Government of Nepal

Ministry of Health and Population

Assessment of Selected Hub Hospitals Using Nepal Customized Hospital Safety Index

December 2024 - January 2025

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Foreword

As natural and human-induced hazards continue to rise, ensuring the safety and resilience of healthcare facilities is a high public health priority. Hospitals must be equipped to function as lifelines during emergencies and disasters, providing critical care and coordination when communities need them most. In recognition of this imperative, the Ministry of Health and Population (MoHP), remains deeply committed to advancing hospital disaster preparedness across Nepal.

The Hospital Safety Index (HSI), an internationally recognized tool, plays a vital role in assessing the structural soundness, non-structural systems, and emergency readiness of health facilities. Since its introduction in Nepal in 2014 – and its contextual refinement following the 2015 Gorkha earthquake – the HSI has been adapted to meet the unique needs of the country's healthcare system. The inclusion of an Access Audit and a dedicated fire safety module further demonstrates our resolve to identify and address context-specific vulnerabilities.

The digital evolution of the tool into the HSI+ App represents a major advancement. This innovation has streamlined the assessment process, strengthened data collection, and supported the development of Hospital Disaster Preparedness and Response Plans (HDPRPs). The application of the HSI+ App in evaluating seven priority hub hospitals between December 2024 and January 2025 marks a crucial step toward institutionalizing risk-informed decision-making and planning.

This report presents the outcomes of those assessments, a collaborative effort led by the MoHP in partnership with the World Health Organization (WHO), CEAD Consultancy, and GeoHazards International (GHI), with financial support from UNITAID and the Coalition for Disaster Resilient Infrastructure (CDRI). It reflects the strength of our collective commitment, the value of localized expertise, and the power of evidence-based tools.

I offer my sincere gratitude to WHO and all the institutions, experts, and hospital teams who contributed to this important initiative. Their unwavering dedication to hospital safety continues to shape our policies and investments as we strive to build a resilient health system, one that protects lives, not only in times of peace but especially in times of crisis.

Dr. Prakash Budhathoky
Chief, HEDMU/HEOC

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Executive summary

A safe hospital remains fully functional and accessible before, during, and after emergencies, ensuring uninterrupted healthcare services. Its resilience depends on structural integrity, reliable critical systems, essential supplies, and effective emergency management. Strengthening these aspects is vital to mitigating risks and ensuring hospitals can respond effectively to crises.

The Hospital Safety Index (HSI) is a cost-effective tool that assesses a hospital's ability to remain operational during disasters, guiding authorities in prioritizing safety improvements. The Nepal Customized HSI expands on the global framework by adding Access Audit and Fire Safety modules, ensuring a more comprehensive evaluation. This approach enables policymakers and healthcare administrators to make data-driven decisions, strengthening hospital preparedness and resilience nationwide.

This report consolidates the findings of the Hospital Safety Assessment conducted across seven hospitals in Nepal using the Nepal Customized Hospital Safety Index (HSI). The assessment evaluated hospital resilience in five key areas: structural safety, non-structural safety, accessibility, emergency preparedness, and fire safety. While hospitals are functioning with available resources, significant vulnerabilities exist, requiring immediate, medium-term, and long-term interventions.

Structural Safety Assessment: The assessment revealed that while newer hospital buildings (post-2010) generally comply with seismic codes, older structures (pre-1990) exhibit significant vulnerabilities, including cracks, corrosion, and poor maintenance. Short-term: Conduct rapid repairs and restrict access to unsafe areas. Medium-term: Retrofit salvageable buildings and improve drainage/seismic gaps. Long-term: Replace high-risk buildings with disaster-resilient designs and enforce strict compliance with building codes.

Non-Structural Safety Assessment: Critical gaps were found in securing medical equipment, utility systems (power, water, medical gases), and waste management, increasing risks during disasters. Short-term: Anchor heavy equipment and upgrade emergency lighting. Medium-term: Install surge protection and improve hazardous material storage. Long-term: Integrate smart monitoring systems and institutionalize safety protocols.

Fire Safety Assessment: Hospitals lack robust fire suppression systems, with inconsistent detection, blocked exits, and unsafe storage of flammable materials. Short-term: Clear evacuation routes and refresh extinguisher training.

Medium-term: Install smoke detectors and conduct quarterly fire drills. Long-term: Implement automated sprinkler systems and formalize fire safety governance.

Access Audit: Basic accessibility features (ramps, wide doors) exist, but gaps in signage, tactile pathways, and inclusive emergency protocols hinder equitable access. Short-term: Repair walkways and add signages. Medium-term: Retrofit toilets with grab bars and train staff on disability-inclusive evacuation. Long-term: Develop curb ramps and digital navigation tools for visually impaired users.

Emergency and Disaster Management: Disaster committees and triage systems are established, but plans lack hazard-specific protocols, staff training, and tested coordination with local responders. Short-term: Update contact directories and conduct tabletop drills. Medium-term: Stockpile 72-hour supplies and set up Emergency Operations Centers. Long-term: Secure dedicated disaster budgets and build permanent decontamination units.

In conclusion, the Hospital Safety Assessment underscores the urgent need for safety enhancements in Nepal's hospitals to ensure resilient healthcare services in emergencies. Implementing these recommendations will strengthen structural stability, non-structural safety, accessibility, emergency preparedness, and fire safety, ultimately creating a safer and more sustainable healthcare system.

Chapter 1: Introduction

Overview of the HSI

The Hospital Safety Index (HSI) is a globally recognized tool for assessing hospital safety, identifying vulnerabilities, and guiding necessary actions to enhance emergency preparedness. It helps optimize resource allocation by recommending high-impact, low-cost measures to strengthen hospital resilience during emergencies and disasters.

The tool aids hospital managers, healthcare staff, and policymakers in making informed decisions to improve the overall safety of hospitals within the broader health system.

The World Health Organization (WHO) has been promoting hospital safety for over 35 years. The first version of the HSI, developed by the Pan American Health Organization (PAHO) and WHO in 2008, was later expanded to public and private hospitals across WHO's six regions. By 2015, after extensive consultations with experts, the tool was revised to adopt an all-hazards approach and was implemented in more than 3,500 hospitals worldwide.

HSI in Nepal:

Nepal first introduced the HSI in 2014, piloting the revised global tool at two tertiary hospitals in Kathmandu:

- Bir Hospital
- Shukraraj Tropical and Infectious Disease Hospital (STIDH)

These pilot assessments, alongside similar evaluations in the Solomon Islands, contributed to finalizing the 2015 global HSI tool. In Nepal, the piloting was carried out by GeoHazards International (GHI).

When Nepal experienced the 2015 Gorkha earthquake (7.8 magnitude), the structural and non-structural weaknesses identified in the 2014 HSI assessments at Bir Hospital and STIDH became evident. In response, post-earthquake assessments were conducted using the same tool, confirming prior vulnerabilities, and highlighting the need for contextualization.

Contextualization of HSI in Nepal:

Unlike American hospitals, which typically consist of a single building, hospitals in Nepal often have multiple scattered structures with varying building codes.

Recognizing these differences alongside many other variations realized in post-earthquake assessment at Bir Hospital and STIDH, Nepal's Ministry of Health and Population (MoHP), in collaboration with the Department of Urban Development and Building Construction (DUDBC), Nepal Engineering Association, WHO and GHI, undertook contextualization efforts by assessing four hospitals:

- Bheri Hospital
- Dadeldhura Hospital
- Seti Hospital
- Rapti Academy of Health Sciences

A subsequent workshop led to the development of Nepal's contextualized HSI tool, which introduced an additional fourth module – the Access Audit to address local needs.

HSI and Fire Safety in Nepal:

During the COVID-19 pandemic, Nepal's healthcare system faced extreme strain, requiring rapid expansion of oxygen supply and ad hoc patient care spaces. This situation heightened fire risks, which were not comprehensively addressed in Nepal's 2019 HSI tool.

Recognizing this gap along with similar needs across other Southeast Asian Countries, WHO's South-East Asia Regional Office (SEARO), with involvement from GHI, developed a comprehensive fire safety checklist in 2022. Subsequently, WHO and MoHP collaborated on:

- Sensitization Webinars
- Pilot Assessments
- Tabletop Exercises
- Training Programs

HSI + App:

WHO launched the HSI+ App in 2019 as a digital tool for conducting Nepal's customized HSI assessment. In June 2022, the National Conference on Hub and Satellite Hospital Network was organized by MoHP in Kathmandu, Nepal. The conference resulted in an 11-point Declaration, with the seventh point specifically stating: 'To work on Hospital disaster preparedness and response in accordance with Hospital Safety Index'.

As a result, in 2023, the scope of HSI + was expanded to support the development of Hospital Disaster Preparedness and Response Plans (HDPRP) for hub and satellite hospitals, aligning with the 11-point Declaration on Hub and Satellite Hospitals. Additionally, a fire safety module was integrated into the app that same year.

The HSI+ App now functions in two key modalities: one for conducting HSI assessments and another for assisting hospitals in developing and updating their HDPRP. Designed as an interactive and user-friendly platform, it allows users – whether HSI assessors or HDPRP teams – to select the relevant modality, input critical data, and facilitate the automated generation of respective reports.

In October 2023, a National Workshop and Hands-on Training on the HSI+ App was held in Kathmandu, where 25 hub hospital staff and WHO personnel were trained on its use (HDPRP modality). To date, the app has been instrumental in developing HDPRP for 25 hub hospitals and 29 satellite hospitals.

The HSI+ App was extensively used to assess seven hub hospitals across Nepal during the Assessment of Priority Hub Hospitals conducted from December 2024 to January 2025. This assessment digitally incorporated all components of Nepal's Customized HSI, including Structural safety, Non-structural safety, Emergency and disaster management, Access audits, and Fire safety.

Purpose and objective

Nepal's Customized Hospital Safety Index (HSI) serves as a vital tool to evaluate a hospital's capacity to remain functional during normal times and in the aftermath of emergencies and disasters. By assessing critical factors such as structural integrity, functionality of critical systems, access audit, fire safety, and emergency preparedness, HSI provides valuable insights into a hospital's strengths and vulnerabilities.

This assessment not only helps determine a hospital's ability to sustain operations during normal times and following adverse events but also guides targeted actions to enhance safety, preparedness, and response capabilities. While hospital management and staff are responsible for implementing improvements within available resources – particularly in addressing non-structural risks and strengthening emergency and disaster management – larger-scale interventions, such as structural retrofitting, may require substantial investments from external sources such as central or provincial ministries.

The key objectives of HSI include:

- To assess whether a hospital can continue functioning immediately after an emergency or disaster.
- To review the overall safety and preparedness of hospitals.
- To systematically document and categorize hospital strengths and weaknesses, both at an individual level and within the broader healthcare network.

- To provide evidence-based recommendations to enhance hospital safety, emergency response, and disaster preparedness.
- To support decision-makers in prioritizing resource allocation and policy interventions to improve hospital resilience.

Once the evaluation is complete, the assessment team presents its findings to the hospital's senior management and staff. Individual hospital reports are later developed for the hospitals as well as compiled into a broader assessment report for policymakers to inform strategic investments in hospital safety and preparedness.

Scope of the assessment

The Hospital Safety Index (HSI) serves as a rapid diagnostic tool, providing a broad yet insightful snapshot of a hospital's safety and preparedness. Rather than offering an in-depth technical audit, the HSI assessment functions as a walkthrough visual evaluation, identifying observable vulnerabilities and potential risks that could impact a hospital's ability to maintain services during emergencies and disasters. The assessment also considers the hospital's broader environment and its role within the health service network.

It is important to note that this evaluation does not replace specialized technical inspections, which require advanced expertise and equipment. Instead, it provides an overview of critical safety dimensions, highlighting areas that may require further detailed investigation.

The scope of the HSI assessment covers five key dimensions:

- Structural Safety: Evaluated through visual inspection of building integrity, and focusing on signs of damage or deterioration that could compromise stability, particularly during seismic events, this assessment identifies apparent risks but does not include detailed structural testing or engineering analysis.

- Non-Structural Safety: Assessed through the observation of essential hospital systems, and including power supply, water storage, medical equipment safety, and waste management practices, the evaluation focuses on the general layout and organization of these systems without conducting technical performance testing.

- Fire Safety: Reviewed by examining the presence and apparent condition of fire prevention, detection and suppression systems, electrical wiring, and emergency exit routes, the assessment identifies observable fire hazards but does not include a comprehensive fire risk analysis or compliance verification.

- Access Audit: Assessed by evaluating the hospital's accessibility for regular patients and ones with mobility challenges that includes the availability of ramps, signage, and pathways, the evaluation highlights general accessibility conditions but does not involve detailed measurements or regulatory compliance checks.

- Emergency and Disaster Preparedness: Reviewed through an examination of the hospital's emergency response plans and discussions on staff training programs, the assessment provides an overview of preparedness efforts but does not measure the effectiveness of these plans or training initiatives.

By providing an initial understanding of a hospital's safety status, the HSI assessment helps prioritize areas for further technical evaluation, ensuring a more comprehensive approach to hospital resilience and preparedness.

