways are free of obstacles or of items that could fall and obstruct them. They should have railings so that they can be used safely at their maximum capacity, the stairs themselves are free from damage and have clearly marked or defined edges keeping in mind that hospital patients will be more vulnerable than typical users. Consider whether damage or failure of stairways and ramps could endanger occupants of the hospital. Additional attention should be focused on areas where there is the highest concentration of people and use.<br><br>IF THERE ARE NO STAIRS AND RAMPS, LEAVE BOXES BLANK. | Direct observation including assessment of slope of ramps where relevant. Tread width of stairs must be at least 0.3m. | In poor condition, subject to damage or there are obstacles, which would impede the function of this and other elements, systems or operations. | Would remain functional despite damage (includes incorrect gradient) | In good condition, no obstacles, correct gradient, potential for no or minor damage that would impede the function of this and other elements, systems or operations.. | |
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| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **33. Condition and safety of floor coverings**<br>Floors can be made of a variety of materials, including terrazzo, ceramic or clay tile, linoleum, wood etc. They may be attached with adhesives, be laid over a membrane (such as a floating floor), or suspended. Verify that the flooring is watertight, anti-skid, and free of cracks or loose sections, especially in critical and high-traffic areas. There should be no uneven sections or depressions that could cause people to fall or cause carts and equipment to tip over. In areas where there are large numbers of conduits, cables and suspended floors. Ensure that the flooring is braced to resist lateral seismic loads. | Direct observation | Floor coverings in poor condition, subject to damage which would impede the function of this and other elements, systems or operations.<br>☐ | In fair condition, subject to damage but damage would not impede function.<br>☐ | In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations.<br>☐ | |
| **3.2 Infrastructure protection, access and physical security** | | | | | |
| **34. Location of hospital's critical services and equipment in the hospital in relation to local hazards**<br>Many facilities lose critical services (e.g. emergency care), systems and equipment (e.g. patients' records or power generators) upon which health-care services depend due to positioning these services and equipment in locations that are vulnerable to local hazards. For instance, hospitals that store patients' records and emergency power generators in underground space may be placing them at risk of flooding which would destroy the records and submerge the generators, thus affecting both normal and emergency functions. Review the safety of the location of critical services and equipment and verify the measures taken to protect critical supplies such as emergency power, medicines and patients' records. The safety and location of some critical systems and supplies in relation to local hazards are addressed in other items in this module and should not be duplicated here. | Direct observation, inspection and interview as required. Refer to Module 1 for guide to hazards. | No protection measures taken; subject to damage, failure and disruption of critical services and hospital operations in emergencies and disasters.<br>☐ | Partial measures to protect critical services from local hazards are taken; subject to damage with some disruption of critical services and hospital operations in emergencies or disasters.<br>☐ | Many measures are taken to protect critical services; high probability that critical services and hospital will operate with no or limited disruption in emergencies and disasters.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **35. Hospital access routes**<br>Access is essential if the hospital is to function properly. The emphasis in this item is on access routes outside the hospital grounds. Review the main access routes to the hospital with maps. Determine the effectiveness of the hospital's security and protection system in terms of vehicle and pedestrian access. Including wheelchair access. Interviews with hospital employees, patients and, where possible, people living near the facility, can provide information about the types of routes and at what time of day routes are congested.<br>Note the presence and condition of waterways (e.g. creeks, rivers) and storm drains that service the area, and should determine whether flooding or storm run-off would flood certain access routes, making them impassable. Evaluators should note structures and trees along the access routes that would impede traffic if they fell during an emergency or a disaster such as an earthquake, or in a high wind event such as a cyclone.<br>Alternate routes should be identified in case major access routes are obstructed. It is important to determine whether alternate routes are taken into account in the hospital's emergency and disaster risk management programmes, including response plans. | Direct observation and review of documentation including maps showing primary transportation routes, alternate routes if required and location of other features in the local vicinity such as storm drains etc. INTERVIEW an outpatient in a wheelchair about access | Access routes subject to obstacles and damage that would impede access and the function of other elements, systems or operations.<br>☐ | Access routes subject to some obstacles and damage that would not impede access and function.<br>☐ | No or minor potential for obstacles or damage that would impede access and the function of other elements, systems or operations.<br>☐ | |
| **36. Emergency exits and evacuation routes**<br>Verify that hospital exit and evacuation routes are clearly marked and free of obstacles to enable emergency evacuation. Confirm that evacuation routes are indicated both inside and outside the hospital. Check that emergency doors are not locked from the inside so that they do not impede an emergency evacuation. If the hospital relies on automatic doors, check that these doors can be opened manually or there are alternative exit points. | Observations and inspection. Check for evacuation route signage both inside and outside the hospital | Exit and evacuation routes are not clearly marked and many are blocked.<br>☐ | Some exit and evacuation routes are marked and most are clear of obstacles.<br>☐ | All exit and evacuation routes are clearly marked and free of obstacles.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **37. Physical security of building, equipment, staff and patients**<br>Evaluators should verify that there are physical security measures in place to:<br>• prevent unauthorized entry<br>• prevent violence and kidnapping (especially from newborn and child wards)<br>• reduce vandalism<br>• secure equipment and supplies from theft.<br>• Physical security of hospitals is essential to convey a sense of security to patients and the community.<br>• The main items to be secured are:<br>• perimeter<br>• cashier<br>• personnel and patient files<br>• pharmacy<br>• psychiatric unit<br>• nursery<br>• tool stores.<br>• The measures for security include:<br>• physical design and layout (e.g. walls, fences)<br>• access control (e.g. security cards)<br>• locks and alarms<br>• closed-circuit television (CCTV) and closed circuit digital video (CCDV) systems<br>• asset tracking and inventory control<br>• clear signage.<br>All of the above should be supported by hospital policies, procedures and staff awareness and training. | Observations, review of documentation including procedures, staff training and inspection. | No measures are in place.<br>☐ | Some physical security protection is in place (e.g. locked storage for supplies and equipment, asset tracking and inventory control).<br>☐ | Wide range of security measures in place (e.g. design and layout, physical barriers, access control and door security systems, locked storage for supplies and equipment).<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **3.3 Critical systems** | | | | | |
| **3.3.1 Electrical systems** | | | | | |
| **38. Capacity of alternate sources of electricity (e.g. generators)**<br>This item addresses both the capacity of alternate sources and the length of delay in starting the alternate source of power for critical areas of the hospital in emergency and disaster situations. Verify that the alternate source(s) of power begin(s) to operate within ten seconds of the hospital losing power and continue(s) to operate to cover power demands for critical services throughout the hospital – particularly in the emergency department, intensive care unit, sterilization units, operating theatres and maternity unit (i.e. areas of the hospital that are most critical to meeting service demands in times of emergency. Item 39 covers regular tests of alternate sources of electricity. Confirm that the hospital's power plant operators have training in emergency preparedness and response. All work areas should be checked to see that there are flashlights and basic communications equipment available. | PEC (Philippine Electrical Code) ( Art. 5. 17.3.6) requires essential electrical systems comprised of emergency systems & life safety system. ASSESS daily power consumption. Evidence of emergency testing, routine maintenance, load calculations, direct observation and review of electrical drawings. 100% for Critical Areas & Life Safety Equipment Critical Areas: OR, all ICU's, ER, Delivery Room, Medical Gas Equipment, All Laboratory rooms, Dialysis, Diagnostic Areas Life safety : Fire Pumps, Emergency Lights, PABX (Private Automatic Branch Exchange) system, Fire Detection & Alarm System (FDAS) | Alternative supply less than 50% of all critical areas | Genset 50–100% the load of all critical areas or does not start in 10 seconds or operators do not have training | - Genset (kVA) capacity should be 100% the load of all critical areas<br>- Staring time starts automatically in less than 10 seconds<br>- Power plant operators have training in emergency preparedness and response | |
| | | ☐ | ☐ | ☐ | |
| **39. Regular tests of alternate sources of electricity in critical areas**<br>Determine how frequently generator performance tests with satisfactory results are carried out by examining maintenance and test records. It allows for potential failures in the system to be anticipated and can indicate measures that need to be taken should a failure occur. | Evidence of actual real life test, load calculations, direct observation and review of as-built electrical drawings, | Tested at full load every 3 months or more. | Tested at full load every 1 to 3 months. | Tested at full load at least monthly. Record of the test present - using service report and/or contract document. | |
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| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **40. Condition and safety of alternate source(s) of electricity**<br>Determine whether or not the generator(s) are functional and based on this, the most appropriate location for them. For outdoor generators, evaluators should inspect the casing and any form of protective covering. Depending on the location, the potential for flood damage, vandalism or theft of generators should be evaluated. The vulnerability of generators to strong winds, seismic forces or proximity to adjacent structures that might fall and cause damage should also be evaluated. Drainage at the generator's location should be evaluated (i.e. how run-off is managed if the equipment is outside and, if placed indoors, whether there are floor drains or openings. Visual inspection can be supplemented by information from maintenance and inspection records.<br>Ascertain whether the generator is well-anchored and braced, without the possibility of falling or shifting. This involves inspection of supports for the generator in the ground or flooring and the condition and type of connections (i.e. checking for corrosion or other deterioration). If springs are used to avoid vibration and noise, they must be well-anchored since these devices amplify seismic waves. The connections for fuel lines and electricity cables must be flexible to avoid breakage should the generator shift or fall. The lower that these heavy pieces of equipment are placed in the structure, the less the chance that they will fall over, but they may still slide.<br>There should be easy and safe access to the equipment. The possibility that doors or other exits could be blocked by cables or fuel lines if the equipment shifts or falls should be considered.<br>Check the availability and storage of fuel, confirming that supplementary tanks are always full and are located so that fuel can reach the generator by gravity rather than relying on pumping at the time of an emergency. Inspect the physical condition of the fuel tanks and electrical and hose connections. Batteries can be highly dangerous, particularly when charging, and are prone to serious risk in an earthquake, wind, flood or fire event. The condition of the batteries and replacement batteries for the starter should also be inspected to ensure that they cannot be damaged. Check for earthling. | Evidence of emergency testing, routine maintenance, load calculations, direct observation and review of electrical drawings. Take into account in assessment the location of flood prone equipment. | No alternate sources; generators are in poor condition, there are no protective measures. | Generators are in fair condition, some measures provide partial protection and security. | - Installed in appropriate location (Indoor / Outdoor)<br>- If outdoor, provided with cover<br>- No potential for flood damage, vandalism, or theft<br>- Sufficient drainage to avoid flooding<br>- Bracing, anchorage, and seismic supports are in place<br>- Safe access to equipment<br>- Fuel storage and fuel tanks<br>- Batteries in good condition<br>- Earthling in place. | |
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| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **41. Condition and safety of electrical equipment, cables and cable ducts**<br>Check the condition of the electrical networks throughout the hospital. These should be protected from flooding and fire, and in earthquake-prone zones and areas of high winds they should be anchored and channeled through cable racks or conduits that protect them from twisting, breaking or from general deterioration. When cables travel along roofs that empty through drainpipes or gargoyles, the cables should be positioned above the overflow level. When the building has a basement or other areas that are likely to flood, evaluators should inspect the location of sockets, large switchgear or isolators and whether they need to be raised. In earthquake-prone areas, when electricity lines pass from building to building or over expansion joints in the same building, these joints should have sufficient flexibility to accommodate the relative movements during earthquakes.<br>An important element is the separation of electrical networks from other systems that they may affect – such as water supply or sewage systems. If they are in close proximity to protective systems for electrical atmospheric discharge, consideration should be given to metal shielding and additional electrical earthling and bonding.<br>Inspect the position of outside power lines in relation to features on the hospital grounds. All power lines on hospital grounds should be placed underground to protect them from damage and flying debris during high winds. If electricity poles are located on hospital grounds, evaluators should ensure that transformers are well anchored. The possibility that poles could fall because of soil liquefaction, wind or other hazards should be considered. Tree branches can break or interfere with above-ground power lines; likewise, tree roots can interfere with buried power lines. | Direct observation and inspection. Note that IMC should be used for exposed cables/ducts. PVC not acceptable for exposed life safety issues (fire resistive conduit should be used). | Electrical equipment, power lines, cables and ducts are in poor condition, there are no protective measures or PVC used. | Electrical equipment in fair condition. | - PVC (Polyvinyl chloride) conduit is used for embedded installations ONLY<br>- IMC (Intermediate Metallic Conduit) are used for exposed and above ceiling installations<br>- Anchorage and Supports<br>- Protection from flooding and risk of fire<br>- Flexible joints are used for earthquake mitigation<br>- For outdoor power lines, if above ground, electrical poles are in good condition. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **42. Redundant system for the local electric power supply**<br>LEAVE BLANK IF NOT APPLICABLE<br>The failure of local power supplies can cause a domino effect in the hospital so that successive outages can occur. Evaluators should confirm that there is redundancy in the power supply, without counting on the hospital's own emergency power-generating system. If possible, there should be more than one power supply entrance to the hospital from the local power supply, and additional entrances should be from other circuits that are independent of the internal emergency system. | Direct observation and inspection. Note that there is generally only one entry allowed for power supply into a building/campus within the Philippines as it would require a special permit from the local power distributor. | NO supply | Partial (<24hrs) mains supply | Single supply | |
| | | ☐ | ☐ | ☐ | |