Chapter 2: Methodology

The 'Assessment of Priority Hub Hospitals Using HSI' has been implemented to evaluate the resilience of priority hub hospitals in Nepal, ensuring they remain safe and prepared during emergencies and disasters. In alignment with the HSI guide, the assessment process emphasized the mobilization of local experts, fostering sustainability and a deeper understanding of hospital scenarios. The assessment followed a structured approach, which included expert training, rigorous planning, and an on-site evaluation using standardized checklists. This methodology section outlines the approach taken, detailing the assessment framework, preparation process, and execution.

1. Assessment Approach

The Ministry of Health and Population (MoHP) spearheaded the initiative, with WHO providing overall support, while financial assistance came from UNITAID and the Coalition for Disaster Resilient Infrastructure (CDRI). Further, WHO engaged CEAD Consultancy as the assessment team and Geo Hazards International (GHI) as technical trainers, ensuring a high level of expertise throughout the process.

The HSI prescribes a multidisciplinary team to conduct hospital assessments, ensuring a comprehensive evaluation across structural, non-structural, and functional components. The recommended team composition includes:

- Structural Engineer
- Architect
- Biomedical Engineer
- Electrical Engineer
- Industrial Engineer
- Disaster Management Expert

Based on this requirement, 12 experts were engaged from CEAD Consultancy, forming two assessment teams for the implementation of assessment across seven hospitals.

To oversee and guide the assessment process, a Technical Working Group (TWG) was formed. This group, formed during its first meeting on October 28, 2024, at the Health Emergency Operation Center (HEOC), included representatives from:

- HEOC (Coordinator and Member Secretary)
- Department of Urban Development & Building Construction (DUDBC)
- Curative Service Division (CSD), Department of Health Services (DoHS)

- Management Division (MD), DoHS
- Nepal Engineering Association (NEA)
- WHO Nepal

During the first TWG meeting, discussions focused on:

- Reviewing WHO's HSI program history and its implementation in Nepal.
- Providing an overview of HSI tool components
- Evaluating HSI's relevance in Nepal's healthcare system
- Outlining a detailed action plan, including an orientation, or training workshop, hospital assessments, and a final dissemination workshop

(Note: Given that HSI assessments involve an element of subjectivity, it is imperative that new assessors undergo specialized training before conducting evaluations. The HSI guide stresses that experts with prior hands-on HSI experience should train new teams to ensure consistency and accuracy.)

The second TWG meeting (November 24, 2024) resulted in critical decisions which was then implemented accordingly.

1) Identification of hospitals for HSI implementation based on:
   - Hub hospital designation
   - Representation from each province
   - Inclusion of different hospital sizes to test HSI applicability across capacities.

2) Orientation of focal persons from the identified hospitals through a webinar for familiarization with HSI and their role during the assessment proper (December 1, 2024).

3) Engagement of expert assessors (CEAD Consultancy) and trainers (GHI) by WHO.

4) Training workshop, December 9 – 11, 2024, to equip participants (CEAD Consultancy, WHO staffs, TWG members, Provincial Field Medical Officers or FMOs and Information Management Associates or IMAs), for assessments, including:
   - Two and a half days of theoretical sessions
   - Half-day practical session at the Nepal Armed Police Force (APF) Hospital

5) Involvement of UNOPS and UN-Habitat engineers for potential future collaborations.

As agreed on the previous meeting, the third TWG meeting (December 1, 2024) focused on orienting disaster focal persons from seven selected hospitals including FMOs, and IMAs to ensure they were prepared for assessments.

2. Planning and Preparation

The assessment dates were finalized by the TWG, while HEOC coordinated hospital communications, requesting facilities to designate key staff and support assessors.

Each assessment was scheduled for three days, with assessment teams arriving a day in advance (Day Zero) for pre-assessment preparations. Coordination at the ground level was managed by Provincial FMOs, and IMAs from the Provincial Health Emergency Operation Center (PHEOC).

Before assessments, PHEOC provided relevant hospital information, which the assessment teams reviewed on Day Zero. Based on this, the central IMAs customized the HSI+ App for each hospital, incorporating building details and critical data.

Assessments were conducted using both HSI paper checklists, and HSI+ App (tablet/laptop-based tool).

Assessment Team Structure:

At Madhesh Institute of Health Sciences (the first assessment carried out from 13 – 15 December 2024), GHI experts led the assessment while assessors from CEAD Consultancy observed and learned. WHO SEARO staff led the Emergency and Disaster Management module, and an independent disability consultant oversaw the Access Audit module. The CEAD Consultancy team, initially trained during the orientation workshop, remained consistent across all assessments except for two disaster management experts who were replaced due to scheduling conflicts. These experts, managed from the National Society of Emergency and Disaster Risk Management (NSEDRM), brought unique expertise in hospital disaster preparedness and response. However, due to scheduling constraints, NSEDRM implemented a cascading approach, ensuring knowledge transfer among team members and rotating personnel across assessments. Disaster management experts were primarily present on the final day, typically arriving on the evening of the second day. To ensure consistency and continuity, WHO staff provided ongoing support for the emergency and disaster management module from Day Zero and remained actively involved throughout the entire assessment cycle.

From the second assessment at Bharatpur Hospital (17 – 19 December 2024), Bagmati Province, the local assessors were split into two teams: Team A and Team B. Team A led the assessment at Bharatpur Hospital, supported by Team B, while GHI experts provided quality assurance and needful guidance. During the third assessment at Lumbini Provincial Hospital, Butwal (21 – 23 December 2024), Team B took the lead with support from Team A, again under the guidance of GHI experts. Trainers and trainees for each module were further supported by WHO staff. GHI experts not only provided technical training but also

emphasized assessment etiquette, demonstrating effective briefing and debriefing techniques while maintaining diplomacy and professionalism.

The final four assessments were conducted by two teams with support from WHO Nepal personnel on the field. Team A carried out assessments at Province Hospital, Surkhet (5–7 January 2025) and Ilam Hospital, Ilam (20–22 January 2025), while Team B conducted assessments at Seti Hospital, Dhangadi (5–7 January 2025) and Dhaulagiri Hospital, Baglung (20–22 January 2025).

3. On-Site Evaluation with Checklists

Modules Used in the Assessment:

- Hazards Assessment – Identification of major risks (earthquake, wind, fire, and flood).
- Structural Safety – Evaluation of hospital building integrity and earthquake resistance.
- Non-Structural Safety – Examination of utilities, medical equipment, and architectural elements.
- Fire Safety – Assessment of fire prevention, suppression, and emergency evacuation measures.
- Emergency & Disaster Management – Review of disaster response preparedness.
- Access Audit – Evaluation of access barriers for people with disabilities.

Key Assessment Areas:

- Building structure and design (seismic resilience, construction materials, modifications).
- Critical infrastructure (electricity, water supply, waste management, medical gases).
- Emergency planning and response capabilities (simulation drills, logistics, coordination).
- Accessibility standards (signage, entryways, circulation paths, hospital layout).

Assessment Execution

Each hospital assessment followed a three-day schedule:

Day 1:

- Briefing session with senior management, engineers, and key staff.
- Hazards Assessment module discussion.
- Teams split into groups to evaluate Structural, Non-Structural, Fire Safety, Access Audit, and Disaster Management aspects.
- On-site physical assessment of hospital buildings and utilities.

Day 2:

- Full-day assessment of hospital buildings and critical systems.
- Daily review meeting to analyze findings and refine the evaluation process.

Day 3:

- Final clarifications and preparation of findings.
- Debriefing session with management (2 hours).
- Presentation of findings and recommendations across all assessment modules.
- Categorization of recommendations into short-term, medium-term, and long-term actions.

GHI experts provided continuous technical training and demonstrated professional briefing/debriefing techniques in the first three assessments. WHO Nepal staff remained engaged throughout assessments for consistency. At the end of each day, a team meeting was held to review findings and plan for the following day. Assessors also worked on technical aspects of the assessment in the evenings.

In summary, the assessment adopted a structured methodology that emphasized strong ownership and coordination by the Ministry of Health and Population (MoHP), the formation of a technical working group, strategic planning and decision-making, expert onboarding and training, on-site evaluations, and checklist-based reviews to identify safety gaps and potential risks. Existing conditions were systematically documented using measurements and photographic evidence to highlight areas requiring improvement. Additionally, focus group discussions with hospital management representatives provided valuable insights to strengthen future disaster preparedness and planning efforts.

Chapter 3: Structural Safety Assessment and Findings

This chapter presents a generalized summary of the Structural Safety Module based on evaluations conducted across multiple hub hospitals. The assessment focused on seismic resilience, material integrity, and compliance with building codes (NBC 105:2020, IS 1893:2016). Key objectives included identifying vulnerabilities in both older and newer constructions, assessing retrofitting needs, and ensuring disaster-ready infrastructure for uninterrupted healthcare services.

Scope

This module assesses the resilience of hospital buildings, focusing on their design, construction type, existing condition, and ability to withstand natural hazards. The findings aim to inform risk reduction strategies, support resilient infrastructure planning, and guide targeted investments in retrofitting or reconstruction to safeguard health service continuity.

The assessment was carried out using a visual, non-destructive survey approach guided by the World Health Organization's Hospital Safety Index (HSI) framework, supported by references to Nepal National Building Code (NBC 105:2020) and relevant Indian Standards (IS 1893:2016).

The following methods and tools were used:

- Walkthrough inspections of key hospital buildings and infrastructure.
- Observation of visible structural elements: columns, beams, walls, floors, ceilings, and roofs.
- Review of existing architectural/structural drawings where available.
- Photographic documentation of defects and vulnerable components.
- Consultations with hospital engineers and facility management teams to understand building histories, retrofits, and incident records (if any).

Although the assessment did not involve geotechnical studies or load simulations, it provides a rapid yet reliable overview of structural vulnerabilities and capacities, flagging areas where more detailed investigations are necessary.

Observations and Findings

3.1.1 Building Design and Materials

Strengths:

- Newer blocks (constructed post – 2010) generally exhibited robust Moment-Resisting Frame (MRF) designs with brick infill walls, complying with modern seismic standards.
- Structural drawings were available for most recent constructions, facilitating accurate assessments.

Gaps:

- Older blocks (pre-1990) predominantly used load-bearing masonry, showing signs of deterioration (cracks, corrosion, termite damage).
- Modifications (e.g., added floors, changed room functions) in some hospitals lacked proper engineering review.






Image 3.1 (Left to Right, Top to Bottom): Hospital buildings across seven assessed hub hospitals. (Photos by Mr. Piyush Pradhan & Ms. Puja Maharjan)

3.1.2 Structural Integrity

Strengths:

- Hospitals with dual structural systems (e.g., shear walls + MRF) demonstrated higher resilience.
- Newer expansions adhered to ductile detailing requirements.

Gaps:

- Seismic gaps between connected blocks were often improperly sealed or neglected.
- Non-structural elements (partition walls, parapets) exhibited cracks due to aging or poor maintenance.
- Vegetation growth on walls/roofs and water seepage accelerated material degradation.

Image 3.2 (Left to Right; Top to Bottom): Seismic Gaps Filled Improperly; Visible Wall Cracks; Vegetation Growth Damaging The Structure; RCC Column Cut To Lay Armored Cable; Rigid Pipes Placed Vulnerably Across Seismic Joints; Properly Maintained Seismic Gaps. (Photos by Mr. Piyush Pradhan &

3.1.3 Hazard Exposure

- Past disasters: Some hospitals reported prior earthquake/flood damage, with repairs not always meeting current standards.
- Proximity risks: Older buildings were vulnerable to pounding effects during earthquakes due to inadequate separation gaps.

Common Structural Issues Identified

Image 3.2 (Left to Right; Top to Bottom): Seismic Gaps Filled Improperly; Visible Wall Cracks; Vegetation Growth Damaging The Structure; RCC Column Cut To Lay Armored Cable; Rigid Pipes Placed Vulnerably Across Seismic Joints; Properly Maintained Seismic Gaps. (Photos by Mr. Piyush Pradhan & Ms. Puja Manandhar)

Structural weaknesses, particularly in essential service buildings, have significant implications for hospital safety and overall functionality in the context of disaster preparedness. These vulnerabilities pose immediate life safety risks to staff, patients, and caregivers during seismic events, potentially leading to the loss of critical services such as emergency care and surgical operations at a time when they are needed most. The continuity of services may be severely disrupted due to the need for evacuation, or because of structural damage or collapse. Furthermore, the financial burden of post-disaster repairs often far exceeds the cost of proactive retrofitting measures. Beyond physical and financial impacts, infrastructure failures can also lead to negative public perception and expose hospitals to legal liabilities in cases where casualties result from preventable structural deficiencies.

Across all sites assessed, several recurring structural concerns were noted:

3.1.4 Seismic Performance Gaps

- Older buildings lack seismic resilience entirely, while newer buildings often fail to fully comply with the latest seismic codes.
- Seismic pounding risk exists where closely spaced buildings are inadequately separated.
- Improper structural jointing may lead to torsional irregularities and failure under lateral loads.

3.1.5 Cracks and Damage

- Diagonal and vertical cracks in walls and columns, often due to differential settlement or thermal stresses.
- Corrosion of steel reinforcements in beams and columns where concrete cover is insufficient or water has seeped in.
- Water seepage from roofs and poor drainage contributing to concrete deterioration.

3.1.6 Poor Maintenance and Aging

- Vegetation growth on rooftops and exterior walls suggests long-term neglect.
- Spalling of concrete and rust stains from exposed rebars indicate structural weakening.
- Drainage pipes leak or overflow, especially in older wings, accelerating building wear and tear.

3.1.7 Hazardous Additions

- Unauthorized rooftop extensions made with lightweight or temporary materials.
- External metal staircases not properly anchored to structural elements.

- Tiling, false ceilings, and other non-structural components added without engineering input, raising risks of falling debris during earthquakes.

3.1.8 Inadequate Documentation

- Absence of as-built drawings or engineering records for many buildings.
- Limited access to past renovation or retrofitting information.
- Inability to trace original structural designs or verify building permits in some cases.

Image 3.4: Ongoing Addition Of The Second Floor, Constructed In Adherence To The Original Building Design. (Photo by Mr. Piyush Pradhan)

Summary of Recommendations

3.1.9 Short-Term (0 – 6 Months)

- Restrict access to visibly unsafe buildings.
- Remove overgrown vegetation and clean roof drainage systems.
- Seal wall cracks, cover exposed reinforcement, and treat damp areas.
- Undertake rapid vulnerability assessments by certified structural engineers.
- Establish signage and barriers around high-risk zones.

3.1.10 Medium-Term (6 Months – 2 Years)

- Perform detailed structural assessments for key service buildings.
- Retrofit buildings that can be salvaged using cost-effective techniques such as jacketing, shear wall addition, and steel bracing.
- Improve site drainage, expand gaps between adjacent buildings where feasible, and secure roof-top utilities.
- Strengthen connections between non-structural components (ceilings, lighting, pipelines) and the main structure.

3.1.11 Long-Term (2 – 5+ Years)

- Phase out and demolish unsalvageable masonry buildings, prioritizing those used by vulnerable populations (e.g., maternity wards, pediatric units).
- Construct new resilient buildings using modern engineering standards and hazard-resistant design.
- Institutionalize regular building audits, maintenance protocols, and budgeting for structural safety.
- Incorporate disaster-resilient planning in the hospital's long-term masterplan, aligning infrastructure investments with national building code updates.

The structural safety status across the assessed hospitals reflects a combination of progress and persistent risk. While newer RCC buildings provide a stronger baseline for safety, design and maintenance gaps continue to pose threats to hospital functionality during disasters. Meanwhile, older masonry structures present clear and immediate vulnerabilities that must be addressed through a strategic blend of retrofitting, demolition, and redevelopment.

Enhancing hospital infrastructure is not just a matter of compliance; it is a life-saving investment. Timely action in assessing and strengthening structures will significantly reduce casualty risks, ensure service continuity, and build public confidence in the healthcare system's resilience.

Chapter 4: Non-Structural Safety Assessment

This module summarizes the assessment findings on non-structural elements across seven healthcare facilities. These elements – internal fixtures, medical equipment, utility systems, and storage methods – are essential for maintaining hospital functionality during emergencies.

Beyond physical infrastructure, the effective operation of healthcare facilities depends heavily on reliable support systems, including electricity and water supply, access to medical gases, waste management, and the availability of quality medical equipment and supplies. Any disruption in these systems can severely impact patient safety and hospital performance, especially during disasters.

This section highlights key observations and provides actionable recommendations to guide hospital administrators and policymakers in strengthening non-structural components. Emphasis is placed on adopting best practices, ensuring regular maintenance, and prioritizing improvements to enhance safety, efficiency, and sustainability – particularly in resource-limited settings.

By outlining areas for improvement and offering phased, practical solutions, this report serves as a valuable resource for stakeholders working to improve the resilience and operational readiness of healthcare facilities, ultimately aiming to improve health outcomes.

Observations and Findings

4.1.1 Electricity Supply

Electricity is a vital component of hospital infrastructure, directly influencing the continuity and safety of healthcare services. The hospital safety assessment across seven hub hospitals in Nepal revealed critical vulnerabilities in the electrical systems, which pose serious risks to the functionality of essential medical services, especially during emergencies.

- Reliability of Power Supply: Several hospitals experienced frequent and prolonged power outages, significantly disrupting patient care and essential services.

These interruptions were particularly detrimental during critical procedures such as surgeries, intensive care, and neonatal support. Most hospitals depend on a single electricity source (substation), without redundancy, making them highly vulnerable to grid failures.

- Electrical Infrastructure and Protection: A concerning number of hospitals had poorly maintained powerlines, cables, and cable ducts, lacking basic physical protection and security. Transformers and substations were not properly anchored, exposing them to physical damage during natural disasters such as earthquakes. While control panels and related components were generally in fair condition, some required improved shielding and maintenance. Additionally, poor lighting in critical areas and emergency pathways was observed, with no backup lighting systems or protective measures in place.

- Backup Power Systems: Although many hospitals were equipped with backup generators and some had installed solar power systems, significant gaps were noted in their implementation and management. Most generators were not properly anchored, and there was no regular testing or preventive maintenance. Some backup systems failed to activate during outages or lacked sufficient capacity to power critical departments. Despite fuel storage being available for approximately 72 hours in most hospitals, none had formal written agreements with suppliers to ensure timely replenishment, nor did they have dedicated or secure fuel storage tanks.

- Power Surge Protection: Several hospitals lacked proper surge protection systems, increasing the risk of damage to sensitive and expensive medical equipment. The absence of surge protection mechanisms also compromises the safety of the overall electrical network within hospital premises.

Image 4.1 (Left to Right, Top to Bottom): Unanchored Transformer; Unmanaged Cabling; Unanchored Diesel Generator; Distribution Panel Affected by Fire Hazard; Cabling and Ducting. (Photo by Ms. Saru Manandhar & Mr. Raushan Gupta)

In summary, while some hospitals have initiated measures like solar systems and generators to improve energy resilience, the overall state of electrical safety remains inadequate. There is an urgent need for comprehensive planning, improved infrastructure, redundancy in power sources, formal fuel supply arrangements, and regular system testing to ensure reliable and resilient electricity systems in healthcare facilities.

4.1.2 Water Supply

Water is indispensable for various medical operations, including surgeries, sanitation, and sterilization. The assessment of water supply systems showed mixed results.

- Quality and Availability of Water: The quality of the water supply was inconsistent. While 60-80% of the water in the hospitals was in good condition, the quality had not been tested, and in some cases, it was sourced from local supplies that were not always monitored for quality control. Some hospitals had access to treated, potable water, while others relied on deep boring sources, which were introduced as alternate supply options. These deep boring sources provided 30-80% of the daily water demand in cases of emergencies or disasters. Furthermore, the absence of continuous water supply in certain areas raised concerns about the provision of basic hygiene services. Although most hospitals had enough water to cover 24 hours of operation, they lacked sufficient reserves for up to 74 hours, leading to potential shortages during periods of high demand or supply disruptions.

- Water Storage and Management: Many hospitals lacked adequate water storage systems, which could lead to water shortages during periods of high demand or disruptions in the main water supply. This deficiency often resulted in delays in patient care or interruptions in essential services, such as cleaning and sterilization processes. Additionally, pumps were not regularly maintained, further exacerbating the risk of water supply interruptions.

Image 4.2 (Left to Right, Top to Bottom): Water Tanks; Unmaintained RO Water Supply; Water Pumps. (Photo by Ms. Saru Manandhar & Mr. Sanjay Bahadur Singh)

- Water Treatment and Filtration Systems: Many hospitals did not have robust water filtration or treatment systems in place. While some facilities employed basic filtration, more advanced systems, such as reverse osmosis (RO) or ultraviolet (UV) treatment, were absent, exposing patients to the risk of waterborne diseases. Generator backups were provided to pump houses to ensure a continuous water supply, but without proper filtration, the health risks remain a concern.

4.1.3 Medical Gases

Medical gases, including oxygen, nitrous oxide, and medical air, are essential for patient care, particularly in emergency, critical, and surgical departments. The assessment revealed a mixed picture of medical gas system functionality, with notable improvements in some areas but persistent gaps in others.

- Oxygen Supply: Oxygen plants were found in almost all assessed hospitals, which is a significant advancement in ensuring self-reliance for oxygen production. However, in many facilities, these plants were not properly anchored, raising concerns about equipment stability and safety, especially during seismic events or operational vibrations. Over 80% of the oxygen supply pipelines were reported to be in working condition, ensuring the delivery of medical oxygen to critical care areas. Nonetheless, challenges remained in the maintenance of on-site generation systems and in ensuring consistent deliveries where external supply was still relied upon. Some hospitals also lacked adequate backup systems, such as reserve

oxygen cylinders or tanks, making them vulnerable during peak demand periods or supply interruptions.

- Storage and Distribution Systems: While a few hospitals had dedicated and properly managed storage areas for medical gas cylinders, many others were observed storing cylinders in an unorganized and potentially unsafe manner. Such disorganized practices pose risks of leakage, contamination, or delayed access during emergencies. Additionally, issues related to inadequate pressure regulation and the absence of standard safety measures were observed in several facilities.

- Monitoring and Safety Protocols: Although documented procedures and maintenance or inspection records were available in most hospitals, the implementation of monitoring systems was still insufficient. Many facilities lacked real-time monitoring tools for gas levels or system performance, relying instead on manual checks that were often irregular. This gap, coupled with underdeveloped safety protocols, increases the risk of insufficient supply, pressure instability, or undetected leaks.

Image 4.3 (Left to Right, Top to Bottom): Unanchored Pressure Swing Adsorption (PSA) Oxygen Plant; Haphazardly Stored Oxygen Cylinders; Rigid Oxygen Pipeline Crossing Between Two Buildings Posing Vulnerability During Earthquakes. (Photos by Ms. Saru Manandhar & Mr. Sanjay Bahadur Singh)

4.1.4 Waste Management

Effective waste management is crucial for infection control, environmental protection, and regulatory compliance. The hospitals assessed demonstrated varying degrees of competency in waste management practices, with both strengths and gaps identified across different facilities.

- Segregation and Storage: In some hospitals, waste segregation remained poor, with instances of medical waste being mixed with general waste. This practice increases the risk of cross-contamination and makes it challenging to dispose of hazardous waste safely. While certain facilities ensured proper segregation and storage, others stored hazardous waste in non-secure or inadequately ventilated areas, posing health and safety risks.

- Disposal Methods: Several hospitals had functioning waste disposal systems with adequate capacity, and there was evidence of compliance with standard procedures and regular maintenance. However, the use of incinerators or other safe disposal units was not consistent across all sites. In facilities lacking proper disposal infrastructure, unsafe or illegal dumping was reported, and medical waste was sometimes disposed of without prior treatment, increasing environmental and public health risks.

- Wastewater Treatment: The treatment of wastewater, especially from surgical areas, remained inadequate in some hospitals. Effluents were occasionally released without proper treatment, raising concerns about contamination of nearby water bodies and the potential health risks to surrounding communities.

- Compliance and Staff Preparedness: While some hospitals showed good compliance with national regulations on waste management, others lacked adequate awareness and enforcement of existing guidelines. Documented procedures and records of maintenance or inspection were limited in many facilities, making it difficult to ensure accountability and continuous improvement. Furthermore, staff members involved in waste handling were often not fully equipped with appropriate Personal Protective Equipment (PPE), increasing their exposure to hazardous materials and infection risks.

Image 4.4 (Left to Right): Waste Segregation Facility; Autoclave Machine for Medical Waste Treatment; Improper Disposal of Liquid Waste. (Photos by Ms. Saru Manandhar & Mr. Sanjay Bahadur Singh)

4.1.5 Medical Equipment and Supplies

The availability, maintenance, and management of medical equipment and supplies are fundamental to the delivery of quality healthcare. This assessment highlighted both strengths and weaknesses across different hospitals.

- Availability and Functionality: Most hospitals had a sufficient inventory of medical equipment; however, the availability of critical equipment such as ventilators, infusion pumps, and diagnostic tools was inconsistent. In some cases, the equipment was outdated or in disrepair, making it unreliable during critical procedures.

- Maintenance and Calibration: Regular maintenance and calibration of medical equipment were often overlooked or conducted infrequently. This resulted in equipment malfunctions, leading to delays in patient care. Calibration was especially important in devices like blood pressure monitors, infusion pumps, and ECG machines, where accuracy is critical.

- Supply Chain Management: Several hospitals experienced challenges in managing medical supplies, including medicines, surgical instruments, and consumables. Shortages or delays in procurement were common, which sometimes resulted in treatment delays. In some facilities, inventory management systems were either outdated or lacked proper tracking, leading to difficulties in ensuring the timely availability of essential supplies.

Sterilization of Equipment: Some hospitals did not follow best practices for sterilization of surgical instruments and other reusable medical equipment. Improper sterilization could lead to infections and patient complications, especially in high-risk areas such as operating rooms or intensive care units (ICUs).

Image 4.5 (Left to Right): Unanchored Laboratory Equipment; Securely Placed ECG Machine. (Photos by Ms. Saru Manandhar & Mr. Sanjay Bahadur Singh)

4.1.6 Architectural Safety

Hospitals are complex facilities where the value of the contents – ranging from advanced medical equipment and furnishings to critical support systems – often surpasses the cost of the physical building. This disparity highlights the immense importance of architectural safety in hospital design. A robust structure featuring sound false ceilings, securely anchored equipment, and well-integrated utility systems is vital to protect these expensive and essential assets. In addition, the incorporation of accessible ramps, wide corridors, non-slip flooring, reinforced walls, optimal lighting, and efficient ventilation systems further ensures that the facility remains functional and safe for patients and staff alike. Such comprehensive architectural planning not only preserves the costly investments within but also guarantees uninterrupted healthcare service delivery during both routine operations and emergencies.