| **43. Condition and safety of control panels, overload breaker switches and cables**<br>Evaluators should check the accessibility, condition and operation of the general distribution board, isolators, switchgear, and control panels throughout the facility. Locations should be checked to ensure that access cannot be blocked, doors and windows are intact, measures are in place for the prevention of fire and that there is sufficient drainage to avoid flooding. The function of the distribution board, the capacity of the breaker, its connections to the system, and the supports or anchors used for all of the panels and corresponding equipment should be checked. This could be done by a combination of examining maintenance records and visual inspection. Distribution boards or panels should be labelled to indicate which control and protection devices serve each circuit in different areas. Evaluators should also check that the control panels are protected from the risk of fire, overload and mechanical damage (e.g. earth leakage circuit breakers, power overload breakers, load test and auto changeover switches to generators).<br>Connections to the emergency back-up system, emergency lighting and interior alarm systems should be inspected. If these connections are located close to the emergency generator, all cables should be appropriately channeled, in good condition and identifiable. | Review of documentation, drawings and direct observation. | Control panels or other elements are in poor condition, there are no protective measures or PVC used. | Control panels in fair condition | - Accessible<br>- Sufficient drainage to avoid flooding<br>- Supports and anchorage<br>- Labels / Identification<br>- Overload and mechanical damage protection<br>- Protected from risk F129of fire<br>- Connections to the emergency back-up system checked | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **44. Lighting system for critical areas of the hospital**<br>Review lighting in critical areas of the hospital, including the emergency department, intensive care unit, operating theatre, laboratories etc. Test levels of lighting in rooms, the function of lighting fixtures, and the safety of their bracing or supports. Some lights are suspended from ceilings, others are attached to the structure. In surgery or obstetrics, lights should be bolted to beams. Ensure that lighting fixtures are not supported by false ceilings. Confirm that lighting is connected to the emergency power system or UPS. (Uninterruptible Power Supply). Check maintenance and inspection records. | Review of documentation, drawings and direct observation with lux level measuring instrument. Standard reference of illumination levels are as follows: Areas and the Recommended Level of Illumination (Lux) below:<br>A. Common Areas (Corridors, Lobby, Patient's Room/Ward, Stairways, Elevators) and Plant Rooms/Control Rooms - 220 lx<br>B. ICUs/Nurseries/Toilets - 320 lx<br>C. Offices / Laboratories / Examination / Treatment Area - 540 lx<br>D. Emergency Rooms - 1100 lx<br>E. Operating Rooms - 2200 lx<br>F. Delivery Rooms - 110 lx | Does not comply with recommended standards (lighting level for hospital) OR no protective measures OR not connected to emergency power systems. | Lighting is satisfactory but does not meet minimum requirements. Some measures provide partial protection (bracing and supports). | Adequate lighting in critical areas in compliance with recommended illumination levels AND good levels of protective measures (bracing and supports). Lighting level verified using LUX meter test instrument. Connected to emergency power systems. | |
| | | ☐ | ☐ | ☐ | |
| **45. Condition and safety of internal and external lighting systems**<br>Criteria for Evaluation:<br>Ensure that both internal and external lighting are operational and correctly sectioned Interview maintenance staff to determine whether there is sufficient stock of lighting supplies (e.g. flashlights, head-torches, batteries and light bulbs in case of light failure in a disaster). Ensure that emergency lighting systems are adequate for the level and type of use of an area, especially on stairs and walkways, in corridors and in the critical medical and nonmedical areas of the hospital. Lighting should be clear of plants or other vegetation which could pose a physical risk or affect performance. Check maintenance and inspection records. | Review of documentation, drawings and direct observation with lux level measuring instrument. Standard reference of illumination levels are as follows: Areas and the Recommended Level of Illumination (Lux) below:<br>A. Common Areas (Corridors, Lobby, Patient's Room/Ward, Stairways, Elevators) and Plant Rooms/Control Rooms - 220 lx<br>B. ICUs/Nurseries/Toilets - 320 lx<br>C. Offices / Laboratories / Examination / Treatment Area - 540 lx<br>D. Emergency Rooms - 1100 lx<br>E. Operating Rooms - 2200 lx<br>F. Delivery Rooms - 110 lx | Does not comply with recommended standards (lighting level for hospital) OR no protective measures OR not connected to emergency power systems. | Lighting is satisfactory but does not meet minimum requirements. Some measures provide partial protection (bracing and supports). | Adequate lighting in critical areas in compliance with recommended illumination levels AND good levels of protective measures (bracing and supports). Lighting level verified using LUX meter test instrument. With sufficient stock of lighting supplies (e.g. batteries, flashlights, light bulbs). | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **46. External electrical systems installed for hospital usage**<br>IF THERE ARE NO EXTERNAL ELECTRICAL SUBSTATION, LEAVE BOXES BLANK<br>Evaluators should verify the existence and capacity of external substations or transformers that provide power to the hospital either on hospital grounds or in close vicinity. These systems should be completely enclosed and there should be labels and signs clearly indicating that they are power sources. They should be isolated from fuel tanks. The substations should not be subject to damage from flooding or heavy rain. Anchors or supports should be sufficient to prevent them from tipping over or sliding. Evaluators should take into account the possibility of oil leaks in the case of a transformer and breaks in electrical cables. Transformers or substations should not be placed close to vegetation – especially trees because branches can break or interfere with above-ground power lines. Likewise, tree roots can interfere with buried lines. Power sources should be protected from lightning and other atmospheric electrical discharge. | Direct observation and inspection. Note that this item may be not applicable for a small hospital (minimum of 750 kVA generally to apply for a sub-station through local provider). Review design drawings to document demand. | Major hospital (demand>750kVA) without a substation | n/a | Major hospital (with demand>750kVA) has a substation. Minor hospital achieved without a substation | |
| | | ☐ | ☐ | ☐ | |
| **47. Emergency maintenance and restoration of electric power supply and alternate sources**<br>The maintenance division should provide the operations manual for electrical power systems, as well as preventive maintenance records. Verify that there are emergency procedures for maintaining systems in emergency/disaster situations. Check that personnel have been trained to an appropriate standard to maintain the correct level of safety of the electrical power supply and alternate source (e.g. generators) of the hospital in both routine and emergency/disaster situations. | Review of documentation, drawings and direct observation including a review of maintenance records being up to date as demonstrated by logbooks and other records. | NO maintenance records | Maintenance records but not up to date | - Operation manual AND<br>- Preventive maintenance records AND<br>- Emergency procedures for maintaining normal and alternate systems in emergency / disaster situations AND<br>- Personnel have been trained to maintain systems in both routine and emergency / disaster situations | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **3.3.2 Telecommunications systems** | | | | | |
| **48. Condition and safety of antennas**<br>Verify the condition of antennas, satellite dishes, external control boxes and their roof fixings, bracings and supports. There should be at least three tiedowns at 120° intervals; four tie-downs should be spaced at 90° intervals. Grounding devices for lightning rods should be correctly installed and should not be used to anchor other systems. Access walkways to antennas and related equipment should be safe and well-protected from hazardous phenomena. Visual inspection can be supplemented by information from maintenance and inspection records.<br>IF THERE ARE NO ANTENNAS, LEAVE BOXES BLANK. | Direct observation, review of drawings and inspection. Include lightning rods in this assessment. | Poor condition of bracing for antennas and lightning conductors | Antennas and lightning conductor bracing requires some improvement | - Bracing and supports in place AND<br>- Grounding devices for lightning rods correctly installed AND<br>- Access walkways are safe and well-protected from hazards | |
| | | ☐ | ☐ | ☐ | |
| **49. Condition and safety of low- and extra-low-voltage systems (Internet and telephone)**<br>Low-voltage and extra-low-voltage systems may have antennas, transmission equipment, line and voltage controllers, receivers, wiring and a grounding mechanism so evaluators should verify the status of each part. Verify that cables are properly connected in strategic areas to avoid system overload. Cables for computer and telephone networks should be protected from events such as high winds and flooding, so that the systems can function in adverse conditions. The main components of low voltage and extra-low-voltage systems, such as servers and network hubs, should be in protected areas that are free of items that could potentially block access and ingress.<br>To connect the telephone exchange to each of the extensions or telephones in a building, there is a system of wires that must be segregated from other electrical sources to avoid overloading the system and to protect against their being damaged by different voltages. Likewise, internal communications wires must be segregated. The wires should be protected according to the appropriate standards and legislation – for instance, protection in electrical tubes or boxes, and placement above the floor (e.g. at 0.5 meters). Check maintenance and inspection records. | Direct observation, review of drawings and inspection records and maintenance records. Include a review of whether the equipment is in a flood prone area or not and whether the equipment is well ventilated and fixed. | Poor protection of low voltage systems | Partial protection of low voltage systems | - System equipment and components well-protected AND<br>- Cables secured from high winds or flooding AND<br>- Accessible AND<br>- Cables segregated from other electrical sources and well-protected (e.g tubes, boxes, or placement 0.5 meters above the floor | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **50. Alternate communication systems**<br>Verify the condition of the hospital's alternate independent communications systems (including radio-communications, satellite telephone, Internet, mobile telephones, pagers) to maintain internal as well as external contact in the event of an emergency or disaster. Components of internal networks should be reviewed to ensure that vulnerabilities at different points of the system have been eliminated. | Testing radios, record of testing of modems and radios | NO alternative systems<br>☐ | Alternative systems not tested annually<br>☐ | Radios, pagers and modems all functioning, connected to the emergency power system and tested annually.<br>☐ | |
| **51. Condition and safety of telecommunications equipment and cables**<br>The condition and functionality of the telecommunications equipment and cables in the hospital should be checked. Verify that all telecommunications equipment is well-protected and anchored for increased security. Outside cables on the hospital grounds should be in underground conduits to protect them from damage during high winds and other hazards. Telephone exchange consoles, computers and servers should have anchors to prevent tipping or sliding. In areas which require anchoring and/or bracing, the quality of anchors and braces should be assessed. There should be adequate conduit tubing for cables to prevent them from deteriorating. Mobile telephone towers in the vicinity of the hospital should have back-up generators. Visual inspection can be supplemented by information from maintenance and inspection records. | Direct observation, review of drawings where appropriate and inspection. This includes equipment such as PABX (private automatic branch exchange), Switches, Servers, UPS (Uninterruptible Power Supply), Battery banks. | Telecommunications systems not well secured<br>☐ | Telecommunications partially secured/protected<br>☐ | Telecommunications systems :<br>- Functional and in good condition AND<br>- Well-protected and anchored AND<br>- (For outside cables) Installed in underground conduits to protect from damage AND<br>- Cables installed in conduit tubing to prevent deteriorating AND<br>- Equipment protected from direct sunlight<br>☐ | |
| **52. Effect of external telecommunications systems on hospital communications**<br>External telecommunications systems, radio transmitters and similar systems that are placed near the hospital may cause interference to hospital communications networks. Evaluators should verify that exterior telecommunications systems do not interfere with the communications of the hospital. This can be done by examining maintenance records, site plans and drawings, and by talking with staff. | INTERVIEW switchboard manager, test phones, EXAMINE Operation and maintenance records | External telecommunications systems cause regular interference with hospital communications<br>☐ | External telecommunications systems occasionally cause interference with hospital communications<br>☐ | External communications cause no interference with hospital communications<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **53. Safety of sites for telecommunication systems**<br>Check the condition and safety of the sites for the telephone exchange and computer network server. Entry ducts should have fire barriers, doors must open completely and away from the room, suspended ceilings that can fall easily should be avoided, and no pipelines should be co-located here. Doors and windows should close tightly to keep out wind and water, and doors should have moderate fireproofing. Lighting should be adequate for personnel to work, but the equipment should be protected from direct sunlight. To avoid water damage, water filtration apparatus, toilets and bathrooms should not be on floors above the equipment.<br>Telecommunications centers must be placed away from facades. Cables and wires should be encased in conduit tubing to prevent deterioration and all equipment should be anchored according to its weight and dimensions. Verify that installations are not subject to explosion in case of sparks.<br>Check distance from electromagnetic interference such as imaging equipment, transformers, motors and radio transmission systems.<br>Access to the telecommunications centers must be restricted and controlled. Visual inspection can be supplemented by information from maintenance and inspection records.<br>Battery storage areas should be ventilated separately. Batteries should be sealed. If other types of batteries are used (non-sealed batteries) for reasons of economy, these should not be placed in the same location as the telephone switchboard, and their location must have the following specifications:<br>• It should be away from equipment and the operator, and antacid treatment must be applied to the floors and walls up to 1500 mm above the finished floor level.<br>• It should not have an outlet or interrupter placed inside, outfitted with shatterproof lamps, and doors should have moderate fireproofing. The battery should be protected from direct sunlight.<br>• There should be a sink with a salt-water battery. | Direct observation, review of drawings and inspection. Include a review of whether the equipment is in a flood prone area or not and whether the equipment is well ventilated and fixed. | Telecoms in poor condition or vulnerable to hazards. | Full hazard specific protection not provided for telecoms | - Enough space to accommodate all equipment and maintenance; Entry ducts have fire barriers; Doors open completely and away from room with moderate fireproofing; free from wind and water (including pipes); >4metres from sources of electromagnetic interference; batteries stored and in good condition | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **54. Condition and safety of internal communications systems**<br>Verify the condition of loudspeakers, public address systems, speaker systems, intercoms and similar systems that serve to facilitate communication with personnel, patients and visitors to the hospital. Confirm the existence of audible systems such as bells and horns that are used as alarms or alerts for evacuation. The existence of redundant and alternate systems for internal communication guarantees that personnel, patients and visitors are contacted quickly and clearly in emergencies and disasters. The evaluators should request that the internal communications systems are tested and should confirm that messages were well received. | Direct observation, review of drawings where appropriate and inspection. | Internal communications systems do not exist or are in poor condition. | Internal communications systems are in fair condition, but there are no alternate systems. | - Components of system (e.g. Loudspeakers, public address, intercoms, etc.) in good condition<br>- Audible systems available for alarms (e.g. Bells & horns)<br>- Availability of inspections, testing and maintenance records | |
| | | ☐ | ☐ | ☐ | |
| **55. Emergency maintenance and restoration of standard and alternate communications systems**<br>The maintenance division should provide the operations manual and preventive maintenance records for electrical power systems. Verify that there are emergency procedures for maintaining standard and alternate communications systems in emergency/disaster situations. Check that personnel have been trained to an appropriate standard to maintain the correct level of safety of the communications system and the alternate source of communications in the hospital in both routine and emergency/disaster situations. | Direct observation, test records, maintenance records and documented emergency procedures. Include in assessment control system and UPS system. | NO maintenance records of emergency alternate communications systems | Alternative communication systems not annually tested | Documented procedures exist, maintenance/ inspection records are up to date, personnel have been trained, and resources are in place for implementing emergency maintenance and restoration, including UPS. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **3.3.3 Water supply system** | | | | | |
| **56. Water reserves for hospital services and functions**<br>Evaluators should verify that water tanks have a permanent reserve that is sufficient to provide water for at least 72 hours in accordance with official national guidance (Philippine National Plumbing Code), in addition to a water reserve for fires (it is advised to provide at least 300 liters daily per bed). Evaluators should also verify that water storage is sufficient to satisfy essential services. This could be ascertained from service and maintenance records. Typically, water storage for hospitals is in cisterns or reserve tanks on the ground floor and elevated tanks. It is important to check locations in the hospital that are not served by the main water system. If wells, boreholes or aquifers exist on hospital grounds, the percentage of water supply they provide and whether they are used regularly or as reserves should be ascertained. | Direct observation, review of drawings and inspection of water tanks. Base on 3 days storage at 1200L(934 gals)/bed per day as the target storage volume. See Philippine National Plumbing Code | No reserve water | Less than 3600 liters per bed in reserve (3 days storage) | Demonstrated capacity to hold 3600L in reserve per bed (3 days storage) | |
| | | ☐ | ☐ | ☐ | |
| **57. Location of water storage tanks**<br>Check that:<br>- Cistern is not susceptible to flooding<br>- Safe to contamination<br>- Location is safe from landslide<br>- Connection to water tanks has adequate flexibility to withstand shaking during an earthquake<br>- Tanks has appropriate covers, safe and properly secured<br>- No damage (e.g. cracks, corrosion, mold, etc.)<br>- Tanks are properly secured, braced or anchored.<br>- Maintenance and inspection records is available<br><br>IF THE HOSPITAL DOES NOT HAVE A WATER STORAGE TANK, LEAVE BOXES BLANK. (THIS NOTE SHOULD BE DELETED) | Direct observation, review of drawings and inspection. | Water tanks not secure | Water tanks mostly secure | Water tanks secure AND vent and overflow pipes have a screen to prevent access of small animals AND all manholes have a safe cover and lock | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **58. Safety of the water distribution system**<br>Check that:<br>- Check condition of water distribution line, storage tanks, valves, pipes & connections<br>- Valve function properly<br>- Check condition of pipe distribution line, no sign of leakage, deterioration<br>- Pipes is properly provided with bracing, anchored & has provided with flexible connections (connections between pumps and pipes)<br>- Water supply meets water quality standards with water analysis conducted regularly<br>- Availability of water safety plan<br>- Availability of inspection, testing & maintenance records | Direct observation, review of drawings and inspection. Include assessment of water quality. EXAMINE water safety plan, maintenance and inspection records. Philippine Plumbing Code | Water reticulation system not compliant. The presence of a booster pump means the water distribution does not comply with the sanitation code and is NOT compliant | Water system only partially compliant | Reticulation system fully compliant and water safety plan in place and followed including Pipe pressure compliant AND Backflow valve after the water meter | |
| | | ☐ | ☐ | ☐ | |
| **59. Alternate water supply to the regular water supply**<br>Check that:<br>- Verify if there is available alternative water supply<br>- Water supply from local water supply distributor<br>- Supply from local Fire Department<br>- Supply water tankers trucks has sufficient access to supply the facility. | Direct observation, review of drawings and inspection. Alternative water supply includes:<br>1. Rain water harvesting<br>2. Water supply from fire department<br>3. Desalination<br>4. Mobile water treatment system | Less than 50% of requirements met. | 50–100% of requirements are met | 100% of requirements are met (including licensed water suppliers) | |
| | | ☐ | ☐ | ☐ | |
| **60. Supplementary pumping system**<br>Check that:<br>- Pumping system has redundant pumps operating as duty or standby (at least 2-pumps)<br>- Pumps is operating in a alternate mode<br>- Pumps is supplied with 100% power supply back-up from the genset<br>- Inspection, testing and maintenance records is available | Test all supplementary pumps/ View records of pump tests. | There is no back-up pump and operational capacity does not meet minimum daily demand. | Supplementary pumps are in fair condition but would not meet the minimum daily demand for water. | All supplementary pumps and back-up systems are operational and would meet the minimum demand for water. | |
| | | ☐ | ☐ | ☐ | |
| **61. Emergency maintenance and restoration of water supply systems**<br>Check that:<br>- Maintenance personnel has proper training for emergencies<br>- Operation & Maintenance record is available<br>- Emergency procedure is available | Review water supply records. Record of maintenance training certification and INTERVIEW maintenance personnel | Not Documented | Documented in log book but is not up to date. | Documented by log book which is up to date. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **3.3.4 Fire protection system** | | | | | |
| **62. Condition and safety of the fire protection (passive) system**<br>The hospital must be completely protected against fire, since this type of hazard can stop services in a hospital when they are most needed. Hospitals are considered to be buildings which are extremely difficult to evacuate; therefore, the most important aspect of fire safety is to have the best means of prevention and protection in place.<br>Passive fire protection measures will be based on the combustible level of each area, the level of compartmentalization, the use of incombustible material, fireproof doors, firewalls, and the location of doors and windows in respect to other buildings and other areas. The main objective should be to prevent fires from starting and, if a fire starts, to prevent its spread in order to avoid the total evacuation of the building.<br>Determine whether the hospital design incorporates firewalls, doors and designated escape routes, which provide a high level of safety. Review the fire protection measures in areas at highest risk of fire, including boiler rooms, fuel tank storage, medical gases, electrical panels, electrical switch rooms, pharmacy etc. from maintenance records, the facility's fire plans, and policies and procedures.<br>Partial evacuations should be prioritized, preferably to an area on the same level (horizontal evacuation), and as a last resort to other floors (vertical evacuation). To enable this, it is important to have a building structure that limits the risk of the fire spreading both within and outside the affected units, compartmentalizing the fire by sectors with fire resistance in place. Floors should be divided into fire sections and each section should have enough space to hold all patients from one neighboring section. The sections should have adequate means of evacuation available, including exit routes and direct exits to external safety areas, so that occupants can safely leave the building or reach a safe location within the building. | Direct observation, review of drawings and inspection. Fire rating as per Fire Code of the Philippines, National Building Code or NFPA 101 | Does not meet requirements of the BFP fire code (RA 9514)<br>☐ | n/a<br>☐ | Meets requirements of the BFP fire code (RA 9514):<br>- Means of prevention and protection is in place<br>- Building has properly compartmentalized has proper fire rating for doors, windows, walls, & floors<br>- No combustible materials present inside the building<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **63. Fire/smoke detection systems**<br>Check that:<br>- Building is fully protected with fire detection & alarm system (smoke detectors, pull stations, & alarm bell)<br>- System is addressable (visual & audible)<br>- System is properly working or operational<br>- Inspection, Testing and maintenance record is available and updated<br>- Drawings, Operation & Maintenance manuals is available | Smoke alarm maintenance/testing records | No system has been installed. | Smoke alarm system not tested regularly . | System is installed and well-maintained and tested frequently. | |
| | | ☐ | ☐ | ☐ | |
| **64. Fire suppression systems (automatic and manual)**<br>Check that:<br>- The building has automatic fire sprinkler system<br>- Portable fire extinguishers is accessible, clearly labelled, regularly maintained, and not expired.<br>- Dry or wet type standpipe/riser is adequate, available and accessible<br>- Inspection, testing and maintenance records are available<br>- portable fire extinguishers are properly anchored, braced or secured.<br>- Fire safety personnel has adequate training<br>- Conducts fire drill regularly | Fire Code of the Philippines requires Fire Sprinkler for 5 storey building only (15 meters high). However if no fire suppression the hospital would have smoke detectors & fire extinguishers. Direct observation, review of drawings and inspection. Fire drill records. | Not compliant with fire code. | Fire suppression system damaged but still functional. | Compliant with fire code including regular testing. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **65. Water supply for fire suppression**<br>Check that:<br>- Fire reserved tank is adequate (minimum 30 minutes fire reserved)<br>- Fire reserved tank is dedicated for fire suppression system<br>- Availability of water supply (e.g. river, lake, deep well, external fire hydrants)<br>- Availability of drawings/plans, inspection, testing & maintenance records<br>- Availability of facility policies and procedures | Fire safety documents. Refer to Fire Code of the Philippines (RA 9514) or NFPA 20. | Not Compliant with RA9514 of NFPA 20. | Limited compliance. | Fully Compliant with RA 9514 of NFPA 20. | |
| | | ☐ | ☐ | ☐ | |
| **66. Emergency maintenance and restoration of the fire protection system**<br>The maintenance division should provide the operations manual for the fire protection systems, as well as records showing preventive maintenance of fire extinguishers and fire hydrants.<br>Verify that:<br>• A manual plus training on the management of fire protection systems are available.<br>• There are records of preventive maintenance of extinguishers and hydrants.<br>• The equipment is to be found in the appropriate places and is freely accessible.<br>• The network of pipes, pumps and accessories is exclusively for the hydrants.<br>• Hoses are appropriately joined to the valves on the cabinets for the hydrants.<br>• The network of hydrants has its own water cistern.<br>• The fire safety officer (warden) team in the hospital has been established.<br>• Personnel are trained and drills have been carried out.<br>• A plan of action and procedures for fire response are available.<br>• Inflammable materials and liquids are stored in safe places that are reserved exclusively for these substances. | Direct observation, review of drawings and inspection. | Documented procedures and maintenance/ inspection records do not exist. NOT compliant with DAO35 | Documented procedures exist, maintenance/ inspection records are up to date, personnel have been trained, but resources are not available. | Documented procedures exist, maintenance/ inspection records are up to date, personnel have been trained, and resources are in place for implementing emergency maintenance and restoration. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **3.3.5 Waste management systems** | | | | | |
| **67. Safety of nonhazardous wastewater systems (Health Care Waste)**<br>Nonhazardous wastewater or sewerage systems consist of a network of pipes that carry the wastewater from the hospital to the sewer unit or to a separate system. They also include special systems such as septic tanks, infiltration wells and oxidation ponds, as well as filters, hydraulic traps or siphons. These systems treat and dispose of residuals, prevent the entrance of odor or insects from the treatment or excreta systems, and unclog and clean the pipes.<br>Ventilation systems maintain atmospheric pressure within wastewater systems. Grease, plaster, mud and sand must be filtered out to allow for the effective performance of treatment and excreta systems.<br>Verify the physical and functional condition of equipment, clamps and anchors, the means of discharge or evacuation, leakages due to defective or missing hardware, and the state of the waste vents in covers. Look for leaks in the system and should assess the state of the registry (presence of faecal matter). Check overflows of deposits, the location of treatment tanks, pits and septic tanks, percolation of wells, grease, plaster or mud traps and so on, and the proximity of wastewater systems to potable water systems, verifying that the sanitation system lies downstream from the potable water system.<br>Ensure that facilities for hospital wastewater disposal do not have the possibility to contaminate local serviceable drinking water. Evaluators should verify types of independent or combined systems for water intake through the base of the system (drains, showers, others) as a result of rain or flooding. Check the operation of the valves that prevent sewage water from regurgitating back into the cistern, as well as the location of the treatment systems in respect to the potable water management system. Visual inspection can be supplemented by information from drawings, plans and site records.<br>Check if there are sufficient toilets (at least 1 per 15 patients and staff) that are functioning and accessible and that safely separate the user from excreta. | Direct observation, review of drawings and inspection including DENR discharge permit . CERTIFICATE OF ANAYLSIS from DENT accredited laboratory. Operation and Maintenance Manual. SPECIFY the type of disposal Compliance with Clean water Act. RA 9275 Confirm that the system in place will continue to function for normal and emergency conditions. Review 2004 2nd Edition Healthcare Waste Management Manual of the DOH. Joint Administrative Order (JAO) No. 02, series of 2005, Policies and Guidelines on effective and proper handling, collection, transport, treatment, storage and disposal of health care wastes.. Building code, Plumbing Code and Sanitation Code. 3rd Edition of the department of Health Care Waste Manual (HCWM), including checking the thickness of garbage bags | Septic tank system only.<br>☐ | reticulated sewerage.<br>☐ | Compliant with DAO 35 (DENR Standard for effluent water) Existence of Sewage Treatment Plant (STP) or septic tank in accordance to Clean Water Act R.A. 9275 in adequate condition<br>- Minimum volume of septic tank achieved according to discharge rate<br>- Sufficient toilets (functioning and accessible)<br>- Availability of proper records and maintenance<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **68. Safety of hazardous wastewater and liquid waste (Health Care Waste)**<br>Criteria for Evaluation:<br>- Separate collection of hazardous wastewater in accordance to Clean Water Act R.A. 9275.<br>- Availability of proper records and maintenance<br>The characteristics of each of the wastewater systems define the form of disposal and whether the waste would be in conventional form or in a form that can be removed by the authorized entity. The responsible division of the hospital (e.g. engineering or maintenance) should ensure that hazardous wastewater does not drain into the public sewage system and does not contaminate drinking water.<br>Dangerous residual liquids can be divided into two groups: those that are pre-treated and which can then be discharged into the sanitation system, and those which cannot be discharged and need manual removal by an authorized entity. In both cases the hospital must ensure the standards, and the system must be assessed according to the established standards of the country.<br>Liquids that can be discharged into the sanitation system through pre-treatment include oils and fats, explosive mixtures, colorings, corrosive waste and some radioactive matters, depending on the level of concentration.<br>Liquid waste from operating rooms may be infectious if it has come into contact with liquid or semi-liquid substances such as blood, semen, vaginal secretions, saliva, purulent secretions and placenta or cerebrospinal, synovial, pleural, peritoneal or amniotic fluid. Other liquids that do not contain concentrations of drugs or radioactive substances can be handled as nonhazardous liquids and may be discharged to community sewer systems.