Image 4.6: Architectural Lapses Pose Significant Risks During Hazards And Can Lead To Substantial Property Damage. (Source: Google)

4.1.7 Telecommunication System

The assessment of the telecommunication systems across the seven hospitals reveals that internet and landline infrastructures are generally in good condition. However, hospital-wide telecommunications equipment is inconsistently present; in many facilities, traditional telephone systems are either non-functional or have been replaced by mobile-based communication. Most hospitals have Public Address Systems (PAS) installed at the departmental level, but a centralized PAS system is lacking. Furthermore, none of the hospitals have a documented procedure for the emergency maintenance and restoration of standard or alternate communication systems. This gap could pose significant challenges in crisis scenarios, underscoring the need for structured communication protocols and system redundancies to ensure seamless coordination during emergencies.

Summary of Recommendation

The assessment has identified several areas for improvement regarding the safety and resilience of non-structural elements in healthcare facilities. While some hospitals exhibit strong safety measures, there is a significant opportunity for improvement in others. By adopting the phased recommendations outlined below, healthcare facilities can strengthen their disaster preparedness, improve operational continuity, and ensure the safety of staff and patients. Through dedicated efforts in the short, medium, and long term, hospitals can create safer, more resilient environments that can withstand the challenges posed by natural and man-made disasters.

4.1.8 Short-Term (0 – 6 Months)

- Securing Non-Structural Elements:
  - Hospitals should begin by identifying and securing critical non-structural elements, such as medical equipment, furniture, and large machines. Use anchoring and stabilizing techniques (e.g., wall anchors, anti-tip devices) for heavy or movable items.
  - Implement a visual inspection protocol to identify unsecured elements in high-risk zones like patient wards and emergency rooms.

- Upgrading Emergency Lighting and Signage
  - Conduct a thorough audit of existing emergency lighting systems and signage. Replace outdated or non-functional units to ensure full coverage across the facility.
  - Mark all emergency exits clearly, ensuring unobstructed pathways to exit points, particularly in less-used areas like basements or storage rooms.

- Immediate Staff Training on Non-Structural Safety
    - Conduct short, focused training sessions to raise staff awareness about the importance of securing non-structural elements.
    - Provide practical demonstrations on how to secure equipment and materials safely.

4.1.9 Medium-Term (6 Months – 2 Years)

- Enhancing Seismic Safety Compliance
    - Engage with experts to assess and strengthen the seismic stability of non-structural elements, particularly in earthquake-prone regions.
    - Develop a comprehensive plan for retrofitting and securing non-structural elements, ensuring compliance with local and international seismic safety standards.

- Improving Hazardous Materials Storage
    - Implement a facility-wide review of hazardous material storage practices. Ensure that all chemicals, pharmaceuticals, and medical waste are stored according to safety regulations, with appropriate ventilation, labeling, and access control.
    - Upgrade storage facilities for hazardous materials to meet safety codes, minimizing contamination and exposure risks.

- Upgrade Operational Continuity Plans
    - Update disaster preparedness and continuity plans to include specific protocols for managing non-structural elements during emergencies, including guidelines on securing equipment and safeguarding utilities.
    - Integrate non-structural elements into overall emergency response plans and ensure all staff are familiar with these procedures.

4.1.10 Long-Term (2 – 5+ Years)

- Continuous Monitoring and Risk Assessments
    - Establish a regular risk assessment schedule for non-structural elements, ensuring that all changes to the facility are considered in terms of safety and operational impact.
    - Use digital tools for ongoing monitoring of the state of equipment, storage, and non-structural safety measures, allowing for timely interventions.

- Ongoing Staff Training and Simulation Drills
  - Implement a comprehensive training program that includes both theoretical and practical components, focusing on disaster preparedness, securing non-structural elements, and responding to emergencies.
  - Conduct regular simulation drills to practice securing non-structural elements during emergencies, ensuring that staff are prepared for a variety of disaster scenarios.

- Long-Term Upgrades to Infrastructure
  - Plan for long-term improvements in the infrastructure to enhance non-structural safety, including the installation of advanced seismic protection systems and the integration of smart technologies for real-time monitoring of non-structural elements.
  - Develop a phased approach for retrofitting facilities based on priority, ensuring that the most critical areas are addressed first.

Chapter 5: Fire Safety Assessment

Hospitals are critical infrastructure that demand high levels of fire safety due to their continuous operation, vulnerable patient populations, extensive use of electrical and medical equipment, and the presence of flammable substances such as medical gases and chemicals. Inadequate fire safety measures can lead to catastrophic consequences, including injury, loss of life, and disruption of essential healthcare services.

In Nepal, many healthcare facilities operate in aging or repurposed buildings with limited fire-resilient design. Furthermore, a lack of regular safety audits and the absence of robust fire safety governance compounds existing vulnerabilities. This assessment aimed to evaluate fire prevention, detection, and suppression systems, assess hospital preparedness, and provide recommendations for improving fire safety resilience.

This chapter presents a generalized summary of the Fire Safety module, based on observations and findings from the fire safety assessments conducted across seven hub hospitals. The intent is to consolidate common patterns, vulnerabilities, and strengths identified during the assessment process, without referring to specific institutions, to ensure a broader applicability of the insights gathered.

The assessment was guided by the National Building Code of Nepal (NBC 107:1994) and Indian Standards such as IS 2190:2010 (for portable extinguishers) and IS 3844:1989 (for hydrant systems), offering a harmonized approach to evaluating infrastructure and preparedness.

Observations and Findings

The findings revealed systemic challenges, with considerable variation in fire safety capacities across facilities. Key thematic issues are outlined below:

5.1.1 Infrastructure and Systems

- Fire Suppression Systems: Most hospitals had partial fire suppression infrastructure, including hose reels, hydrants, or risers, often with missing or non-functional components. Fire pumps existed in some hospitals but lacked regular testing or were not connected to reliable water sources.

- Fire Detection: The presence of smoke or heat detectors was inconsistent. In some facilities, only limited zones were covered, while in others, the systems were completely absent. Alarm panels were often outdated or not integrated across hospital wings.

- Sprinklers and Water Mist Systems: No facility had a fully operational sprinkler system, a critical gap especially in high-risk areas such as ICUs, operation theaters, and laboratories.

Image 4.6: Architectural Lapses Pose Significant Risks During Hazards And Can Lead To Substantial Property Damage. (Source: Google)

5.1.2 Wiring Electrical Safety

- and Load Management: Older buildings showed disorganized wiring and overloaded circuits, creating high-risk zones for electrical fires. In several facilities, flammable materials were stored dangerously close to high-voltage panels and generators.

- Emergency Power Supply: Emergency lighting was inconsistently installed. Where present, it was often connected to the main power supply, negating its utility during outages.

5.1.3 Hazardous Materials

- Storage Practices: Improper storage of oxygen cylinders, diesel drums, and flammable chemicals was widespread. In multiple locations, these materials were stored adjacent to ignition sources such as diesel generators or electrical panels.
- Gas Cylinder Safety: Cylinders were frequently unlabeled, stored without racks or chains, and in poorly ventilated spaces, in violation of fire safety codes.

Image 5.2 (Left To Right): Combustible Materials In Store Without Any Fire Extinguishers And Fire Control Systems Installed; Storage Of Combustible Materials Near Electrical Appliances. (Photos By Saru Manandhar)

5.1.4 Access, Egress, and Evacuation

- Obstructed Access Routes: In many hospitals, fire engine access to the building was obstructed by parked vehicles, construction debris, or temporary structures.
- Exit Routes and Signage: Staircases and corridors meant for evacuation were cluttered or blocked. Fire exits were often poorly marked or locked. Illuminated signage and floor markings were either missing or dysfunctional.
- Assembly Areas: There was minimal awareness or signage about designated emergency assembly points, and in some instances, these areas were being used for storage or parking.

5.1.5 Preparedness and Response

- Fire Safety Plans and SOPs: Only a few hospitals had documented Hospital Disaster Preparedness and Response Plans (HDPRPs) that included fire scenarios.

- Staff Awareness and Training: Fire safety training was limited to certain departments (e.g., security or maintenance). Clinical staff, housekeeping, and administrative personnel often lacked even basic fire response knowledge.

- Drills and Simulations: Regular fire drills were not being conducted. In hospitals where a drill had been performed, documentation was absent or had not been updated in over a year.

Image 5.2 (Left To Right): Combustible Materials In Store Without Any Fire Extinguishers And Fire Control Systems Installed; Storage Of Combustible Materials Near Electrical Appliances. (Photos By Saru Manandhar)

5.1.6 Monitoring and Governance

- Fire Safety Personnel: Dedicated fire safety focal persons or committees were rare. There was no structured chain of accountability for fire preparedness.

- Inspection and Maintenance Records: Maintenance logs for fire equipment, including extinguishers and hydrants, were either missing or inconsistently maintained. Some extinguishers were found expired or depressurized.

- Coordination with Local Fire Services: Coordination with local fire departments was minimal. Hospitals had not conducted joint drills or communication tests with fire services, weakening response readiness.

Summary of Recommendations

5.1.7 Short-Term (0 – 6 Months)

- Infrastructure Readiness:
  - Restore functionality of existing fire suppression systems.
  - Refill, service, and reposition fire extinguishers in line with IS 2190:2010.
  - Establish temporary emergency lighting using battery-operated systems until proper connections can be made.
  - Deploy use of Fire – Resistant Cabinets for Storing Flammable Chemicals.

Image 5.5: Fire-Resistant Cabinets for Storing Flammable Chemicals. (Source: MSIG)

- Risk Reduction:
  - Immediately relocate combustible materials (oxygen, fuel, chemicals) away from heat and ignition sources.
  - Create secure, ventilated, and isolated storage spaces for hazardous materials.
  - Clear blocked exits, stairwells, and fire engine access routes.

- Awareness and Training:
  - Deliver rapid fire safety training for all staff categories, including clinical and non-clinical departments.
  - Post basic fire action signage and floor escape plans in all hospital wings.

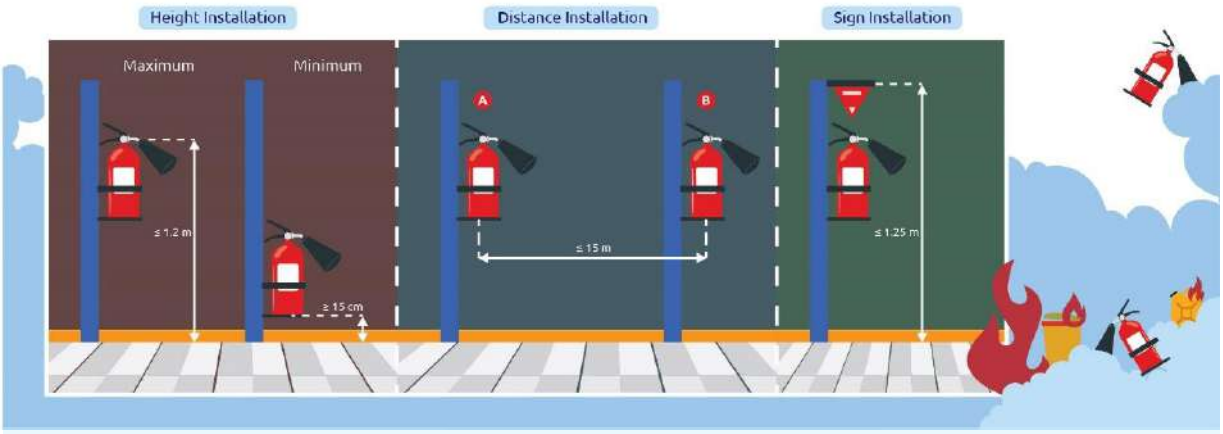

Image 5.6: Recommended Placement Standard for Fire Extinguishers. (Source: MSIG)

- Procedural Measures:
  - Identify and assign a Fire Safety Focal Person in each hospital.
  - Begin basic inspection checklists for fire extinguishers, hydrants, and emergency lights.

5.1.8 Medium-Term (6 Months – 2 Years)

- System Upgrades:
  - Install smoke and heat detectors in high-risk areas such as OT, ICU, server rooms, and storage facilities.
  - Upgrade fire pumps and connect them to reliable water sources with pressure gauges.
  - Retrofit electrical systems in older buildings to eliminate fire-prone wiring.