<br>The hospital sanitation system will track where the substances are discharged once treated in order to obtain a sample for analysis to verify the safety of landfill material to the environment or to determine possible action to ensure safety of the environment. | Direct observation, review of drawings and inspection, operational and maintenance manuals. Compliance with Clean water Act. Review 2004 2nd Edition Healthcare Waste Management Manual of the DOH. Joint Administrative Order (JAO) No. 02, series of 2005, Policies and Guidelines on effective and proper handling, collection, transport, treatment, storage and disposal of health care wastes. Also, 3rd Edition of the Department of Health Care Waste Manual (HCWM). | NO hazardous water neutralization plant.<br>☐ | Hazardous water neutralization plant not tested.<br>☐ | Hazardous water neutralization plant.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **69. Safety of nonhazardous solid waste system (Health Care Waste)**<br>The responsible division of the hospital (e.g. engineering or maintenance) should ensure that solid waste does not pollute the environment and does not cause any risk to health.<br>Like liquid waste, solid waste is classified as hazardous or nonhazardous with each type treated differently. There are three important steps to the management of waste that should be checked by evaluators, namely:<br>• Segregation or classification of waste. This is key as wrong classification can cause problems later and lead to loss of time. The level of preparedness of personnel and the establishment of biosecurity protocols must be checked, including the use of appropriate containers for different types of waste – such as high-resistance red polypropylene bags for hazardous substances, sharps containers, containers for special elements, and black bags for nonhazardous waste.<br>• Handling and storage. Personnel in charge of handling should know the different types of waste and correct management. They should wear personal protective clothing and equipment and should adhere to the routes and schedules established. Nonhazardous materials can be placed in areas served by the municipal services, separate from hazardous materials.<br>• Collection and transportation. Transportation to the place of final treatment or disposal will be in special, closed vehicles with specific timelines, leaving the collection area perfectly clean. Solid waste should be disposed of in a safe and proper manner in accordance with appropriate legislation and guidance. | Direct observation, review of drawings and inspection. Confirm that the healthcare waste management system procedure is documented with all 5 stages - min, segregation, collection, storage, disposal. Confirm that the system in place will continue to function for normal and emergency conditions. If non-hazardous waste is classified as hazardous at source and treated as such then this item to be blank. Review 2004 2nd Edition Healthcare Waste Management Manual of the DOH. Joint Administrative Order (JAO) No. 02, series of 2005, Policies and Guidelines on effective and proper handling, collection, transport, treatment, storage and disposal of health care wastes | System for solid waste management does not exist or is in poor condition.<br>☐ | Management system is in good condition with good capacity and evidence of compliance and maintenance.<br>☐ | Management system is in good condition with good capacity and evidence of compliance and maintenance.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **70. Safety of hazardous solid waste system (Health Care Waste)**<br>Check conditions in the following documents:<br>- Segregation or Classification of Waste - Good Housekeeping, proper documentation/monitoring<br>- Handling & storage of Non-hazardous Solid Waste - Material Recovery Facility (MRF)<br>- Collection and Transportation - accredited service provider by DENR-EMB<br>- Joint Administrative Order (JAO) No. 02, series of 2005, Policies and Guidelines on effective and proper handling, collection, transport, treatment, storage and disposal of health care wastes Also: R.A. 9003 - Philippines Ecological Solid Waste Management Act of 2000 | Direct observation, review of drawings and inspection. Confirm that the healthcare waste management system procedure is documented with all 5 stages - min, segregation, collection, storage, disposal. Confirm that the system in place will continue to function for normal and emergency conditions. Review 3rd Edition Healthcare Waste Management Manual of the DOH, including waste minimization and handling; segregation, classification and identification/labelling of waste; onsite collection with Material recovery facility (MRF) and central storage; off-site collection by DENT-EMB accredited contractor with valid transport permit to DENR approved sanitary landfill; quarterly documentation and monitoring signed by pollution control officer; | NO waste management system. | Some waste management stages carried out. | All five stages of Water management considered. | |
| | | ☐ | ☐ | ☐ | |
| **71. Emergency maintenance and restoration of all types of hospital waste management systems**<br>The maintenance division should provide the operations manual and preventive maintenance records for hazardous solid waste management systems. Evaluators should verify that there are emergency procedures for maintaining hazardous solid waste systems in emergency/disaster situations. Waste management should be compliant with Joint Administrative Order (JAO) No. 02, series of 2005, Policies and Guidelines on effective and proper handling, collection, transport, treatment, storage and disposal of health care wastes. Also RA6969 and RA9003 - Philippine Ecological Solid Waste Management Act 2000. Check that personnel have been trained to an appropriate standard | Review waste management records with emergencies and training manuals for waste management staff. Refer also to ITEM 116 - Emergency Plan. Review 3rd Edition Healthcare Waste Management Manual of the DOH including waste minimization and handling; segregation, classification and identification/ labelling of waste; onsite collection with Material recovery facility (MRF) and central storage; off-site collection by DENT-EMB accredited contractor with valid transport permit to DENR approved sanitary landfill; quarterly documentation and monitoring signed by pollution control officer; | Documented procedures and maintenance/ inspection records do not exist. | Procedures exist but are only partially compliant with 3rd Edition of DoH Manual of Healthcare Waste - eg not up to date, or training not provided. | Procedures fully comply with the 3rd Edition of DoH Manual for Management of Healthcare Waste. Documented procedures exist, maintenance/inspection records are up to date, personnel have been trained, and resources are in place for implementing emergency maintenance and restoration. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **3.3.6 Fuel storage systems (e.g. gas, gasoline, and diesel)** | | | | | |
| **72. Fuel reserves**<br>Verify that the hospital has fuel supplies or storage tanks of adequate size and safety. Verify the level of demand for fuel at the maximum capacity of the hospital, taking into account the additional capacity required to respond to emergencies and disasters. Check the size of reserve tanks to ensure that the reserve is sufficient to meet the demand for each type of fuel at the maximum capacity of the hospital for at least 72 hours with the high increase in service demand in emergencies and disasters. Observe how much fuel is available at the time of the assessment. Determine how often fuels are delivered and whether supplies can be delivered effectively during emergencies or following disasters, especially if access and road networks have been compromised. Hospitals that do not have fuel reserves or fuel tanks and provided with fuel from petrol stations on a contractual basis, for instance, should be given a low rating. | Direct observation and inspection. Review fuel consumption records. Three days' supply is the target for high rating. ASSESS 24hour fuel consumption from genset | Sufficient for 24 hours or less, or fuel tank does not exist<br>☐ | Sufficient for more than 24 hours but less than 72 hours<br>☐ | Guaranteed to cover at least 72 hours.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **73. Condition and safety of above-ground fuel tanks and/or cylinders**<br>The fuels used for the generators, hospital boilers and other services may differ, so it is important that all fuel tanks are very clearly labelled and, where possible, stored in different areas. All fuel tanks should be well-anchored to prevent them from tipping. Visit the fuel tanks and cylinders to determine the safety and security of the installations and the tanks/cylinders, and should verify that the tanks/cylinders are safe and secure from hazards (e.g. anchors, banded enclosures, safe from fire). Fuel tanks should be located at least 2m away from power lines and from combustible elements such as weeds or dry grass, in a radius of at least 3 meters. If tanks are located in publicly accessible places, they must be protected by a security gate with a lock or padlock.<br>Where tanks/cylinders are supported by concrete or brick walls, the walls should be checked for cracks and the braces or anchors checked for signs of sinking or general deterioration. Large horizontal tanks can slide and break connection hoses, so in seismic areas they should be supported with clamps and flexible connections. Evaluators should check that there are appropriate isolation valves to ensure that fuel tanks can be isolated in the event of damaged pipework.<br>It is important to keep in mind that the heavier the tank/cylinder and the higher its center of gravity, the greater is the likelihood that it will tip over. Cylinders positioned vertically should be anchored/supported in at least three directions.<br><br>IF THE HOSPITAL DOES NOT HAVE THESE SERVICES, LEAVE BLANK. | Direct observation, review of drawings and inspection. Check maintenance and inspection records. Review of certification including Environment and National Resources Department annual inspection certificate. | Tanks are in poor condition; more than 6inches of water in cistern tanks if present; there are no anchors or tank enclosure; tanks are not safely located with respect to hazards | Tanks are in fair condition, anchors and bracing are inadequate for major hazards; tank enclosure has some safety and security measures | Tanks are in good condition; No water mixed with fuel in cistern tanks; anchors and bracing are in good condition for major hazards; the tank enclosure has adequate safety and security and there is evidence of certification. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **74. Safe location of fuel storage away from hospital buildings**<br>Check for:<br>- Tanks are accessible and has proper label<br>- Safe and stored in different areas (isolated from the main building)<br>- Properly provided with support, bracing and anchor<br>- Safe and secure from hazards (fire, banded enclosures), away from power lines<br>- Protected by a security gate with lock or padlock<br>IF THERE IS NO FUEL TANK, LEAVE BOXES BLANK. | Direct observation and inspection. Include in assessment presence and adequacy of bund wall, adequate ventilation and lighting. Refer NFPA or Philippines Mechanical Code. IINTERVIEW officer responsible for fuel tank security | Fuel storage is not accessible and is not located in a secure site | Not all ideal conditions met | Clearly marked, hazard specific location, accessible, well-secured with designated officer responsible for security, bund wall, adequate ventilation and lighting | |
| | | ☐ | ☐ | ☐ | |
| **75. Condition and safety of the fuel distribution system (valves, hoses, connections)**<br>Check for:<br>- Accessible clearly marked and labelled<br>- Safe distance from key clinical and non-clinical facilities<br>- If tanks are enclosed (built with non-combustible materials)<br>- Properly ventilated and well illuminated<br>- Properly secured with fencing, CCTV, and with security alarm for intruder<br>- Accessible for maintenance and for emergencies<br>- Have a good drainage system<br>- Not prone to flooding, landslide or soil liquefaction<br>- Check if there is available fire protection equipment (manual portable fire extinguishers foam type or automatic fire suppression system)<br>IF THERE IS NO FUEL DISTRIBUTION TANK, LEAVE BOXES BLANK. | Direct observation, review of drawings, operation and maintenance manual, and inspection. | Less than half of the system is in safe operational condition. | Between 50% and 90% of the system is in good operational condition and has automatic shut-off valves. | More than 90% of the system is in good operational condition and has automatic shut-off valves and evidence of certification | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **76. Emergency maintenance and restoration of fuel reserves**<br>**Check for:**<br>- Fuel distribution lines is in good conditions, no sign of leakage, deterioration<br>- Flexible connections is attached to the equipment<br>- Availability of inspection, testing and maintenance records<br>- Training records | Direct observation, review of drawings and inspection, operations and maintenance manual, emergency procedures for fuel supply systems, trained personnel | Documented procedures and maintenance/ inspection records do not exist. | Documented procedures exist, maintenance/ inspection records are up to date, personnel have been trained, but resources are not available. | Documented procedures exist, maintenance/ inspection records are up to date, personnel have been trained, and resources are in place for implementing emergency maintenance and restoration. | |
| | | ☐ | ☐ | ☐ | |
| **3.3.7 Medical gases systems** | | | | | |
| **77. Location of storage areas for medical gases**<br>Check:<br>- Oxygen supply banks, as well as storage tanks of medical gases, should be located outside the hospital building because of the risk of tank discharge and explosion.<br>- Verify that there is a site designated solely for storage of tanks and/or cylinders and related equipment for medical gases, and that only this equipment occupies the designated area. These areas should be well-ventilated, well-illuminated and clearly marked and labelled.<br>- There should be secure enclosure around the site, with signage indicating that the gases and equipment are dangerous.<br>- The location should be in an area unlikely to flood, at a distance from any heat sources including fuel sump pits, and protected from flying or falling debris.<br>- The site should be easily accessible for facilities, maintenance and fire response personnel. | Direct observation and inspection, | No sites reserved for medical gases, or sites for medical gases are at high risk of failure due to hazards; there are no protective measures, and storage is not accessible. | Reserved areas in fair condition and fair location; some measures provide partial protection. | In good condition and good location, well-secured and other protective measures in place; storage is accessible. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **78. Safety of storage areas for medical gas tanks and/or cylinders**<br>Check:<br>- Visit areas where medical gas bottles, tanks and cylinders are stored to verify that they are safe and secure and that they are prevented from falling over and protected from hazards (e.g. obstacles, fire, anchors, braces).<br>- The size of the storage areas must also be adequate for the correct handling of bottles, tanks and cylinders from deliveries. Each cylinder containing gas must have permanent marks that show whether it has pure gas or a mix of gases inside.<br>- Storage areas should also show the types of risks and safety measures to be taken, so that the necessary control actions are applied when manipulating the cylinders.<br>- The cylinders should not be painted. In earthquake-prone zones and high-wind areas, medical gas tanks in storage areas should be well braced or anchored. If these tanks or cylinders are stored in undesignated parts of the hospital, such as corridors, the rating should be low.<br>- Ascertain that the personnel responsible for managing medical gases know all safety procedures and isolation requirements for each type of gas being used.<br>- Fire extinguishing equipment must be available, and personnel must be trained in its use. | Direct observation, review of drawings and inspection including compliance with Dept. of Environment regulations. Maintenance and inspection records. DENR provision on fire extinguisher classification of gas with corresponding phase out period. | Medical gas tanks and cylinders in storage areas are poor condition or in poor areas, such as corridors; no protection measures, not secured; personnel are not trained to operate medical gas and fire extinguishing equipment. | Medical gas tanks and cylinders in storage areas are in fair condition, some measures provide partial protection; the quality of anchors and braces is inadequate; personnel are trained to operate equipment. | Good condition, well-secured and protected, anchors are of good quality for major hazards; medical gas and fire extinguishing equipment operated by qualified personnel and fully compliant to Department of Environment. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **79. Condition and safety of medical gas distribution system (e.g. valves, pipes, connections)**<br>Verify that storage devices and distribution networks use color-coding and labelling to identify different types of medical gases. In addition to different colors, the bottles or cylinders for each type of gas use different valve configurations, eliminating the hazard of connecting the wrong type of gas to the supply.<br>The major danger if gas tanks fall is that the valves will break and there will be an uncontrolled flow of pressurized gases escaping into atmosphere with dangerous consequences. Inspect the operation of the retaining valves in the cylinder banks, outage valves and intake points; ensure that couplings are flexible, and there is enough play to tolerate small movement, but that tanks cannot fall or knock against each other while they are connected to the supply bank. Tubing should be protected and correctly anchored to structural elements. Flexible couplings should be used where tubing crosses structural joints. It is important to examine the network for leaks. Check the alarm system, the capacity of operators and the maintenance system, as documented in the maintenance log-book and records. | Direct observation, review of drawings and inspection. Maintenance records. | Less than half of the system is in good working condition. | Between 50% and 80% of the system is in good working condition. | More than four fifths of the system is in good working condition. | |
| | | ☐ | ☐ | ☐ | |
| **80. Condition and safety of medical gas cylinders and related equipment in the hospital**<br>Gas bottles, tanks and cylinders are usually located in the service areas where they are used. They contain a variety of gases that are under high pressure; some are toxic, others are flammable. In general, the gas containers should be well-ventilated, braced or anchored to avoid damage to their valves if they fall, and to avoid injuring patients and staff or damaging other equipment. Each oxygen outlet should have a valve that can close the supply. Quick access to the premises is necessary and the location of the keys should be clearly marked for authorized personnel to use.<br>Vertical oxygen tanks should be anchored in three or four directions with welded connections, bolts or evenly spaced tie-downs; horizontal tanks should be anchored to walls so they cannot slide as a result of shaking during seismic events. Medical gas distribution pipes should have flexible connections when passing from building to building or across expansion/ seismic joints in earthquake-prone regions. | Direct observation, review of drawings and inspection. | Medical gas tanks and cylinders in hospital areas are in poor condition, no protective measures; not secured. | Medical gas tanks and cylinders are in fair condition; the quality of anchors and braces is inadequate; some measures provide partial protection. | Good condition, well-secured and protected and hydro tested; anchors are of good quality for major hazards. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **81. Availability of alternative sources of medical gases**<br>Verify that alternative or standby sources for medical gases have an oxygen supply bank with the necessary reserve capacity and have reserve cylinders or bottles available. Confirm whether the supplier of medical gases is in the vicinity and has reserves available to enable an appropriate supply chain in an emergency. Assessors can obtain this information through supplier contract details and organizational policies and procedures. | Direct observation, review of drawings and inspection. Refer also to SW 134. | Alternative sources are not available. | Alternative sources in place but delivery of supplies takes longer than 15 days. | Sufficient alternative sources are available at short notice (less than 15 days). | |
| | | ☐ | ☐ | ☐ | |
| **82. Emergency maintenance and restoration of medical gas systems**<br>The maintenance division should provide the operations manual and preventive maintenance records for the medical gas system. Verify that there are emergency procedures for maintaining the medical gas system in emergency/disaster situations. Check that personnel have been trained to an appropriate standard to maintain the correct level of safety of the hospital's medical gas systems in both routine and emergency/disaster situations. | Direct observation, review of drawings and inspection. Review inspection records. | Documented procedures and maintenance/ inspection records do not exist. | Documented procedures exist, maintenance/ inspection records are up to date, and personnel have been trained, but resources are not available. | Procedures exist, maintenance/inspection records are up to date, personnel have been trained, and resources are in place for implementing emergency maintenance and restoration. | |
| | | ☐ | ☐ | ☐ | |
| **3.3.8 Heating, ventilation, and air-conditioning (HVAC) systems** | | | | | |
| **83. Adequate location of enclosures for HVAC equipment**<br>Enclosures for boilers should be located away from the hospital building. Preferably, they should be housed in installations with some roof cover, isolated from fuel storage, in areas that are easy to access and difficult to obstruct or flood. When central air-conditioning units are on the roof of buildings they should be protected from the weather. Any HVAC equipment should be easy to access (obstacles to access should be cleared) and positioned in locations that are protected from flooding. | Direct observation and inspection | HVAC enclosures are not accessible and they are not located in a safe site; there are no protective measures. | HVAC enclosures are accessible, located at a safe site; some measures provide partial protection from hazards. | HVAC enclosures are accessible, in a safe location and protected from hazards. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **84. Safety of enclosures for HVAC equipment**<br>Check for:-<br>- Equipment has proper enclosure (specially for rotating equipment)<br>- Accessible with enough space for maintenance<br>- Properly ventilated and illuminated<br>- Control panels is safe from water ingress<br>- Plant rooms equipped with fire extinguishing equipment and with emergency lighting | Direct observation and inspection | HVAC equipment is not accessible; no protection measures for safe operation and maintenance. | HVAC is accessible; some measures provide partial protection. | HVAC equipment is accessible, wide range of protection measures in place. | |
| | | ☐ | ☐ | ☐ | |
| **85. Safety and operating condition of HVAC equipment (e.g. boiler, exhaust)**<br>Check for:<br>- Equipment are in good condition and well maintained<br>- Provided with proper bracing, support, anchorage, vibration isolators/rubber pads, and flexible connections<br>- Availability of drawings/plans<br>- Regularly inspected and tested<br>- Availability of inspection, testing, and maintenance records | Direct observation, review of drawings and inspection. Operation and Maintenance Manuals | HVAC equipment in poor condition, not maintained. | HVAC equipment in fair condition; some measures provide partial protection, but no regular maintenance. | Good condition, well-secured and protected from hazards (e.g. anchors are of good quality); regular maintenance and testing of control and alarms conducted. Operational relief valve on boiler. | |
| | | ☐ | ☐ | ☐ | |
| **86. Adequate supports for ducts and review of flexibility of ducts and piping that cross expansion joints**<br>All heating, ventilation and air-conditioning (HVAC) ductwork pipes should be in good condition and must be supported adequately by the building structure. In earthquake-prone areas, there should be no possibility of horizontal movement. Connections should be flexible, while the bracing should be rigid but should allow ductwork to move in three directions. In areas of high winds, ductwork that crosses roofs should be anchored, and should be placed above the level of the roof's drains.<br>Check the distance between supports to ensure that there are no deflections caused by the weight of the ducts, which could cause them to fall. Where internal ductwork is hidden by false ceilings, ceiling tiles should be removed to check the ducts. Ductwork should be flexible across expansion joints. Ductwork that crosses between blocks of buildings units should be inspected to ensure that it is not damaged and corrosion has not started to occur around the ducts adjacent to each block or building. | Direct observation and inspection. Include requirement for seismic bracing & support as per National Structural Code of the Philippines (NSCP) or AISC1997 edition and Philippine Society of Engineers (PSME) Code. | Supports are lacking and/or connections are rigid | Only partial compliance with National Structural Code of the Philippines (NSCP) or AISC1997 edition | Fully compliant with National Structural Code of the Philippines (NSCP) or AISC1997 edition | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **87. Condition and safety of pipes, connections and valves**<br>Pipes should travel through conduits so that they are protected from humidity and corrosion when passing through walls or fixtures or where they breach a fire compartment. Check that valves operate and should review the condition of pipes in kitchens, boilers or other areas where there is steam to ensure that coatings or piping are protected. Check that condensation will not affect the insulation of piping and that leaks from upper floors will not affect elements and services below. Humidity can ruin false ceilings and other hospital elements or equipment that come into contact with the piping.<br>Piping should have flexible connections where it crosses expansion joints of the building, and spans from building to building in earthquake-prone areas or where it is connected to a rigid piece of equipment. The pipes should be supported at a distance from electrical panels or wiring. Safety valves or air valves for steam or for hot or room-temperature water respond to seismic amplifications such as inverted pendulums, so they should have lateral supports. | Direct observation, review of drawings and inspection. Inspection, testing, and maintenance records | Less than 50% of pipes are in good condition; limited protective measures against hazards. | More than 50% of pipes are in good condition | - All pipes, ducts are in good condition, no leaks, and well maintained<br>- Safe from hazard<br>- Provided with proper bracing, hangers/ support, sway bracing, anchorage, and flexible connections<br>- Insulated piping | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **88. Condition and safety of air-conditioning equipment**<br>Check the condition and safety of air-conditioning units which may be local or central, compact or not. Central air-conditioning units may be compact or split with a fan coil unit. As not all air-conditioning systems can accommodate all requirements of areas with very high sanitation requirements (e.g. operating rooms, intensive care units) and other areas of the hospital, check the physical and technical condition of the equipment, including its suitability for servicing the area where it is installed.<br>Air-conditioning units are very heavy and are generally located in areas with ventilation, such as on roofs, upper floors of the hospital, or floors dedicated to building machinery and equipment. Because of their weight, air-conditioning units can significantly change the behavior of the structure. Unless they are well-secured or anchored, the units can move or overturn and, as a result, can cause partial or total collapse of the building. Smaller split systems have the evaporator inside and the compressor and condenser outside, on the roof, patio or elsewhere. The outside equipment is vulnerable to strong winds and floods and must be well anchored and located out of reach of water that would damage the electrical system. Indoor units should be firmly anchored to structural elements; if they should fall they could injure people or damage other equipment. The condition and safety of window units or small portable units should also be checked. | Direct observation, review of records, drawings and inspection, maintenance. | Air-conditioning units in poor condition, not secured. | Air-conditioning units are in fair condition; some measures provide partial protection (e.g. quality of anchors and braces is inadequate). | - Equipment (Air-conditioning, ventilating fans/blowers) are in good condition, and well maintained<br>- Safe from hazard<br>- Provided with proper bracing, hangers/ support, anchorage, and flexible connections | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **89. Operation of air-conditioning system (including negative pressure areas)**<br>LEFT BLANK IF NOT APPLICABLE (this is applicable for one of the local hospital SAN LAZARO HOSPITAL with Biological isolation room)<br>Evaluators should check the ability of the hospital to establish zones for the air-conditioning systems to reduce the spread of infectious diseases or fire. If there are negative pressure rooms in areas of high risk for infectious diseases, evaluators should check that these zones can be isolated from the air-conditioning system. | Direct observation, review of records, drawings and inspection. For high rating there should be a negative pressure isolation room for ER. | Air-conditioning system has no capability for establishing zones of the hospital | Air-conditioning system can establish zones, but has no capacity to separate air circulating between high-risk areas and other areas of the hospital | Air-conditioning system can isolate air from high-risk areas; negative pressure rooms are available. HEPA filters in high sterile areas. | |
| | | ☐ | ☐ | ☐ | |
| **90. Emergency maintenance and restoration of HVAC systems**<br>Check for:<br>- Availability of operations manual and preventive maintenance records<br>- Emergency procedure for maintaining HVAC systems<br>- Personnel is properly trained for maintenance and safety (normal operation & emergency situations) | INTERVIEW HVAC engineer. Direct observation, review of records, drawings and inspection. Include in assessment Fire Dampers for all fire rated duct and ductwork penetrating thru a fire rated walls or floors (as per Fire Code of the Philippines, NFPA, PMC) | NO procedures for HVAC | HVAC staff time not available at all | Documented procedures exist, maintenance/ inspection records are up to date, personnel have been trained, and resources are in place for implementing emergency maintenance and restoration and compliant with NFPA/ PMC | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **3.4 Equipment and supplies** | | | | | |
| **3.4.1 Office and storeroom furnishings and equipment (fixed and movable)** | | | | | |
| **91. Safety of shelving and shelf contents**<br>Verify that shelving (whether as shelving units or wall attachments) and its contents should be safely secured from falling. Shelves should not pose an occupational hazard or be at risk of falling in a hazard event. Check that they are located where they will not obstruct emergency access, evacuation routes or emergency exits. Shelves of medical contents should all have lips or railings to prevent bottles or other material from falling.<br>Verify that shelves are anchored to the walls and/or are braced and that the contents are secured. Clinical areas, offices, libraries and clinical records archives commonly have shelving units with glass doors. These units should be connected to each other and unbreakable material should replace the glass. Where there are rows of high, free-standing shelves, these must be anchored to the floor, connected to each other at the top by ties that cross the room and attached to the wall at each end of the row of shelves. Connecting the shelves increases lateral stability, lessening the chance that they will fall. For tall shelving made of combustible material, the condition of lighting fixtures and wiring near the shelves should be inspected. | Direct observation and inspection | No shelving/contents fixed. | Some shelving/contents fixed. | All shelving/contents fixed. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
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| **92. Safety of computers and printers**<br>Much of a hospital's information is found on its computers. To ensure that a facility continues to function, computers and their contents must be secured against damage caused by natural hazards.<br>Verify that computer tables are secure and will not move. If tables are on wheels, the wheels should be in the locked position. Where there is raised access flooring that allows computer wiring to run under the floor, the evaluators should check anchors to the structural slab and vertical and horizontal bracing.<br>In hospitals which are at risk of flooding or heavy rain, computer centers and computers, particularly servers, should be located where they will not be at risk of water damage. Basements and ground-floor areas are particularly susceptible to flooding. Sprinkler systems for firefighting systems may also damage computers and other electronic equipment. | Direct observation and inspection | No computers/printers fixed. | Some computers/ printers fixed. | All computers/printers fixed and safe from flooding. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **3.4.2 Medical and laboratory equipment and supplies used for diagnosis and treatment** | | | | | |