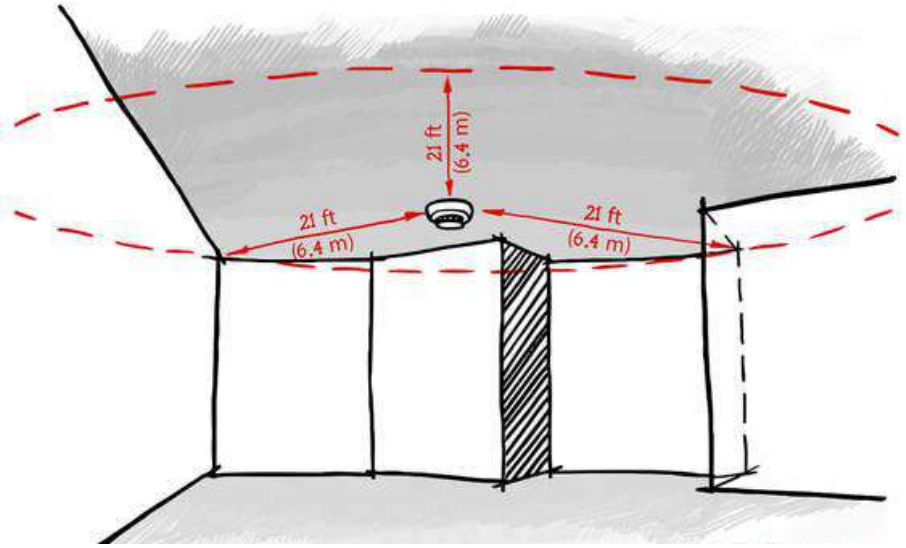

Image 5.7: Standard Reference for Placement of Smoke Detectors.

- Preparedness Drills:
  - Institutionalize quarterly fire drills, with external observers and scenario-based simulations.
  - Review and revise HDPRPs; ensure distribution and orientation across all departments.

- Structural Adjustments:
  - Develop clear signage for exits and assembly points using photoluminescent or LED technology.
  - Create zoning plans for fire control: designate "No Storage Zones," isolation areas for chemicals, and safe evacuation paths.

- Documentation and Monitoring:
  - Establish digital logs or registers for inspection records, system status updates, and staff training.
  - Begin interdepartmental fire safety audits and quarterly review meetings.

Image 5.7: Standard Reference for Placement of Smoke Detectors.

5.1.9 Long-Term (2 – 5+ Years)

- Infrastructure Development:
  - Install centralized fire alarm control panels linked to all buildings.
  - Expand into fire sprinkler systems in critical areas, considering water mist systems where traditional sprinklers may damage equipment.
  - Build or upgrade fire-safe stairwells with pressurization systems.

- Technology and Automation:
  - Deploy fire safety dashboards to monitor equipment status, alarm logs, and drill schedules.
  - Integrate fire systems with hospital Building Management Systems (BMS) for automated response coordination.

- Institutionalization:
  - Form a permanent Fire Safety Committee, including administrative, engineering, and clinical leads.
  - Introduce fire safety modules in hospital induction and CME (continuing medical education) programs.
  - Partner with local fire departments for annual joint exercises and pre-incident planning.

- Policy and Advocacy:
  - Advocate for mandatory compliance audits aligned with NBC 107:1994 and IS codes.
  - Develop hospital-level Fire Safety Policies backed by budgetary provisions.

Chapter 6: Access Audit

This chapter presents a generalized summary of the Access Audit Module based on observations from assessments conducted across seven hub hospitals. The audit evaluated compliance with inclusive design principles to ensure safe, equitable access for all users, including persons with disabilities (PWDs), elderly patients, and those with mobility challenges.

Aligned with the RECU framework (Reach, Enter, Circulate, Use), the assessment criteria included:

- Nepal Building Code (NBC 206:2015)
- DUDBC Universal Design Guidelines
- UNCRPD Commitments

Findings reflect recurring themes across facilities, with recommendations to improve accessibility and emergency preparedness.

Observations and Findings

Most hospitals demonstrated strengths in accessibility, offering multiple entry points with unobstructed approach roads. Additionally, drop-off zones were commonly located near main entrances, ensuring convenient access for ambulances and patients with limited mobility. However, several gaps were identified. Directional signage, such as symbols and arrows at road junctions, was often inadequate or completely absent. Tactile paving to aid visually impaired individuals was rarely installed along pedestrian pathways. Moreover, designated parking spaces for persons with disabilities (PWDs) were frequently either unmarked or obstructed, limiting their effectiveness.

6.1.1 Reaching the Hospital (External Access)

(A) Approach Infrastructure

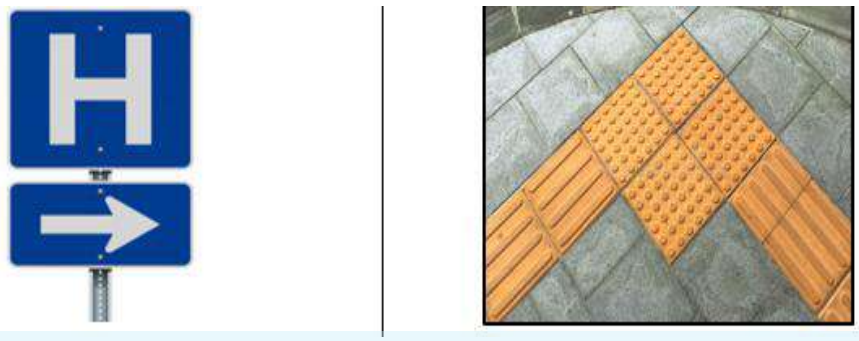

Image 6.1: (Left to right) – Example of Directional Signboard to Locate a Hospital; Example of Tactile Layout. (Source: Google)

Roadways & Pedestrian Paths: Most hospitals featured paved approach roads with curb cuts, though inconsistent maintenance led to:

- Broken pavement segments creating tripping hazards.
- Uncovered drainage ditches near walkways
- Absence of tactile guidance paths for visually impaired visitors

Transport Access: While vehicle drop-off zones were present, key issues included:

- Uneven transitions between parking areas and sidewalks
- Lack of audible crossing signals at internal roadways
- No designated pick-up/drop-off zones for ambulances

Image 6.2 (Left to Right, Top to Bottom): Accessible Barrier-Free Entrance to the Hospital; Inadequate Entry to the Hospital; Risk of Building Collapse in Emergency Situations, Potentially Causing Entrance Barrier; Unmanaged Parking. (Photos by Ms. Bimala Tuladhar)

(B) Parking Facilities

Standard parking slots were typically available but showed:

- Inadequate width (<3.6m) for wheelchair-accessible vehicles
- Missing international accessibility symbols
- Poor lighting in peripheral parking zones

6.1.2 Entering Hospital Blocks (Entrances, Ramps, and Doorways)

A key strength observed was the common availability of ramps at hospital entry points, although their slope ratios occasionally deviated from the recommended 1:15 standard. Most service rooms were equipped with sufficiently wide doors, typically exceeding 900mm, allowing smooth access for wheelchairs and stretchers. Despite these positive aspects, several gaps were identified. Many ramps lacked essential features such as handrails or proper landings, posing safety risks for users. Additionally, high plinths at toilet entrances frequently obstructed wheelchair access, undermining the overall accessibility of the facilities.

(A) Entrance Design

Ramp Systems: Present at 80% of main entrances but commonly exhibited:

- Slopes exceeding 1:15 ratio.
- Missing intermediate landings every 9m
- Slippery surface materials during monsoon

Doorway Accessibility:

- Automatic doors were rare (only in newer constructions)
- High door thresholds (>25mm) at emergency exits.
- Insufficient maneuvering space (<1.5m diameter) at entry vestibules

Image 6.3 (Left to Right, Top to Bottom): Easily Openable Doors; Inaccessible Drinking Water. (Photos by Bimala Tuladhar)

(B) Wayfinding Systems

Signage deficiencies included:

- Text-only signs without Braille or tactile elements
- Poor color contrast (grey-on-white) for low-vision users
- Inconsistent placement (often above eye-level for wheelchair users)

Image 6.4: Proper Signage for the Building. (Photos by Bimala Tuladhar)

6.1.3 Internal Circulation

Newer hospital blocks featured spacious lobbies and covered walkways, which facilitated smooth and uninterrupted movement within the premises. Staircases across most facilities generally met basic safety standards, with uniform treads and risers ensuring safe use. However, several accessibility gaps were noted. Elevators, where present, were often non-functional or lacked essential accessibility features such as Braille buttons and audio announcements. In older blocks, the presence of storage items on stair landings and the existence of narrow corridors significantly hindered circulation, especially for individuals with mobility challenges.

(A) Horizontal Movement

Corridor systems demonstrated:

- Variable widths (1.2m-2.4m) causing bottlenecks.
- Protruding objects (fire extinguishers, wall-mounted equipment)
- Lack of resting areas along long hallways

(B) Vertical Circulation

Elevator accessibility issues:

- Control panels mounted at 1.4m (above reach range)
- No auditory announcements or tactile floor indicators
- Emergency call buttons blocked by door mechanisms.

Staircase challenges:

- Open risers creating fall risks.
- Handrails without continuous gripping surfaces

Image 6.5 (Left To Right): Covered Pathway; Wide Stairways But Hindered By The Flowerpots. (Photos By Bimala Tuladhar & Saru Manandhar)

6.1.4 Using Facilities

Some hospitals were equipped with adjustable beds in critical care wards such as dialysis and orthopedics, enhancing patient comfort and care. Drinking water stations with purification systems were also available, although their maintenance was inconsistent across facilities. Despite these strengths, significant gaps remained. Universally accessible toilets—featuring grab bars, western-style water closets, and adequate turning space—were notably scarce. Additionally, emergency assembly areas and evacuation protocols that included provisions for persons with disabilities (PWDs) were largely absent, indicating a critical need for inclusive disaster preparedness measures.

(A) Sanitation Facilities

Toilet cubicles showed:

- Narrow entry doors (<900mm)

- Insufficient turning radius (<1.5m)
- Grab bars installed at incorrect heights (600mm vs standard 850mm)

(B) Patient Care Areas

Wards and clinics exhibited:

- Fixed-height examination beds (non-adjustable)
- Nursing counters with overhangs obstructing wheelchair users
- No accessible charging ports at patient waiting areas.

(C) Emergency Preparedness

Critical gaps identified:

- No tactile evacuation route maps
- Assembly areas reached only via stepped pathways.

Staff untrained in disability-inclusive evacuation protocols

Image 6.6: (Left to right) – Example of Universal Toilet; Unpreferred tap design; Preferred tap design. (Source: Google)

Summary of Recommendations

The Access Audit highlighted that while basic accessibility features exist in most hospitals, critical gaps in maintenance, wayfinding, and emergency preparedness require attention. Implementing the phased recommendations will ensure compliance with national standards and foster equitable healthcare access for all.

6.1.5 Short-Term (0 – 6 Months)

1) Pathway Improvements:

    i. Install tactile paving along key routes to assist visually impaired users.
    ii. Repair uneven surfaces and cover open drains to prevent tripping hazards.

2) Signage Enhancements: Add clear directional and pictorial signage at decision points (e.g., entrances, lobbies).

3) Parking: Clearly mark PWD parking spots with universal symbols and ensure unobstructed access.

6.1.6 Medium-Term (6 Months – 2 Years)

1) Ramp Modifications: Reconstruct ramps to standard slopes (1:15) with dual handrails and landings.

2) Toilet Retrofitting: Retrofit at least one toilet per block with grab bars, accessible sinks, and adequate turning space.

3) Staff Training: Conduct disability-inclusive emergency drills and elevator-use training

6.1.7 Long-Term (2 – 5+ Years)

1) Infrastructure: Construct curb ramps and covered walkways to link all blocks seamlessly.

2) Policy: Allocate dedicated budgets for annual accessibility audits and upgrades.

Technology: Install digital information kiosks with audio output for visually impaired users.

Chapter 7: Emergency and Disaster Management Assessment and Findings

Emergency and disaster readiness is the backbone of resilient healthcare systems. This chapter presents a generalized summary of the Emergency and Disaster Management Module based on observations from assessments conducted across seven hub hospitals.

Scope of Assessment

At each hospital, organizational and operational capacity to deliver uninterrupted patient care during emergencies – whether natural disasters, disease outbreaks, or mass casualty events were evaluated. While comprehensive risk management programs should encompass prevention, mitigation, and recovery, the assessment focused specifically on response readiness, guided by three core objectives:

- Identifying critical elements of hospital emergency management (organizational, personnel, and operational).
- Assessing existing plans and capacities for effective disaster response and mass casualty care.
- Establishing measurable benchmarks through the Hospital Safety Index scoring framework.

Hospitals were assessed using 40 evaluation items organized into seven submodules:

1) Coordination of emergency management activities
2) Response and recovery planning
3) Communication and information systems
4) Human resource mobilization
5) Logistics and financial resilience
6) Patient care continuity
7) Evacuation, decontamination, and security protocols

This report supports hospital administrators, policymakers, and other stakeholders in fostering a safer and more robust healthcare system for the communities they serve.

Assessment of Existing Preparedness Measures

The assessed hospitals demonstrated a structured approach to disaster preparedness, with Hospital Disaster Preparedness and Response Plan (HDPRP) developed collaboratively by staff and supported by technical partners. These plans followed inclusive methodologies that aligned with national preparedness frameworks and encouraged ownership among institutional stakeholders. Most hospitals had revised or updated their plans within the last two years, showing efforts to maintain relevance amid evolving risks.

Image 6.6: (Left to right) – Example of Universal Toilet; Unpreferred tap design; Preferred tap design. (Source: Google)

Training for Staff Members

The assessment highlighted the importance of regular and role-specific training on disaster preparedness. Key recommendations included:

- Assigning defined roles within Disaster Management Committees (DMCs).
- Conducting annual training programs for all staff members.
- Updating training content based on the latest versions of Hospital Disaster Preparedness and Response Plans (HDPRPs).
- Organizing simulation exercises to test readiness in real-time scenarios.

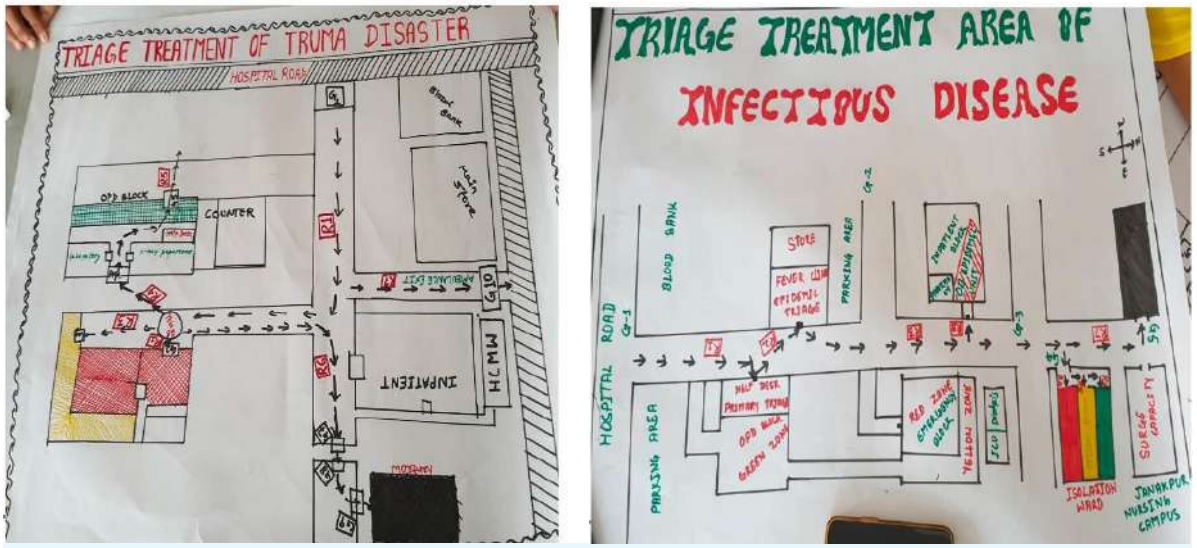

Image 7.2: (Left to right) – Well-Documented Charts of Clearly Demarcated Triage and Treatment Areas for Trauma Management and Infectious Diseases. (Photos by Dr Nabin Phuyal)

Periodic Preparedness Drill Timeline

While some hospitals had initiated drills, many cited resource constraints, and competing priorities as barriers to regular preparedness exercises. A recommended drill timeline includes:

- Quarterly tabletop exercises for strategic scenario discussions.
- Bi-annual functional exercises involving operational units.
- Annual full-scale simulations to test hospital-wide disaster response capacity.

Image 7.3: Emergency Department with Clearly Demarcated Triaging Area. (Photos by Dr Rabin Bom)

Coordination with Local Emergency Services

Coordination mechanisms with local emergency response entities were found to be in varying stages of development. Key improvement areas included:

- Updating contact directories and formalizing stakeholder engagement mechanisms.
- Strengthening communication protocols to support real-time coordination.

Testing referral and support systems with neighboring healthcare facilities.

Observations and Recommendations

Key Observations:

Most hospitals had developed HDPRPs and established Disaster Management Committees with clearly assigned roles, providing a foundational framework for emergency preparedness. Visual management tools such as color-coded bed systems helped streamline triage processes, and designated triage areas supported organized patient sorting. Emergency protocols and supplies were generally accessible, though resource levels varied. Standardized treatment protocols ensured consistent clinical practices during crises. Participation in government-led training initiatives such as HOPE and SPRP reflected a system-wide commitment to preparedness. Strong community engagement through partnerships with local clubs, volunteers, and organizations enhanced interagency collaboration. Communication systems – including emergency registration, intercoms, and reporting tools – were functional in most hospitals, while water storage systems and borehole pumps supported basic infrastructure resilience. Cybersecurity measures, including licensed firewalls, were implemented across facilities, though periodic audits were recommended.

Some of the key observations related to these preparedness measures are pointed below.

7.1.1 Coordination of Emergency Management Activities

- Disaster Committees were present but often lacked complete representation and formal training.
- Emergency coordinators were designated, but few had deputies, posing continuity risks.
- Emergency Operations Centers (EOC) were largely absent.

7.1.2 Response and Recovery Planning

- Hazard-specific sub-plans were typically missing.
- Activation protocols existed but had not been tested in real scenarios.

- Recovery plans were not documented in most hospitals.

7.1.3 Communication and Information System

- Contact directories were often outdated, affecting coordination.
- Backup communication systems like satellite phones were lacking.
- Cybersecurity was generally strong but required periodic review.

7.1.4 Human Resource Mobilization

- Emergency staff rosters were not available in several hospitals.
- Psychosocial support systems were underdeveloped.

7.1.5 Logistics and Financial Resilience

- Emergency procurement agreements existed but lacked enforceability.
- Dedicated disaster budgets were generally absent.

7.1.6 Patient Care Continuity

- Triage supplies were insufficient for prolonged emergencies.
- Referral systems remained untested.

7.1.7 Evacuation, Decontamination, and Security

- Formal evacuation plans were missing in most hospitals.
- Decontamination equipment was present, but staff training was inadequate.

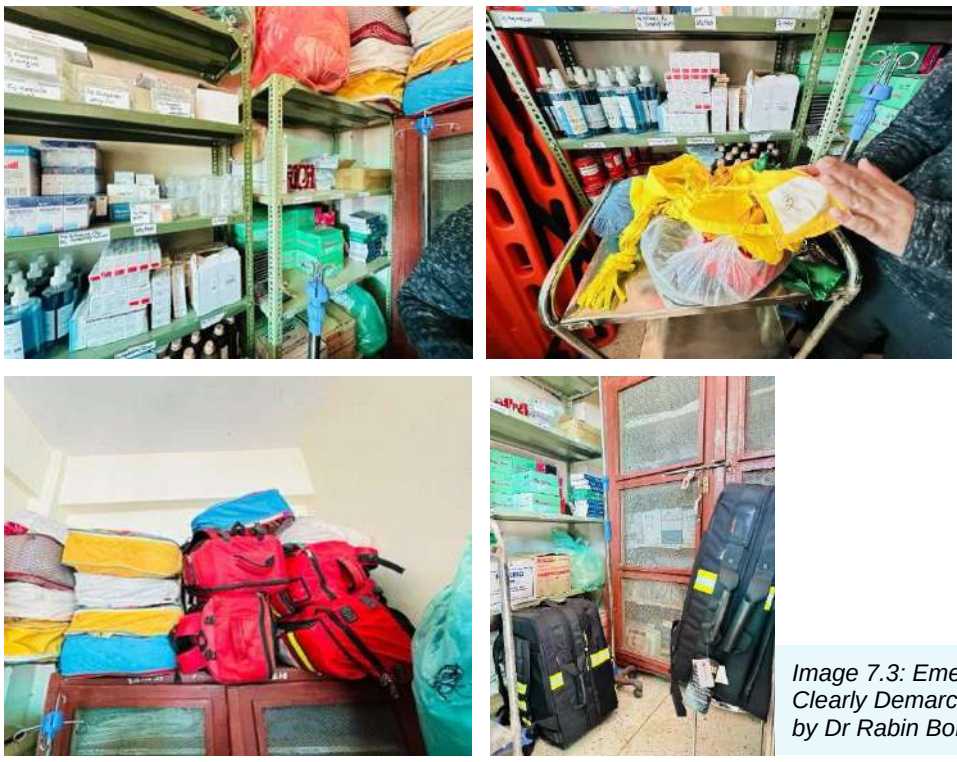

Image 7.3: Emergency Department with Clearly Demarcated Triaging Area. (Photos by Dr Rabin Bom)

Recommendations:

- Train DMC members on responsibilities and conduct annual disaster training for all staff.
- Update HDPRPs to include hazard-specific sub-plans and risk mitigation strategies.
- Develop recovery frameworks with defined stockpile replenishment mechanisms.
- Test referral systems for disaster response and adapt resource plans accordingly.
- Allocate dedicated budgets for emergencies and secure pre-arranged procurement agreements.
- Establish functional EOCs with defined protocols and resource capacities.
- Improve backup communication systems and periodically update contact directories.
- Provide training and infrastructure for psychosocial support.
- Strengthen continuity planning for critical departments such as radiology, pharmacy, and laboratories.
- Formulate long-term staffing strategies for disaster management.

Summary of Recommendations

7.1.8 Short Term Recommendations (0 to 6 months):

- Formalize DMC terms of reference and issue appointment letters.
- Appoint deputies to emergency coordinators.
- Update stakeholder directories quarterly.
- Provide disaster response training to DMC and all staff.
- Conduct tabletop drills to test plan activation.
- Maintain and audit cybersecurity measures biannually.
- Update HDPRPs based on recent risk assessments.

7.1.9 Medium Term Recommendations (6 months to 2 years):

- Set up basic Emergency Operations Centers.
- Procure backup communication tools such as satellite phones.
- Develop emergency staffing rosters.
- Stockpile supplies sufficient for 72-hour operations.
- Secure agreements with suppliers for emergency procurement.
- Conduct workshops to develop hazard-specific sub-plans.
- Run functional and full-scale drills annually.
- Expand psychosocial training and support mechanisms.
- Strengthen continuity plans for essential hospital services.

7.1.10 Long Term Recommendations (Above 2 years):

- Allocate sustained budgets for disaster preparedness.
- Develop comprehensive staffing strategies for emergency response.
- Build and equip permanent decontamination units.
- Develop and test evacuation plans with biannual drills.
- Establish fully operational EOCs with post-crisis surge capacity.
- Secure long-term procurement agreements for non-tendered emergency supplies.

Chapter 8: Conclusion and Way Forward

The assessment underscores systemic vulnerabilities across Nepal's hub hospitals, revealing recurring gaps in infrastructure resilience, operational preparedness, and inclusive design. While encouraging progress is noted in newer constructions and the adoption of disaster preparedness frameworks, critical risks remain – particularly in older buildings, unsecured non-structural components, and inadequate fire safety provisions. These risks highlight the urgent need for a comprehensive and phased approach to improving hospital safety and functionality.

To guide this transformation, the assessment outlines strategic priorities categorized into short, medium, and long-term actions. Short-term recommendations (0 – 2 years) focus on immediate, low-cost measures that hospitals can undertake without significant financial burden such as securing loose equipment, repairing minor infrastructural damages, and training staff on essential emergency protocols. These actions offer a quick yet impactful way to reduce risk.

Medium-term recommendations (2 – 5 years) involve targeted improvements that require modest investment, including structural retrofitting, hazard-specific emergency planning, routine simulation drills, and enhanced coordination with local disaster response bodies. These efforts aim to build institutional resilience over time.

Long-term recommendations (5+ years) necessitate policy-level engagement and sustained financial commitment, particularly from the Ministries. These include enacting policy reforms, allocating dedicated budgets for hospital safety, and undertaking major infrastructure upgrades in alignment with national codes and international standards.

In addition to these strategic actions, the report presents cross-cutting recommendations under governance, capacity building, investment, and inclusivity. These suggest forming permanent hospital safety committees with clear mandates, conducting regular all-hazard training for staff, integrating resilience into health sector budgeting, and adopting universal design principles to ensure accessibility and safety for all, including persons with disabilities.

Importantly, expanding this type of assessment to a broader set of hospitals across Nepal can significantly enhance national efforts to identify, prioritize, and address systemic risks. Such expansion would generate critical data and insights, enabling the development of evidence-based policies and interventions that strengthen hospital safety and

functionality during both routine operations and disaster situations. By adopting this phased, collaborative approach, Nepal can move toward a more resilient healthcare system that ensures uninterrupted, equitable, and safe care for all.