| **93. Safety of medical equipment in operating theatres and recovery rooms**<br>Verify that medical equipment is safely secured with respect to natural and other hazards. Operating theatres and recovery rooms should not be located where they are most vulnerable to the effects of natural hazards, including flooding, earthquakes and winds.<br>Verify that lamps, equipment for anesthesia and surgical tables are operational and that table or cart wheels are all locked, and in turn should be secured to the operating table when in use. Ceiling light fixtures in surgery should function, the hinges on the extension arm should be properly adjusted, and fixtures should be well-anchored to beams to prevent them from swinging. Braces, latches and castor brakes on all equipment should be inspected.<br>Life support equipment should be completely anchored, eliminating the possibility of disconnection from the patient. Flexible hoses and tubes with swivel connectors and automatic shut-off valves should be used for connecting equipment to medical gases, water or steam. Cables that connect equipment to a power source should pass through a conduit so that they cannot tangle during rotational motion. Equipment should not be placed above the patient. When not in use, equipment should be braced against a wall, with brakes applied to carts and rolling tables. | Direct observation and inspection | Not fully fixed.<br>☐ | N/A.<br>☐ | Equipment is in fixed and safe.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **94. Condition and safety of radiology and imaging equipment**<br>Verify that radiology and imaging equipment is safely secured with respect to natural hazards. They should be located where flooding cannot damage them. Verify that the condition of X-ray equipment and carts holding the equipment is in good condition and is secured; brakes for cart wheels must be functional. Where computed axial tomography (CAT) scanners are used, verify that they function and safety measures are in place. Operators should be familiar with all safety protocols for using the equipment. Criteria used in this item (94) can be applied to other equipment that should be anchored.<br>In earthquake-prone areas, adequate anchors for this heavy equipment are needed to keep it from tipping or moving. The higher the center of gravity of these items, the greater the possibility they will tip over. Power connections and other connections should be flexible; it is better for cables to be disconnected than to break. Hospital equipment is highly sensitive to sudden changes in voltage (e.g. computed tomography scanner, mammography equipment, excimer laser, magnetic resonance imaging scanner) so evaluators should ensure that this equipment has voltage regulators and earth-grounding to protect equipment from electrical discharge. | Direct observation and inspection | Not fully fixed.<br>☐ | N/A<br>☐ | Equipment is fixed and safe.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **95. Condition and safety of laboratory equipment and supplies**<br>The instructions to evaluators in items 93 and 94 should be taken in consideration when evaluating the condition and safety of laboratory equipment. When inspecting the laboratory, evaluators should pay special attention to handling and securing biological samples. Biosafety measures should be in place. If biological and chemical containers break or leak at any time, technicians, patients or the laboratory itself could be contaminated. Further safety measures may be required to protect laboratory equipment and supplies from movement or damage due to hazardous phenomena. Refrigeration units for laboratory supplies should be inspected to ensure that they are in good order and their contents are secured. In hospitals in earthquake-prone zones or high-wind areas, shelving used for storage of laboratory supplies, including biological and chemical containers, must be well-anchored (see item 93). There should be adequate fire protection items or systems (extinguishers, standpipe systems etc.) and laboratory staff must be trained in operating this equipment. | Direct observation and inspection | Not fully fixed. | N/A. | Equipment is fixed and safe. | |
| | | ☐ | ☐ | ☐ | |
| **96. Condition and safety of medical equipment in emergency care services unit**<br>The instructions for evaluators in items 93 and 94 should be taken into consideration when assessing the condition and safety of equipment in the emergency care services unit. Evaluators should check that this equipment – which includes crash carts, oxygen tanks, monitors etc. – is in working order and is secured. | Direct observation and inspection | Not fully fixed. | N/A. | Equipment fixed and safe. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **97. Condition and safety of medical equipment in intensive or intermediate care unit**<br>The instructions for assessors in items 93 and 94 should be taken into account when assessing the condition and safety of equipment in the intensive care unit. Evaluators should check that basic and specialized intensive care equipment is in good working order and is well-secured. This equipment includes life-support systems, ventilators, resuscitation equipment, oxygen tanks, monitors etc. The most rigorous inspection should be carried out in the quarantine units of the hospital because of the added hazards of contamination or infection. | Direct observation and inspection | Not fully fixed. | N/A. | Equipment fixed and safe. | |
| | | ☐ | ☐ | ☐ | |
| **98. Condition and safety of equipment and furnishings in the pharmacy**<br>The instructions for evaluators in items 93 and 94 should be taken into account when assessing the condition and safety of equipment in the pharmacy. Refrigeration units for medicine and other supplies should be inspected to ensure that they are in good order and their contents are secured. In hospitals in earthquake-prone zones or high-wind areas, shelving used for storage of medicines must be well-anchored (see item 93). Because some materials in the pharmacy are flammable, there should be adequate fire protection items or systems (extinguishers, standpipe systems etc.) and pharmacy staff must be trained in operating this equipment. Measures should be in place to ensure that the pharmacy is secured against theft. | Direct observation and inspection | Not fully fixed. | N/A. | Equipment fixed and safe. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **99. Condition and safety of equipment and supplies in the sterilization services**<br>The instructions for evaluators in items 93 and 94 should be taken into account when assessing the condition and safety of equipment in the hospital's sterilization services (in a unit or otherwise). assessors should check the condition of autoclaves and should review the operator's training in managing them in cases of emergency. Water leaks originating outside the units and possible contamination of stored items are concerns in sterilization units, so evaluators should determine whether there are water filtration systems on upper floors, water outlets or, in the worst case, toilets that could contaminate stored items. Proper labelling for routing sterile and contaminated equipment should be checked. Evaluators must ensure that safety measures are being used for shelving and trolleys where sterilized materials are stored (see item 92); materials can be contaminated if shelves or trolleys tip over during a seismic event.<br>Autoclaves are heavy and they should be completely anchored in earthquake-prone zones. Water supply to autoclaves should have flexible connections in earthquake-prone areas. Evaluators must also ensure that fire protection items or systems are present (including extinguishers, standpipe systems etc.) and that the staff are qualified to use them. The proximity of doors and windows to the materials being sterilized should be checked, as well as the materials used for the doors and windows | Direct observation and inspection | Not fully fixed.<br>☐ | N/A.<br>☐ | Equipment fixed and safe.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **100. Condition and safety of medical equipment for obstetric emergencies and neonatal care**<br>The instructions for evaluators in items 93 and 94 should be taken into account when assessing the condition and safety of equipment for obstetric emergencies and neonatal care. While a hospital may not have specialized services for neonatal care, evaluators should check that equipment and supplies are available for a basic level of emergency care for obstetric emergencies and neonatal care. Check that equipment is in working order and is secured. Specific neonatal equipment includes incubators, resuscitation equipment, oxygen tanks, monitors etc. Sanitation and hygiene should be rigorously reviewed in these units, particularly in birthing rooms, because of the vulnerable condition of newborns. Doors and windows should be able to resist strong winds; if water penetrates the area, specialized equipment can be damaged or destroyed. It is difficult to transfer newborns to other areas of the hospital because of their vulnerability. | Direct observation and inspection | Not fully fixed.<br>☐ | N/A.<br>☐ | Equipment fixed and safe.<br>☐ | |
| **101. Condition and safety of medical equipment and supplies for emergency care for burns**<br>The instructions for evaluators in items 93 and 94 should be taken into account when assessing the equipment for emergency care for burns. While a hospital may not have specialized services for burns patients, evaluators should check that equipment and supplies are available for a basic level of emergency care for burns. Evaluators should check that basic and/or specialized burn care equipment and supplies are in good working order and well-secured. This equipment includes life-support systems, ventilators, oxygen tanks, monitors, crash carts etc. | Direct observation and inspection | Not fully fixed.<br>☐ | N/A.<br>☐ | Equipment fixed and safe.<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **102. Condition and safety of medical equipment for nuclear medicine and radiation therapy**<br>The instructions for evaluators in items 93 and 94 should be taken into account when assessing the condition and safety of equipment for nuclear medicine and radiation therapy. Check the handling, condition and safety of samples. Supplies should be stored in areas where they cannot fall or be hit by other objects. If containers break or leak, technicians and patients could be contaminated. Further safety measures may be required to protect equipment from movement or damage due to hazardous phenomena. Drums used for radioactive waste must be in safe locations and have secure covers. Verify that radiation sensors and chambers for handling samples function correctly, and that signs indicate restricted areas. As in other areas of the hospital, fire-extinguishing equipment should be checked and evaluators should verify that staff know how to operate it.<br>IF THE HOSPITAL DOES NOT HAVE THESE SERVICES, LEAVE BLANK. | Direct observation and inspection | Not fully fixed. | N/A. | Equipment fixed and safe. | |
| | | ☐ | ☐ | ☐ | |
| **103. Condition and safety of medical equipment in other services**<br>Many of the elements addressed in items 93 and 94 will be applicable in other services of the hospital not already addressed. These could include infectious disease services, cardiology, orthopedics, pediatrics, maternity, physiotherapy etc. Evaluators should carry out a review of the remaining areas, giving the most weight to areas that would influence the overall functioning of the hospital. | Direct observation and inspection | Not fully fixed. | N/A. | Equipment fixed and safe. | |
| | | ☐ | ☐ | ☐ | |
| **104. Medicines and supplies**<br>Verify the level of demand for medicines and supplies at planned maximum capacity of the hospital, taking into account the types of services provided by the hospital and the additional capacity required to respond to emergencies and disasters. Check if the availability of medicines will cover this maximum demand for at least 72 hours to ensure that the hospital can sustain the provision of services in an emergency or disaster. The WHO List of Essential Drugs can be used as a reference. | Direct observation, review of documentation and inspection. | Not compliant with Item 134 | N/A. | Met if compliant with Item 134. | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **105. Sterilized instruments and other materials**<br>Evaluators should verify the level of the demand for sterilized instruments at the hospital's maximum capacity, taking into account the types of services provided and the additional capacity required to respond to emergencies and disasters. Check if the availability of medicines will cover this maximum demand for at least 72 hours to ensure that the hospital can sustain the provision of services in an emergency or disaster. Evaluators should confirm that the hospital has a supply of sterilized materials for use in an emergency (evaluators can check the supply prepared for the following day), and that it has the means to sterilize instruments and provide sterilized materials to cover maximum demand for at least 72 hours. | Direct observation, review of documentation and inspection. | Not compliant with Item 134 | N/A. | Met if there is a documented system to ensure continued sterilization of instruments | |
| | | ☐ | ☐ | ☐ | |
| **106. Medical equipment specifically used in emergencies and disasters**<br>Verify the existence and maintenance of medical equipment and instruments used in the hospital specifically in emergencies – such as endotracheal intubation kits, chest drain sets, surgical sets, neck collars, backboards and pelvic binders, infusion/ transfusion sets, emergency obstetric kits, nebulizers, oxygen masks etc. Verify the level of the demand for medical instruments at the maximum capacity of the hospital, taking into account the types of services provided and the additional capacity required to respond to emergencies and disasters. Check that the availability of instruments will cover the maximum demand for at least 72 hours. | Direct observation, review of documentation and inspection. | Not compliant with Item 134 | N/A. | Met if compliant with Item 134 (system in place). | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **107. Supply of medical gases**<br>Verify the level of demand for medical gases at the maximum capacity of the hospital, taking into account the types of services provided by the hospital and the additional capacity required to respond to emergencies and disasters. Check that the availability of medical gases will cover maximum demand for at least 15 days to ensure that the hospital can provide services in emergencies. Check the reserve capacity of each type of medical gas used in the hospital, taking into account both the central supply bank and the cylinders or bottles in areas of service. The 15- day supply standard is used because large quantities of medical gases are required and deliveries of these gases tend to be infrequent. Verify the existence of up-to-date emergency contact details (e.g. telephone numbers, addresses) of medical gas suppliers. It is also important to confirm the frequency of deliveries of gases. | Direct observation, review of documentation and inspection. | Not compliant with Item 134 | N/A | Met if compliant with Item 134 (system in place) | |
| | | ☐ | ☐ | ☐ | |
| **108. Mechanical volume ventilators**<br>Verify that an inventory of the quantity, condition and protocols for use of this equipment is available (usually from the Hospital Emergency/Disaster Committee).Verify the level of demand for mechanical volume ventilators at the maximum capacity of the hospital, taking into account the types of services provided by the hospital and the additional capacity required to respond to emergencies and disasters. Check that the ventilators available will cover this maximum demand for at least 72 hours to ensure that the hospital can sustain the provision of services in an emergency or disaster. | Direct observation, review of documentation and inspection. | All ventilators are not working | N/A. | Met if all ventilators are working | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **109. Electro medical equipment**<br>Verify that an inventory of the quantity, conditions and protocols for use of electro medical or clinical engineering equipment is available (usually from the Hospital Emergency/ Disaster Committee).Verify the level of demand for electro medical equipment (e.g. portable electrocardiographs, blood gas monitors, surgical cautery equipment, syringe pumps, ultrasound machines) at the maximum capacity of the hospital, taking into account the types of services provided by the hospital and the additional capacity required to respond to emergencies and disasters. Check that the availability of electro medical equipment will cover this maximum demand for at least 72 hours to ensure that the hospital can sustain the provision of services in an emergency or disaster. | Direct observation, review of documentation and inspection. | Not compliant with 134 | N/A. | Met if there is a sufficient supply of ECGs, pulse oximeters and defibrillators | |
| | | ☐ | ☐ | ☐ | |
| **110. Life-support equipment**<br>Verify that an inventory of the quantity, condition and protocols for the use of this equipment (e.g. defibrillators, ventilators) is available (usually from the Hospital emergency/Disaster Committee). Verify the level of the demand for life-support equipment at the maximum capacity of the hospital, taking into account the types of services provided by the hospital and the additional capacity required to respond to emergencies and disasters. Check that the availability of life-support equipment will cover this maximum demand for at least 72 hours to ensure that the hospital can sustain the provision of services in an emergency or disaster. | Direct observation, review of documentation and inspection. | ICU not functional | | Met if a fully functional ICU is equipped | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **111. Supplies, equipment or crash carts for cardiopulmonary arrest**<br>Verify that an inventory of the quantity, condition, locations and protocols for the use of this equipment and of supplies for managing cardiopulmonary arrest is available (usually from the Hospital Emergency/Disaster Committee). Evaluators should verify the level of the demand for cardiopulmonary arrest at the maximum capacity of the hospital, taking into account the types of services provided by the hospital and the additional capacity required to respond to the most likely emergencies and disasters. Evaluators should check that the availability of these supplies and equipment will cover this planned maximum capacity for at least 72 hours to ensure that the hospital can sustain the provision of services in an emergency or a disaster. | Direct observation, review of documentation and inspection. | No functioning crash carts | Some functioning crash carts | Met if there is a fully stocked crash cart for each ward | |
| | | ☐ | ☐ | ☐ | |

# MODULE 4: Emergency and Disaster Management

Name of Hospital: _____ Date _____

Name of Evaluator: _____

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **4.1 Coordination of emergency and disaster management activities** | | | | | |
| **112. Hospital Emergency/Disaster Committee**<br>Verify that a committee has been formally established (with policy directives) to coordinate hospital emergency response and recovery operations. Responsibility would also include coordination of preparedness measures to develop the readiness of the hospital for response and recovery. Verify that the hospital positions on the Hospital Emergency/ Dis aster Committee are occupied by senior personnel from different and key hospital departments/disciplines (e.g. hospital director, director of administration, chief of nursing, medical director, chief of surgery, chief of laboratory services, chief of maintenance, chief of emergency services, chief of transportation, chief of security and chief of support services). The leadership and commitment of senior executives provides critical support for emergency and disaster management, including for preparedness, response and recovery. | Hospital orders and latest minutes of emergency committee meeting | No hospital orders | Hospital office orders | Hospital office orders (including minutes) | |
| | | ☐ | ☐ | ☐ | |
| **113. Committee member responsibilities and training**<br>Determine whether committee members are fulfilling their collective and individual responsibilities regarding emergency and disaster management (i.e. in preparedness, response and recovery operations). Members should have participated in internal or external training courses that enable them to understand the role of the committee with respect to hospital emergency and disaster management and their individual roles. | Hospital orders and copies of certificates of training of emergency committee members | No hospital orders | Hospital orders on training | Documentation of certification of training for all committee members | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **114. Designated emergency and disaster management coordinator**<br>Verify whether a staff member has been designated as the hospital emergency/disaster management coordinator, and how much of that person's time is devoted to emergency and disaster management. | Hospital orders for appointment of Emergency coordinator and organizational chart showing emergency coordinator | No post | hospital order for coordinator | Orders + meeting coordinator + deputies | |
| | | ☐ | ☐ | ☐ | |
| **115. Preparedness programme for strengthening emergency and disaster response and recovery**<br>Evaluators should verify that the Hospital Emergency/Disaster Committee has a programme or action plan to strengthen the preparedness of the hospital for response and recovery to emergencies and disasters. The preparedness activities should by supported by a budget and included as part of the annual work programme of the hospital. Evaluators should determine if preparedness activities are being implemented in accordance with the programme or action plan. | Hospital annual plan showing the emergency program part | No program identified in hospital annual work plan | partial program | Risk awareness, Preparedness, response and recovery plan including staff training and budget, identified in Hospital Annual Plan | |
| | | ☐ | ☐ | ☐ | |
| **116. Hospital incident management system**<br>Evaluators should verify if there are any incident management arrangements for the command, control and coordination of the different hospital departments in hospital emergency and disaster response. This also includes coordination with external agencies to support local and hospital emergency response. | Document describing the hospital incident management system | No structure | Organizational structure clear with a mandate from Hospital Order | Functional incident management system ordered | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **117. Emergency Operations Centre (EOC)**<br>Verify that an EOC has been designated in a safe and secure location. The EOC should already be equipped or there should be arrangements to rapidly equip a converted meeting room for immediate set-up and operation. Determine that minimum equipment and supplies are readily available to set up the EOC for communications, information management (documentation, monitoring boards/screens), identification, security, and well-being of EOC staff. The EOC should be backed up by an information management system that supports emergency operations and that can link to data from the hospital's information management system. There should be a procedure for setting up and managing the EOC, including designation of a responsible person to set up and ensure smooth operation of the logistical aspects of the center. | A VISIT to the designated EOC is required. Risk assessment documentation required to match to specific hazards | No EOC designated | EOC designated only | Specific hazard safe EOC, fully equipped, functional and tested | |
| | | ☐ | ☐ | ☐ | |
| **118. Coordination mechanisms and cooperative arrangements with local emergency/disaster management agencies**<br>Verify that formal coordination mechanisms and cooperative arrangements exist between the hospital and local emergency/ disaster management agencies (e.g. local emergency management coordination committees, emergency services, civil protection, fire, police) in order to support hospital functions in time of emergency or disaster. Annual drills. | Memorandum of understanding with outside agencies, including records of joint drills | NO arrangements | Memorandum of agreements with fire, police, barangay | Proof of meetings -and drills, etc. | |
| | | ☐ | ☐ | ☐ | |
| **119. Coordination mechanisms and cooperative arrangements with the health-care network**<br>Verify that formal coordination mechanisms and cooperative arrangements exist between the hospital and local health authorities, public, private and other nongovernmental hospitals (especially neighboring hospitals), practitioners and volunteer groups to ensure provision of essential health services in the community during times of emergency or disaster. Appropriate elements should have been tested in regular exercises. This is a requirement of Administrative Order No FAE 007s 1998: Policies and guidelines on the transfer of patients between DOH metro Manila Hospitals. | Memorandums of agreement with other hospitals (for private hospitals) and standard operating procedures and processes with Department of Health for public hospitals | No arrangements | Health sector network Memorandum of agreements with other facilities (private) | SOP for arrangements disseminated | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **4.2 Hospital emergency and disaster response and recovery planning** | | | | | |
| **120. Hospital emergency or disaster response plan**<br>Hospital has a documented, routinely reviewed and updated all hazards emergency or disaster response plan that defines actions to be taken in anticipation of, during and after any type of emergency or disaster to which the hospital is expected to respond. Review the plan and confirm if the hospital has the necessary resources to implement it. Check the content of the response plan. At least the content of the all-hazards plan includes sections on the hospital incident management system, coordination, logistics, roles and responsibilities of key staff and departments, human and financial resources, patient reception and management, including triage and decontamination, communication, staff welfare and security as a minimum. Plan reviewed annually and after exercise. | A copy of the disaster response plan, including proof of its last update | No plan | Approved Plan | Annually reviewed plan including at least the twenty items identified in the PT from 4.3.1 to 4.3.19: infection control; referral; emergency response procedure; treatment guidelines; disaster admin procedures; resource mobilization; emergency dept. admission; expansion; records; safety maintenance; surveillance; morgue; transport and logistics; food supplies; psychosocial support; drills; volunteers; security; waste management | |
| | | ☐ | ☐ | ☐ | |
| **121. Hospital hazard-specific sub plans**<br>Refer to Module 1 for an assessment of hazards which may affect the hospital. | A copy of the disaster response plan, including proof of its last update | No specific hazards considered | Some alternative hazards considered | All hazards in risk assessments mentioned | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **122. Procedures to activate and deactivate plans**<br>Verify that there are procedures for how, when and by whom the emergency response plan, sub plans and contingency plans are activated and deactivated, including triggers and early warning mechanisms. In particular, determine :<br>• what type of signal is used and the criteria for activating plans for internal or external events;<br>• who has the responsibility for activating and deactivating the hospital's emergency or disaster response plans;<br>• whether hospital staff have been trained in the activation procedures;<br>• how often the activation procedures are tested.<br>• activation procedures out of office hours, at weekends and during holidays. This is a requirement of Administrative Order No 182s 2001: Adoption and implementation of Code Alert systems for DOH hospitals during emergencies and disasters. Pp26-28 | INTERVIEW with a Departmental head, or senior administrator or nurse supervisor about knowledge of activation of alert systems. Documentation of activation and stand down in response plan | No activation procedures | Activation system partially understood | Up to date Coding system for activation and stand down and well understood/ disseminated | |
| | | ☐ | ☐ | ☐ | |
| **123. Hospital emergency and disaster response plan exercises, evaluation and corrective actions**<br>Exercises should be carried out with specific process for the management of the exercises was followed – including development, conduct and evaluation. The process should have included a way to identify corrective actions, such as a post-exercise after action review, and to address the gaps noted in the exercise, including additional preparedness measures and training needs, and the revision of the emergency response plan. | Documentation of drills including debrief and actions | No exercises in the last year | Exercise carried out | Evidence of exercise, debrief, documentation and actions | |
| | | ☐ | ☐ | ☐ | |
| **124. Hospital recovery plan**<br>Documented, routinely reviewed and updated all hazards hospital recovery plan that defines actions to be taken to recover normal functions of the hospital after an emergency or disaster. | Documented recovery plan including budget procedures based on DoH guidelines | No recovery plan | Documented plan | Documented and updated plan | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **4.3 Communication and information management** | | | | | |
| **125. Emergency internal and external communication**<br>Verify that the hospital switchboard (central service responsible for routing calls) has a functional internal and external communication system with back-up measures (eg runners) if required. Switchboard operators understand emergency codes and how to use them. | INTERVIEW information officer or designate (this may be simply the phone operators in a small hospital) Identify radios for emergency use in EOC | Basic phone system only | Small range of communication options identified | A wide range of alternative communication systems have been identified such as radios, identified runners, satellite phones | |
| | | ☐ | ☐ | ☐ | |
| **126. External stakeholder directory**<br>Verify that an up-to-date directory with contact information of external stakeholders and emergency support services is available to the Hospital Emergency/Disaster Committee, EOC staff and other key hospital administration and emergency staff, including switchboard operators. | A specific external stakeholder directory with a record of its last update | No directory | Directory not updated | Directory updated | |
| | | ☐ | ☐ | ☐ | |
| **127. Procedures for communicating with the public and media**<br>Verify that procedures are in place for communicating with the public and media in case of an emergency or disaster, and that a spokesperson(s) has been nominated for this role. Determine if spokespersons have received specific media training and if exercises have tested this skill | Prepared media releases short INTERVIEW with designated spokesperson | No spokesperson | Spokesperson identified | Trained spokesperson /communicator with some examples of media releases | |
| | | ☐ | ☐ | ☐ | |
| **128. Management of patient information**<br>Check how the hospital and the response plans deal with safe storage and movement of medical and other critical patient records and should verify that procedures are in place to ensure continuity of medical record-keeping, timely access to patient data, and secure storage of confidential information. | Short INTERVIEW with manager of records department. Written procedure for records in an emergency | No identified system for records in an emergency | Simple record system for emergency | Assigned person to patient information with a departmental emergency and human resource if necessary | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **4.4 Human resources** | | | | | |
| **129. Staff contact list**<br>Verify that an up-to-date contact list of all hospital personnel is available and is accessible to EOC staff and hospital administrators. Check a random set of telephone numbers for accuracy. | Staff contact list | No staff contact list<br>☐ | Staff contact list<br>☐ | Up to date (and dated) staff contact list including home phone numbers with HR and available at EOC<br>☐ | |
| **130. Staff availability**<br>Determine the current workforce availability compared to service delivery requirements of all major departments (e.g. emergency medicine, surgery, internal medicine, orthopedics, support services, security) during normal functioning (non-emergency). | Record of staff absenteeism at both ward and hospital level | Knowledge of staff levels poor<br>☐ | Partial knowledge of staffing levels<br>☐ | Absenteeism and staffing levels (and reasons) well understood and documented<br>☐ | |
| **131. Mobilization and recruitment of personnel during an emergency or disaster**<br>Procedures are in place for the mobilization of existing on-duty and off-duty staff and recruitment and training of employable personnel and volunteers to meet surge capacity needs of high-demand clinical and support services. Rosters should identify staff who are on call at all times for key roles for the immediate response to emergencies and disasters, and other staff who will be mobilized in accordance with the scale of the response. Department Order No 1-Js 2000: Reporting mechanism of health Emergency Staff (HEMS) at Central Office and its units at the centers for Health Development and DOH hospitals | Written procedure for recalling staff during an emergency. Expectations clearly documented in Job description | No staff recall system<br>☐ | Staff recall system poorly documented<br>☐ | Staff recall, resource mobilization and volunteer systems are well developed and documented<br>☐ | |
| **132. Duties assigned to personnel for emergency or disaster response and recovery**<br>Verification that all staff will receive, written instructions (e.g. action card, job action sheet) and training and/or exercises on duties to be performed during an emergency. | Job sheets and assignment of duties in a written record | No duties<br>☐ | Not all duties assigned<br>☐ | Written duties assigned job action sheets with training<br>☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **133. Well-being of hospital personnel during an emergency or disaster**<br>Verify if space has been designated and measures are available so hospital personnel can rest, sleep, eat, drink, observe faith-based practices and meet personal needs during an emergency, including family support. | Roster system for emergencies. VISIT rest area for staff | Psychosocial well being not considered | Availability of resting space | Designated place where they can rest/ assigned food provision by canteen hospital psychosocial service rosters and relievers available and monitored | |
| | | ☐ | ☐ | ☐ | |
| **4.5 Logistics and finance** | | | | | |
| **134. Agreements with local and regional suppliers and vendors for emergencies and disasters**<br>Verification that agreements (e.g. memoranda of understanding, mutual aid agreements) with local suppliers, vendors and utility companies/agencies are in place to ensure procurement and delivery of essential medications, equipment and supplies during times of shortage or increased demand, as in the case of emergencies and disasters. | Written agreements for emergency supply for: Food; water; fuel; medical gases; surgical supplies; pharmaceuticals; laboratory supplies | No arrangements | Incomplete arrange-ments | Operational written agreements with local and regional suppliers, pharmacy, food and water gasoline, medical gases, clinical supplies | |
| | | ☐ | ☐ | ☐ | |
| **135. Transportation during an emergency**<br>Verify that procedures are in place to ensure availability and access to ambulances and other vehicles and necessary modes of transportation for the movement of patients, staff, equipment and supplies during an emergency or disaster. Memorandum No 120s 2003: Personnel and ambulance services for Emergencies and disasters | Documentation of transport arrangements for emergencies | No arrangements | some arrangements for extra vehicles | System to supply extra vehicles eg through police, defense, MMDA | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **136. Food and drinking-water during an emergency**<br>Procedures are in place to ensure provision of food and water to patients and personnel during an emergency. Confirm that there are measures for supplying and storing food and drinking-water during the emergency and that funds for food are included in the budget. | Documentation of emergency food supply (see 134) Interview with senior dietician Record of emergency arrangements for drinking water including water trucks | No arrangements | Incomplete food/water arrangements | arrangements with fire, waterworks, WSS Manila Chief dietician has a documented arrangement for emergency food supply | |
| | | ☐ | ☐ | ☐ | |
| **137. Financial resources for emergencies and disasters**<br>The hospital has a specific budget and access to funds for use in the response to emergency and disaster situations, as well as for recovery. See SECTION 53.2 (EMERGENCY CASES) OF THE IMPLEMENTING RULES AND REGULATIONS OF REPUBLIC ACT NO. 9184 | Record of national arrangements for emergency budgeting (5%) and other arrangements | Not applicable | Not applicable | Site administrative order - 5% SOP - emergency fund | |
| | | ☐ | ☐ | ☐ | |
| **4.6 Patient care and support services** | | | | | |
| **138. Continuity of emergency and critical care services**<br>Procedures exist to ensure operational continuity of emergency and critical care services on evenings, weekends and holidays (e.g. emergency room, intensive care unit, operating theatre and services) for emergency and disaster situations. | Emergency response plan: section on drills/ surge capacity and training accreditation CHECK EMERGENCY PLAN FOR THESE THINGS | No system for continuity of care after hours | Simple system of Nobody goes home without a reliever | Continuity of care after hours fully assured during emergencies | |
| | | ☐ | ☐ | ☐ | |
| **139. Continuity of essential clinical support services**<br>Verify that procedures exist to ensure operational continuity of essential clinical support or ancillary services (e.g. laboratory, radiology, pharmacy) during an emergency. | Emergency plan should have documented procedures for continuity of laboratory, radiology and pharmacy services. INTERVIEW manager of radiology, lab and pharmacy | | CHECK EMERGENCY PLAN FOR THESE THINGS | Procedures exist, personnel have been trained and resources are available to implement procedures at all times capacity for emergency | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **140. Expansion of usable space for mass casualty incidents**<br>Procedures are in place to expand space and provide access to extra beds for mass casualty incidents Administration order 155s: 2004: Implementing guidelines for mass casualty incidents during emergency and disasters. | Emergency plan (documented area for expansion) VISIT area designated for expansion | No extra space identified | Space only identified | Space available, stocked and hazard specific | |
| | | ☐ | ☐ | ☐ | |
| **141. Triage for major emergencies and disasters**<br>Designated space and trained personnel to carry out triage in a major emergency/disaster situation. The triage procedures for a major emergency or disaster should have been tested and there should be resources | Documentation of triage system. Certificates of triage training. INTERVIEW head of emergency department | Triage system not in plan | Triage system in plan | Triage system documented in plan with training provided and exercises, including team with designated area for triage | |
| | | ☐ | ☐ | ☐ | |
| **142. Triage tags and other logistical supplies for mass casualty incidents** | INSPECT triage tags | No tags | Some tags available | Tags available inn large quantity | |
| | | ☐ | ☐ | ☐ | |
| **143. System for referral, transfer and reception of patients**<br>Documented criteria for receiving and referring patients during an emergency or disaster. The plan includes specific procedures for the transfer and reception of patients to and from other health facilities within and outside the geographical area where the hospital is located. Administrative order No FAE 007s, 1998: Policies and guidelines on the transfer and referral of patients between DOH metro Manila Hospitals. | Documentation in response plan - what happens when a patient arrives? How is a patient referred? How is a patient transferred? | No documented arrangements | | Documented arrangements with another hospital or with DoH Documented referral forms | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **144. Infection surveillance, prevention and control procedures**<br>Infection prevention and control programme – including related policies, procedures and measures – is in place., including standard precautions, hospital based surveillance and measures for highly infectious diseases. There should be an active programme of staff training in infection prevention and control procedures. Additional resources should include the availability of supplies for emergency situations, including epidemics and pandemics, and extra cleaning staff. | Infection control plan for emergencies including infectious disease emergency | No infection control procedures | Infection control committee | Infection control committee emergency plan up to date (meeting minutes) with designated surveillance officer and proof of training for all committee | |
| | | ☐ | ☐ | ☐ | |
| **145. Psychosocial services**<br>Procedures are in place for delivery of psychosocial support, assessment and treatment services to patients, families and staff during emergency and disaster situations. | Written evidence of psychosocial support for emergencies (eg hospital counsellor) | NO consideration of psychosocial support | some consideration of psychosocial support | Trained/certificated personnel providing psychosocial with surge capacity | |
| | | ☐ | ☐ | ☐ | |
| **146. Post-mortem procedures in a mass fatality incident**<br>Procedures are in place for appropriate management of dead bodies, such as temporary storage of cadavers, during a mass fatality incident., including onsite or off-site arrangements to increase mortuary capacity, cold storage facilities and levels of staffing and expertise (e.g. disaster victim identification). | Documented arrangements with National Bureau of Investigation or SOCO for morgue facilities | | | Arrangements with NBI/ SOCO for extra capacity for morgue | |
| | | ☐ | ☐ | ☐ | |