Chapter 9: Annex

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Hands-on Training on customized WHO Hospital Safety Index Tool and its application in selected hospitals in Nepal – Attendance Log

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Madhesh Institute of Health Science (MIHS), Janakpur, Madhesh Province (13 – 15 December 2024) – Briefing & Debriefing Sessions: Attendance Log

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35) Ar. Saru Manandhar, Architect, CEAD Consultancy (Team A)
36) Er. Sanjay Bahadur Singh, Biomedical Engineer, CEAD Consultancy (Team A)
37) Er. Raushan Gupta, Electrical Engineer, CEAD Consultancy (Team A)
38) Dr. Sunil Adhikari, NSEDRM
39) Mr. Samyam Mahat, WHO Nepal
40) Dr. Prakat Aryal, WHO Nepal
41) Mr. Ajit Maharjan, WHO Nepal

Dhaulagiri Hospital, Baglung, Gandaki Province (20 – 22 January 2025) – Briefing & Debriefing Sessions: Attendance Log

1) Dr. Prakash Budhathoky, HEOC | Remote Participation
2) Dr. Kiran Tiwari, Chief Medical Superintendent, Dhaulagiri Hospital
3) Dr. Amit Dhungana, Consultant Anesthesiologist (Disaster Focal Person), Dhaulagiri Hospital
4) Dr. Alina Sapkota, Consultant Ophthalmologist, Dhaulagiri Hospital
5) Dr. Samjhana Lamichhane, Consultant, Dhaulagiri Hospital
6) Dr. Surendra Acharya, Radiologist, Dhaulagiri Hospital
7) Dr. Prabhat Singh Rajput, Dermatologist, Dhaulagiri Hospital
8) Dr. Bipana KC, Consultant GP, Dhaulagiri Hospital
9) Dr. Pramesh Thapa, Consultant Orthopedic Surgeon, Dhaulagiri Hospital
10) Dr. Asmita Shrestha, Consultant ENT Surgeon, Dhaulagiri Hospital
11) Dr. Sandeep Sapkota, Consultant Physician, Dhaulagiri Hospital
12) Dr. Bimal Banstola, Obs & Gynae, Dhaulagiri Hospital
13) Dr. Puja Sharma, ENT Surgeon, Dhaulagiri Hospital
14) Dr. Prabesh Karki, MD, Dhaulagiri Hospital
15) Dr. Sandesh Pariyar, Dental Surgeon, Dhaulagiri Hospital
16) Dr. Kiran Kandel, Dental Surgeon, Dhaulagiri Hospital
17) Dr. Sandip KC, Medical Officer, Dhaulagiri Hospital
18) Dr. Jyoti Sharma, Medical Officer, Dhaulagiri Hospital
19) Dr. Krishan Kandel, Medical Officer, Dhaulagiri Hospital
20) Dr. Thapa, Medical Officer, Dhaulagiri Hospital
21) Ms. Anjila Silwal, Nursing Officer, Dhaulagiri Hospital
22) Mr. Ram Udgar Singh, Physiotherapist, Dhaulagiri Hospital

23) Mr. Suyash Sapkota, Dhaulagiri Hospital
24) Ms. Karishma KC, Staff Nurse, Dhaulagiri Hospital
25) Ms. Tika Devi Sharma, Staff Nurse, Dhaulagiri Hospital
26) Ms. Srijana Chhetri, Physiotherapist, Dhaulagiri Hospital
27) Ms. Neema, Nursing Officer, Dhaulagiri Hospital
28) Ar. Sujata Shakya Bajracharya, Architect, CEAD Consultancy (Team B)
29) Er. Puja Maharjan, Civil Engineer, CEAD Consultancy (Team B)
30) Er. Sushant Raj Giri, Industrial Engineer, CEAD Consultancy (Team B)
31) Er. Bhaskar Rijal, Biomedical Engineer, CEAD Consultancy (Team B)
32) Er. Kishor Raj Joshi, Electrical Engineer, CEAD Consultancy (Team B)
33) Dr. Mangesh Bajracharya, NSEDRM
34) Mr. Deepesh Sthapit, WHO Nepal
35) Er. Samriddha Rana, WHO Nepal
36) Mr. Sanjib Gautam, WHO Nepal
37) Dr, Rajeeb Lalchan, WHO Nepal
38) Mr. Birodh Kattel, WHO Nepal

Nepal Customized Global Hospital Safety Index - December 2024 version

MODULE I. Hazards affecting the safety of the hospital and the role of the hospital in emergency and disaster management

1.1 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		
Natural hazards						
1.1.1 Geological hazards						
Earthquakes *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). 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).*	☐	☐	☐	☐	☐	
Dry mass movement – landslides *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).*	☐	☐	☐	☐	☐	
Other geological hazards (e.g. rockfalls, subsidence) (specify) …… *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).*	☐	☐	☐	☐	☐	
1.1.2 Hydro-meteorological hazards						
1.1.2.1 Meteorological hazards						
Tropical cyclone effects *Refer to regional hazard maps or other hazard information, and rate the hazard level for the hospital location in terms of cyclone effects such as heavy rain and high winds. Determine whether the hospital should be prepared to respond to an emergency or disaster due to cyclones (based on exposure of the catchment population).*	☐	☐	☐	☐	☐	
Tornadoes *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).*	☐	☐	☐	☐	☐	

1.1 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		
Local storms and thunderstorms *Rate the hazard level for the hospital in relation to flooding and other damage due to intensive (or torrential) rainfall, lightning, hail, and high winds from local storms, including thunderstorms, 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).*	☐	☐	☐	☐	☐	
Local snowstorms *Rate the hazard level for the hospital in relation damage due to heavy snowfall at higher elevations and high winds from local snowstorms 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. wind gusts) (specify) …..... *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 respond to an emergency or disaster due to other meteorological hazards (based on exposure of the catchment population).*	☐	☐	☐	☐	☐	
1.1.2.2 Hydrological hazards						
River floods *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 *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).*	☐	☐	☐	☐	☐	
Wet mass movements – landslides *Includes debris flows and mudflows caused by rainfall. 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).*	☐	☐	☐	☐	☐	

1.1 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		
Other hydrological hazards (e.g. glacial lake outburst floods (GLOFs), avalanches) (specify) …… *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) *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).*	☐	☐	☐	☐	☐	
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 (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).*	☐	☐	☐	☐	☐	

1.1 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		
1.1.3 Biological hazards						
Epidemics, pandemics and emerging diseases *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 *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) *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).*	☐	☐	☐	☐	☐	
Other biological hazards (e.g., snakebites) (specify) ..... *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 (e.g. chemical, radiological) *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).*	☐	☐	☐	☐	☐	

1.1 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		
Fires (e.g. building and settlement fires) *Refer to local 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. This includes fires in settlements that can spread rapidly from building to building, and sources of fire hazard within the buildings. 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).*		☐	☐	☐	☐	☐	
Explosion hazards from bulk fuel storage facilities *Refer to regional and local maps of fuel storage facilities and any past incidents involving fires or explosions at fuel storage facilities, and rate the hazard level for the hospital's location. Determine whether the hospital should be prepared to respond to an emergency or disaster due to explosion or fire hazard at fuel storage facilities (based on exposure of the catchment population or the specialized role of the hospital for the treatment of patients exposed to hazards).*		☐	☐	☐	☐	☐	
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	☐	☐	☐	☐	☐	
Transportation incidents (e.g. air, road, rail, water transport) *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) and the potential size of such incidents.*		☐	☐	☐	☐	☐	

1.1 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		
Other technological hazards (e.g. air pollution, structural collapses, food/water contamination, nuclear) (specify) ..... *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 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 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 *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 *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).*	☐	☐	☐	☐	☐	
Civil unrest (including demonstrations) *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) and the potential size of such incidents.*	☐	☐	☐	☐	☐	
Mass gathering events *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 *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.*	☐	☐	☐	☐	☐	

1.1 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		
Other societal hazards (e.g. terrorism, blockades) (specify) ..... *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).*	☐	☐	☐	☐	☐	
1.2 Geotechnical properties of soils						
Liquefaction *With reference to the geotechnical soil analysis at the hospital site, liquefaction potential maps, or microzonation studies, rate the level of the facility's exposure to hazards from saturated and loose subsoil.*	☐	☐	☐	☐	☐	
Clay soils *With reference to soil maps or other hazard information, rate the hospital's exposure to hazards from clay soil including expansive soils.*	☐	☐	☐	☐	☐	
Unstable slopes *Refer to geological maps or other hazard information such as landslide hazard maps, and specify the hospital's exposure to hazards from the presence of slopes.*	☐	☐	☐	☐	☐	

Comments on the results of Form 2, Module I

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Name/signature of evaluator(s)

.....

Module 2. Modified DUDBC Structural Assessment Checklist for Field Use, Load Bearing Masonry with Cement Mortar (DUDBC Building Type 2, FEMA Model Building Types URM and URM-A)

No.	Checklist Item	Yes	Possible/ Some	No	Evaluator Comments
PART 1 – BUILDING TYPE					
Select "Yes" for ONE of the options below. Is the building:					
1	**Brick Masonry with Cement Mortar** Yes/ 12 points; Possible/ 0 points; No / 0 points				
	Stone Masonry With Cement Mortar 2 Storeys or less (plus attic) OR verification that building has been professionally designed and constructed Yes/ 10 points; Possible/ 0 points; No / 0 points More than 2 storeys (ground plus one, plus attic) **MULTIPLY FINAL TOTAL SCORE BY 0.5**				
	All Other Masonry Types DO NOT USE THIS CHECKLIST				
PART 2 – BUILDING CHARACTERISTICS AND EARTHQUAKE VULNERABILITIES					
Complete each item below. Check only one box per item. For items for which no criteria are provided for Possible/Some, the category Possible should be selected if the evaluator is uncertain as to whether a characteristic or vulnerability is present or not. (Note that there are no additions for general code compliance for masonry buildings. Rather, each specific prescriptive provision is evaluated separately.)					
Modifications, Condition and Prior Damage					
2	**RETROFIT**: *Is a comprehensive seismic retrofit visible or known from drawings?* Indicate retrofit ONLY if retrofit method is different from adding specific elements covered in items 19-25. Repairs alone (i.e., without strengthening) are not considered a seismic retrofit. Yes/ 5 points Possible/ 3 points No / 0 points				
3a	**MODIFICATIONS AND ADDITIONS**: *Is the building as originally built, with no added storey(s) or significant modification to lateral system that increases vulnerability?* - As originally built with no added storey(s) or significant modification to lateral system that increases vulnerability: Yes / 3 points - Some modifications, but with strong evidence (drawings) that modifications (for example, added storeys) were originally designed for and approved: Some / 1 point - No evidence that modifications were originally accounted for in design: No / 0 points **If storey(s) were added, ALSO complete 3b below. If building only has horizontal additions, leave 3b blank.**				

No.	Checklist Item	Yes	Possible/ Some	No	Evaluator Comments
3b	*IF the building has an added storey or storeys:* - No evidence that modifications were originally accounted for in design or approved AND added mass is estimated to be less than 20% of original building without addition: Yes / -5 points (SUBTRACT 5 points from total score) - No evidence that modifications were originally accounted for in design AND added mass is estimated to be greater than or equal to 20% of original building without addition: No / -15 points (SUBTRACT 15 points from total score)				
4	**DETERIORATION OF CONCRETE**: *Are structural members in good condition?* There should be no visible deterioration of the concrete, such as spalling or efflorescence, or corrosion of reinforcing steel in any of the vertical or lateral force resisting elements. - Building in good condition /no deterioration in any members: Yes / 2 points - Moderate deterioration: Some / 1 point - Severe deterioration: No / points				
5	**MASONRY UNITS**: *Are masonry units in good condition?* There shall be no visible deterioration of masonry units. - Masonry units in good condition /no visible deterioration: Yes / 3 points - Moderate deterioration: Some / 1 point - Severe deterioration: No / 0 points				
6	**MASONRY JOINTS**: *Are masonry joints in good condition?* The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar. - Masonry joints and mortar in good condition /no deterioration: Yes / 2 points - Moderate deterioration: Some / 1 point - Severe deterioration: No / 0 points				
7	**UNREINFORCED MASONRY WALL CRACKS**: *Are walls intact?* There shall be no existing diagonal cracks in wall elements greater than 3mm or out-of-plane offsets in the bed joints greater than 3mm. - Undamaged /no diagonal cracks > 3mm or out-of-plane offsets in bed joints >3mm: Yes / 4 points - A few cracks > 3mm or bed joint offsets >3mm: Some / 2 points - Significant cracks >3 mm or bed joint offsets > 3mm: No / 0 points				

No.	Checklist Item	Yes	Possible/ Some	No	Evaluator Comments
Building System					
8	**LOAD PATH**: *Does the structure contain at least one rational and complete load path for seismic forces from any horizontal direction, to transfer all inertial forces in the building to the foundation?* Yes / 7 points Possible / 4 points No / 0 points				
9	**REDUNDANCY**: *Is the number of lines of vertical lateral load resisting elements in each principle direction greater than or equal to 2? Similarly, is the number of lines of shear walls in each direction greater than or equal to 2?* Yes / 1 point Possible / 1 point No / 0 points				
10	**GEOMETRY**: *Is building free of detrimental changes in the horizontal dimension of lateral force resisting system?* - No offset: Yes / 2 points - Vertical elements of the lateral system at an upper storey are offset inside of those at lower storeys by 50% or less of the lower storey horizontal dimension perpendicular to the front/street: Some / 1 point - Vertical elements of the lateral system at an upper storey are either offset outside of those at the storey below causing the diaphragm to cantilever at the offset OR offset inside of those at lower storeys by more than 50% of the lower storey horizontal dimension perpendicular to the front/street, excluding penthouses and mezzanine floors: No / 0 points				
11	**WEAK AND/OR SOFT STOREY**: *Is the building free of a weak or soft storey?* - Length of walls in lower storey is 75% or more than that in the storey above OR height of any storey is less than 1.3 times the height of the storey above: Yes /5 points - Length of walls in lower storey is between 50% and 75% than that in the storey above, OR height of any storey is between 1.3 and 2.0 times the height of the storey above: Some /3 points - Length of walls in lower storey is less than 50% of that at storey above OR height of any storey is more than 2.0 times the height of the storey above: No / 0 points *Is the building on a sloping site?* - If flat site or less than a full storey gradient change from one side of the building to the				