| | Reference Evidence: SOPS, code, document, ... | Low | Average | High | Evaluators' comments |
|---|---|---|---|---|---|
| **4.7 Evacuation, decontamination and security** | | | | | |
| **147. Evacuation plan**<br>Procedures for vertical, horizontal and partial evacuation of patients, visitors and staff to a safe location with the necessary medical, logistical and administrative support. The criteria should enable triage for evacuation of patients. Training of staff and the regularity of evacuation drills should be evaluated. | Documented evidence of evacuation drills. INSPECT Evacuation signage | No evacuation plan<br>☐ | Part of plan<br>☐ | Evidence of Drills happening regularly/ signage<br>☐ | |
| **148. Decontamination for chemical and radiological hazards**<br>Decontamination facilities enable the decontamination of patients before they enter the hospital. | Documentation of specified hospitals for radiological and chemical hazards (and referral procedures cf 143) | No facilities and no referral procedure<br>☐ | A referral procedure only<br>☐ | A decontamination system is documented<br>☐ | |
| **149. Personal protection equipment and isolation for infectious diseases and epidemics**<br>Verification of the level of the demand for personal protective equipment at the maximum capacity of the hospital, taking into account the types of services provided by the hospital and the additional capacity required to respond to emergencies and disasters. Storage and /or supply arrangements for at least 72 hours | VISIT isolation room EXAMINE PPE store documentation of staff training in PPE use | No PPE<br>☐ | Small supply of PPE<br>☐ | Identified Isolation room outside ER with separate entrance and PPE available for all staff N95 masks etc. with appropriate staff fit tested as part of staff orientation<br>☐ | |
| **150. Emergency security procedures**<br>Emergency procedures are in place to ensure security of patients, personnel and the facility (e.g. early control of access points, triage site(s), other areas of patient flow, traffic, parking, emergency/disaster coordination center) in an emergency, and to sound alerts and respond to security threats. | INTERVIEW head of security Documented security procedures for emergency | No security<br>☐ | Routine security without special emergency planning<br>☐ | Identified security team with surge capacity Documented drills<br>☐ | |
| **151. Computer system network security**<br>The hospital has a plan to respond to and recover from cyber attacks or computer system failures. The plan should include data back-up procedures, arrangements for restoration or replacement of computing hardware and software, and an information technology recovery plan. | INTERVIEW head of IT Cyber-security plan documentation | No IT team<br>☐ | IT team<br>☐ | IT team with documented cyber security plan<br>☐ | |

# Section III.
# Glossary of Terms

# Glossary of Terms

## Critical facilities

The primary physical structures, technical facilities and systems which are socially, economically or operationally essential to the functioning of a society or community, both in routine circumstances and in the extreme circumstances of an emergency.

## Critical systems (in hospitals)

Within a hospital, critical systems include the electrical, telecommunications, water supply, fire protection, waste management, fuel storage, and medical gasses, and heating, ventilation, and air conditioning (HVAC) systems. The failure or disruption of critical systems can stop or impede the functioning of the hospitals.

## Disaster

A serious disruption of the functioning of a community or society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

## Disaster risk management

The systematic process of using administrative directives, organizations, operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

## Disaster risk reduction

The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

## Emergency

An actual or imminent event or threatening condition that requires urgent action.

## Emergency and disaster management

The organization and management of resources and responsibilities for addressing all aspects of emergencies and disasters, including prevention, preparedness, response and recovery.

## Hazard

A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

## Level 1 Hospital

- Shall have as minimum the services stipulated under rule V. B. 1. B. 1 of this Order, including but not limited to the following:
    - A staff of medical qualified, allied medical and administrative personnel headed by a physician licensed by PRC;

- Bed space for its authorized bed capacity in accordance with DOH Guidelines in the Planning and Design of Hospital;
- An operating room with standard equipment and provision for sterilization of equipment and supplies in accordance with a) DOH Reference Plan in the Planning and Design in an Operating Room/Theater b) DOH Guidelines on Cleaning, Disinfection and Sterilization of Reusable Medical Devices in Hospital Facilities in the Philippines;
- A post-operative recovery room;
- Maternity facilities, consisting of ward(s), room(s) a delivery room, exclusively for maternity patients and newborns;
- Isolation facilities with proper procedures for the care and control of infectious and communicable diseases as well as for the prevention of cross infections;
- A separate dental section/clinic;
- Provision for blood station;
- A DOH licensed secondary clinical laboratory with the services of a consulting pathologies;
- A DOH licensed level 1imaging facility with the services of a consulting radiologist;
- A DOH licensed pharmacy

## Level 2 Hospital

- A level 2 hospital shall have as minimum, all of level 1 capacity, including but not limited to the following:
  - An organized staff of qualified and competent personnel with Chief of Hospital/ Medical Director and appropriate board certified Clinical Department Heads;
  - Departmentalized and equipped with the service capabilities needed to support board certified/eligible medical specialist and other licensed physicians rendering services in the specialties of Medicines, Pediatrics, Obstetrics and Gynecology, Surgery, their subspecialties and ancillary services;
  - Provision for General ICU for critically ill patients;
  - Provision for NICU;
  - Provision for HRPU
  - Provision for respiratory therapy services;
  - A DOH licensed tertiary clinical laboratory;
  - A DOH licensed level 2 imaging facility with mobile x-ray inside the institution and with the capability for contrast examinations

## Level 3 Hospital

- A level 3 hospital shall have as minimum, all of level 2 capacity, including but not limited to the following:
  - Teaching and/or training Hospital with accredited residency training program for physicians in the four (4) major specialties namely: Medicines, Pediatrics, Obstetrics and Gynecology, and Surgery;
  - Provision for Physical medicine and rehabilitation unit;
  - Provision for ambulatory surgical clinic;
  - Provision for dialysis facility;
  - Provision for blood bank;
  - A DOH licensed tertiary clinical laboratory with standard equipment, reagents, supplies necessary for the performance of histopathology examinations;
  - A DOH licensed level 3 imaging facility with interventional radiology

## Mitigation

The lessening or limitation of the adverse impacts of hazards and related disasters.

## Nonstructural components

Elements that are not part of the load-bearing system of the building. They include architectural elements and the equipment and systems needed for operating the facility. Among the most important nonstructural components are architectural elements such as facades, interior partitions, roofing structures and appendages. Nonstructural systems and components include lifelines; industrial, medical and laboratory equipment; furnishings; electrical distribution systems; heating, ventilation and air conditioning (HVAC) systems; and elevator/escalator systems.

## Nonstructural detailing

A set of measures, based on the theoretical, empirical and experimental experience of various disciplines, aimed at protecting and improving the performance of nonstructural components.

## Preparedness

The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to anticipate effectively, respond to and recover from the impacts of likely, imminent or current hazard events or conditions.

## Prevention

The outright avoidance of adverse impacts of hazards and related disasters.

## Reconstruction

The process of complete restoration of the physical, social and economic damage aimed at a level of protection higher than that existing before the event. Reconstruction is achieved by incorporating disaster risk reduction measures when restoring damaged infrastructure, systems and services.

## Recovery

The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

## Rehabilitation

Provisional or temporary restoration of the essential services of the community. Rehabilitation is achieved by providing services at pre-disaster levels.

## Resilience

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

## Response

The provisions of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

## Risk (related to probability and negative consequences)

The combination of the probability of an event and its negative consequences. This includes the potential losses in lives, health status, livelihoods, assets and services, which could occur over some specified future time period. (Note: The International Organization for Standardization's standard on risk management (ISO 31000:2009) defines risk as the "effect of uncertainty on objectives" where "an effect is a deviation from the expected — positive and/or negative").

## Risk (related to hazard, vulnerability and capacity)

Risk is the result of the interaction between hazard, vulnerability and capacities. This is a dynamic and complex interaction that is modified over time according to the changes in the probability that a certain phenomenon may occur in a given time and place with an identified intensity, magnitude and duration and the exposure and susceptibility of people, infrastructure, services and goods that can be affected by that phenomenon. The capacities available to reduce hazards and vulnerabilities and respond to residual risks (with potential to cause adverse events such emergencies and disasters) contribute to risk.

## Risk management

The systematic approach and practice of managing uncertainty to minimize potential harm and loss.

## Safe Hospital

A health facility whose services remain accessible and functioning at maximum capacity and with the same infrastructure, before, during and after the impact of emergencies and disasters.

## Structural components

Elements that are part of the resistant system of the structure, such as columns, beams, walls, foundations and slabs.

## Vulnerability

The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

# Annex

# Annex A

## PHILIPPINE POLICIES RELATED TO SAFE HOSPITALS IN EMERGENCIES AMD DISASTERS

### The National Building Code of the Philippines (PD 1096) revised 2006 guidelines

The National Building Code of the Philippines, also known as Presidential Decree No. 1096 was formulated and adopted as a uniform building code to embody – up-to-date and modern technical knowledge on building design, construction, use, occupancy and maintenance. The code provides for all buildings and structures, a framework of minimum standards and requirements to regular and control their location, site design, and quality of materials, construction, use, occupancy and maintenance.

### The National structural Code of the Philippines (5th ed, 2011 guidelines)

The purpose of this code is to provide minimum standards to safeguard life on limb, property and public welfare by regulating and controlling the design, construction, quality of materials pertaining to the structural aspects of all buildings and structures within its jurisdiction.

The provision of this code shall apply to the construction, alteration, moving, demolition, repair, maintenance and use of any building or structure within its jurisdiction, except works located primarily in a public way, public utility towers and poles, hydraulic flood control structures, and indigenous family dwellings.

### Philippine Electrical Code of 2000

The purpose of this Code is the practical safeguarding of person and property from hazards arising from the use of electricity. It contains provisions that are considered the minimum requirements necessary to safety. Compliance therewith and proper maintenance will result an installation that is essentially free from hazard but not necessarily efficient, convenient, on adequate for good service of future expansion of electrical use. This Code is not intended as a design specification or an instruction manual for untrained persons.

### Fire Code of the Philippines (PD 1185)

The Fire of the Phillipnes (PD 1185) sets the uniform standards and regulations for the prevention and suppression of fires for the incorporating fire safety design and constructions; and for the provision of protective and safety devices in buildings, facilities, and structures in order to effect a meaningful reduction in death and injury to persons and loss and damage to property by fire.

### Philippine Mechanical Code - Republic Act 8495

The Mechanical Codes sets minimum standards for the design, construction and quality of materials pertaining to the mechanical works, processes and equipment of all building, structures, mechanical plants, to safeguard life or limb, property and public welfares.

### Accessibility Law – Republic Act 344

An act to enhance the mobility of disabled persons by requiring certain buildings , institutions, establishment and public utilities to install and incorporate in such buildings, establishments, institutions or public utility , such as architectural facilities or structural facilities or structural features that shall reasonably enhance the mobility of disabled persons, such as sidewalks, ramps, railings and the like.

### Philippine Clean Water Act of 2001- Republic Act 9275

The " Philippine Clean Water Act of 2004" or R.A. 9275 aims to pursue a policy of economic growth in manner consistent with the protection, preservation, and revival of the quality of our fresh, brackish, and marine waters. To guarantee effective water utilization and conservation, the Clean Water Act of 2004 has set

the standards that would determine how clean is water.; how to achieve it and how important is the role of every citizen, in the public and private sectors in regulating and minimizing pollution, maintaining environmental policies, waste managing, environmental education and information recognizing the impacts of human activity to the health of the water bodies.

## Ecological Solid Waste Management Act of 2001 –Republic Act 9003

Republic Act 9003 sets the guidelines and targets for solid waste avoidance and volume reduction through source reduction and waste minimization measures, including composting, recycling, re-use, recovery, green charcoal process, and others, before collection, treatment and disposal in appropriate and environmental sound solid waste management facilities in accordance with ecologically sustainable development principles. It is equipped with the proper machinery to carry on the task stated by the law, through the National Solid Waste Management Commission.

The Act in a nutshell is about – Segregation, Storage and Collection systems; Selection of Vehicle for Solid Waste Collection, Designing and Planning a Collection System; Operation of a transfer Station; Intelligent Service Contracting Public Education and Awareness and the critical part is the Policy Formulation of the Act as well as its enforcement. Under the latter are the Solid Waste Management Financing, Incentive and Cost Recovery, wherein the money aspect and proceedings of the Act is discussed.

## Administrative Order No. 2008–0021

**Subject: Gradual Phase-out of Mercury in all Philippine Health Care Facilities and Institutions**

Recognizing the unnecessary risk posed by the continued use of mercury – containing products in health care system, the DOH hereby orders that:

- All Hospitals shall immediately discontinue the distribution of mercury thermometer to patients through the distribution of hospital admission/ discharge kits.
- All hospital shall follow the guidelines for the gradual phase-out of mercury in health care facilities, described in this document on the time lime specified.
- All new Health Care Facilities applying for a License to Operate shall submit an inventory of all mercury-containing devices that will be used in their-facilities and a corresponding mercury elimination program.
- All other Health Care Facilities other than hospital shall make a Mercury Minimization Program based on the guidance set by the Administrative Order.

## Administrative Order No. 2 S2005

**Subject: Policies and Guidelines on effective and proper handling, collection, transport, treatment, storage, and disposal of health care waste.**

The Department of Environment and Natural Resources (DENR) and the Department of Health (DOH) hereby jointly provide the following guidelines on the management of health care wastes pursuant to, among others, the following laws, rules and regulations:

- Clean Air Act of 1999 (Republic Act 8749);
- Toxic Substances, Hazardous Waste, and Nuclear Waste Control Act of 1990 (Republic Act 6969);
- Ecological Solid Waste Management Act of 2000 [Republic Act 9003)
- Refuse Disposal of the Sanitation Code of the Philippines [Chapter XVIII, Implementing Rules and Regulations, Presidential Decree 856);
- Clean Water Act of 2004 [Republic Act 9275];
- Environmental Impact Statement (EIS) System (Presidential Decree 1586);
- Hospital Licensure Act [Republic Act 4226]



A collaboration of the Health Emergency Management Bureau of the Department of Health and the World Health Organization.