No.	Checklist Item	Yes	Possible/ Some	No	Evaluator Comments
	other: Leave above values unchanged. - If a full storey gradient change or more from one side of the building to the other: Change to No / 0 points for all infill panel configurations. **Note:** Sites with significant slope cause the building to be vulnerable to a weak storey condition in the down-slope direction.				
12	**VERTICAL DISCONTINUITIES**: *Are all vertical elements in the lateral force resisting system continuous from the roof to the foundation?* Yes / 2 points Possible / 1 point No / 0 points				
13	**MASS**: *Are changes in effective mass less than 100% from one storey to the next?* Light roofs, penthouse, and mezzanine floors need not be considered. Yes / 2 points Possible / 1 point No / 0 points				
14	**TORSION**: *Do walls appear to be distributed symmetrically, so as to avoid significant torsion?* - Yes, distributed symmetrically: Yes / 4 points - Possibly, unclear if walls distributed symmetrically: Possible / 2 points - No, not distributed symmetrically: No / 0 points *Is the building on a sloping site?* - If flat site or less than a full storey gradient change from one side of the building to the other: Leave above values unchanged. - If a full storey gradient change or more from one side of the building to the other: Change to No/0 points. **Note:** Sites with significant slope cause the building to twist during shaking in the cross-slope (parallel to road) direction.				
Lateral Load Resisting System					
15	**HEIGHT TO THICKNESS RATIO**: *Are the unreinforced masonry wall height-to-thickness ratios less than the following?* Top storey of multi storey building: 9 First storey of multi storey building: 15 All other conditions: 13 - Yes, for all storeys: Yes / 5 points - Possible (mark if unsure all storeys meet criteria): Unsure / 3 points				

No.	Checklist Item	Yes	Possible/ Some	No	Evaluator Comments
	- No, one or more storeys do not meet the criteria: No / 0 points **Note**: Wall height is measured from effective support to effective support.				
16	**CONNECTIONS**: *Are rigid diaphragms (floors and roofs) reinforced and connected to transfer of loads to structural walls (for example, with dowels)?* Yes / 6 points Possible / 2 points No / 0 points **Note**: Choose "No" if building has only flexible diaphragms.				
17	**OPENINGS IN DIAPHRAGMS NEAR EXTERIOR MASONRY SHEAR WALLS**: *Are all diaphragm (floor and roof) openings immediately adjacent to exterior masonry shear walls less than 2.5m?* Yes / 2 points Possible / 1 point No / 0 points				
18	**DIAPHRAGM OPENINGS**: *There is **NO** opening in the diaphragm with a width over 50% of the total diaphragm width at that level.* Yes / 2 points Some / 1 point No / 0 points				
19	**STEEL VERTICAL REINFORCEMENT**: *Is there vertical reinforcement at all corners and T-junctions of masonry walls, starting from foundation and continuous to roof?* Yes / 3 points Some / 1 point No / 0 points **Note**: Buildings with vertical reinforcement will either have steel OR bamboo/timber reinforcement.				
20	**TIMBER/BAMBOO VERTICAL REINFORCEMENT**: *Is there vertical reinforcement at all corners and T-junctions of masonry walls, starting from foundation and continuous to roof?* Yes / 2 points Some / 1 point No / 0 points **NOTE**: Buildings with vertical reinforcement will either have steel OR bamboo/timber reinforcement.				
21	**REINFORCED CONCRETE BANDS**: *Are there reinforced concrete located at the plinth, sill and lintel levels of the building in each floor?*				

No.	Checklist Item	Yes	Possible/ Some	No	Evaluator Comments
	- Plinth, sill and lintel bands: Yes / 7 points - At least lintel or sill band: Some / 3 point - No bands: No / 0 points **Note:** Buildings with bands will have either reinforced concrete or wooden bands.				
22	**WOODEN BANDS FOR STONE MASONRY BUILDINGS**: *Are there wooden bands located at the plinth, sill and lintel levels of the building in each floor?* - Plinth, sill and lintel bands: Yes /3 points - At least lintel or sill band: Some/ 1 point - No bands: No/ 0 points **Note**: Buildings with bands will have either reinforced concrete or wooden bands.				
23	**REINFORCED CONCRETE CORNER STITCH OR DOWELS**: *Are there reinforced concrete elements connecting two orthogonal walls at a vertical distance of at least 0.5m to 0.7m?* Yes / 3 points Some / 1 point No / 0 points **Note**: Buildings with corner stitches /dowels will have either reinforced concrete or wooden corner reinforcing.				
24	**WOODEN CORNER STITCH OR DOWELS**: *Are there wooden elements connecting two orthogonal walls at a vertical distance of at least 0.5m to 0.7m?* Yes / 1 point Some / 1 point No / 0 points **Note**: Buildings with corner stitches /dowels will have either reinforced concrete or wooden corner reinforcing.				
25	**GABLE AND GABLE BAND**: *If the roof is sloped roof, are gables of lightweight material, or is a gable band provided to the building?* - No gables OR gables are lightweight material OR gable band provided: Yes / 3 points - Masonry gable, unknown if gable band present: Possible / 1 point - Masonry gable with no band: No / 0 points				
26	**DIAGONAL BRACING**: *If there is a flexible diaphragm such as joists and rafters, is it diagonally braced and each crossing of a joist/rafter and ~~a~~ brace properly fixed?* Yes / 3 points Some / 1 point No / 0 points				

No.	Checklist Item	Yes	Possible/ Some	No	Evaluator Comments
	Note: Choose "No" if building has rigid diaphragms.				
27	**LATERAL RESTRAINERS***: For flexible roof and floor, are joists and rafters shall be restrained by timber keys in both sides of wall?* Yes / 4 points Some / 2 points No / 0 points **Note**: Choose "No" if building has rigid diaphragms.				
28	**UNSUPPORTED WALL LENGTH**: *Is the maximum unsupported length of a wall between cross-walls limited to 5m for stone masonry, 6m for 230mm brick masonry and 8m for 350mm or greater brick masonry?* Yes / 9 points Unsure / 4 points No / 0 points				
29	**PLAN IRREGULARITIES– REENTRANT CORNER**: *Both projections from an interior corner DO NOT exceed 25% of the overall plan dimension in that direction.* Yes / 2 points Some / 1 point No / 0 points				

Module 2. Modified DUDBC Structural Assessment Checklists for Field Use, Reinforced Concrete (RCC) Buildings with or without Unreinforced Masonry Infill (DUDBC Building Types 3 and 4, and shear wall buildings)

No.	DUDBC Structural Assessment Checklist Item Modified for HSI Use	Yes	Possible/ Some	No	Evaluator Comments
PART 1 – BUILDING TYPE					
Select "Yes" for ONE of the options below. Is the building:					
1	**Moment Resisting Frame with unreinforced masonry infill (C3)** Yes/ 15 points; Possible /0 points; No/ 0 points				
	Moment Resisting Frame with lightweight partitions or weak infill (such as Autoclaved Aerated Concrete)**, OR building in which infill walls were explicitly modeled and accounted for in design (C1)** (for example, by providing a gap filled with compressible material) Yes/ 20 points; Possible /0 points; No/ 0 points				
	Flat Slab Frame with or without unreinforced masonry infill Yes/ 12 points; Possible /0 points; No/ 0 points				
	Building with well-distributed Shear Walls as the main lateral force resisting system (C2) Yes/ 25 points; Possible /0 points; No/ 0 points				
PART 2 – BUILDING CHARACTERISTICS AND EARTHQUAKE VULNERABILITIES					
Complete each item below. Check only one box per item. For items for which no criteria are provided for Possible/Some, the category Possible should be selected if the evaluator is uncertain as to whether a characteristic or vulnerability is present or not. (Note that there are no additions for general code compliance for masonry buildings. Rather, each specific prescriptive provision is evaluated separately.)					
Detailing, Modifications, Condition and Prior Damage					
2	**DUCTILE DETAILING**: *Does building have ductile detailing (i.e., strong column, no shear failures, confinement)?* - Detailing per current national and international provisions (e. g. evidence building was designed to most current IS 13920 or equivalent): Yes / 20 points - Detailing per older ductile detailing codes (for example, IS 13920:1993) as determined either from drawings OR known DUDBC* or international design and construction supervision: Some / 15 points - Either confirmed that no ductile detailing exists, OR there is no convincing evidence of ductile detailing per above, OR strong evidence that design drawings prescribing ductile detailing were NOT followed: No / 0 points * DUDBC design and construction supervision may be assumed for all hospital buildings				

No.	DUDBC Structural Assessment Checklist Item Modified for HSI Use	Yes	Possible/ Some	No	Evaluator Comments
	designed post-2005 AD. Cracks wider than 3mm in concrete members need special attention, especially if due to unrepaired earthquake damage or overloading. (For cracks due to deterioration, see Item 5, Deterioration of Concrete Members.) Diagonal cracking in columns indicates that the building is non-ductile; change Ductile Detailing to No. Earthquake-induced cracking in beams but not columns indicates ductile detailing is more likely. Damage due to overloading also indicates a low level of engineering design; change Ductile Detailing to No. *If columns are severely damaged the building should be red-tagged and not used; change Ductile Detailing score to zero in scoresheet.* **Note**: Ductile detailing question refers to original construction. If building was originally in the No Ductile Detailing / Unknown Detailing category AND has had a comprehensive seismic retrofit, then select "No" for Ductile Detailing and complete the RETROFIT item below.				
3	**RETROFIT**: *Is a comprehensive seismic retrofit visible or known from drawings?* Retrofit scores are only added to buildings in the "No" category for Ductile Detailing. Repair or restoration only, without strengthening or other mitigation of structural deficiencies is NOT considered retrofit. Yes / 10 points Possible / 5 points No / 0 points				
4a	**MODIFICATIONS OR ADDITIONS***: Is the building as originally built, with no added storey(s) or significant modification to lateral system that increases vulnerability?* - As originally built with no modification or additions: Yes/5 points - Some modifications, but with strong evidence (drawings) that modifications (for example, added storeys) were originally designed for and approved: Some/2 points - No evidence that modifications were originally accounted for in design: No /0 points **If storey(s) were added, ALSO complete 4b below. If building only has horizontal additions, leave 4b blank.**				
4b	IF the building has an added story or storeys, and there is no evidence that modifications were originally accounted for in design or approved, complete a separate checklist for the added storey(s) AND answer: *Is the added mass is estimated to be less than 20% of original building without addition?* - Yes, less than 20%: SUBTRACT 5 points from total score - No, greater than or equal to 20%: SUBTRACT 15 points from total score				

No.	DUDBC Structural Assessment Checklist Item Modified for HSI Use	Yes	Possible/ Some	No	Evaluator Comments
5	**DETERIORATION OF CONCRETE MEMBERS**: *Are structural members in good condition?* There should be no visible deterioration of the concrete, such as spalling or efflorescence, or corrosion of reinforcing steel in any of the vertical or lateral force resisting elements. - Building in good condition /no deterioration or fewer than 10% of members in a single storey: Yes / 5 points - Moderate deterioration: 10-20% of columns, beams or slabs in a single storey: Some / 2 points - Severe deterioration: more than 20% of columns in a single storey: No / 0 points				
Building System					
6	**LOAD PATH**: *Does the structure contain at least one rational and complete load path for seismic forces from any horizontal direction, to transfer all inertial forces in the building to the foundation?* - Rational load path confirmed by drawings or likely in judgement of evaluator: Yes / 6 points - Potential load path deficiencies, incremental construction that potentially lacks positive connection between phases, or hybrid construction in which a masonry storey has been built above an RCC storey: Possible / 3 points - Observable load path deficiencies, evidence that incremental construction lacks positive connection between phases, or hybrid construction in which an RCC storey has been built above a masonry storey: No/ 0 points				
7	**REDUNDANCY**: *Is the number of lines of vertical lateral load resisting elements in each principal direction greater than or equal to 2?* Yes / 1 point Possible / 1 point No / 0 points				
8	**GEOMETRY**: *Is building free of detrimental changes in the horizontal dimension of the lateral force resisting system?* - No offset: Yes / 2 points - Vertical elements of the lateral system at an upper storey are offset inside of those at lower storeys by 50% or less of the lower storey horizontal dimension perpendicular to the front/street: Some / 1 point - Vertical elements of the lateral system at an upper storey are either offset outside of those at the storey below causing the diaphragm to cantilever at the offset OR offset inside of those at lower storeys by more than 50% of the lower storey horizontal dimension perpendicular to the front/street, excluding penthouses and mezzanine floors: No / 0 points				

No.	DUDBC Structural Assessment Checklist Item Modified for HSI Use	Yes	Possible/ Some	No	Evaluator Comments
9	**WEAK AND/OR SOFT STOREY**: *Is the building free of a weak or soft storey?* - Solid (double wythe, 230mm) infill panels in lower storey are 75% or more than those in the storey above or height of any storey is less than 1.3 times the height of the storey above: Yes/ 9 points - Solid (double wythe, 230mm) infill panels in lower storey are between 50% and 75% of those at storey above, or height of any storey is between 1.3 and 2.0 times the height of the storey above: Some / 4 points - Solid (double wythe, 230mm) infill panels in lower storey are less than 50% of those at storey above or height of any storey is more than 2.0 times the height of the storey above: No/0 points **Note**: Single wythe, 115 mm infill panels are not typically strong enough to affect frame behavior and create a soft and/or weak story. *Is the building on a sloping site?* - If flat site or less than a full storey gradient change from one side of the building to the other: Leave above values unchanged. - If a full storey gradient change or more from one side of the building to the other: Change to No / 0 points for all infill panel configurations. **Note**: Sites with significant slope cause the building to be vulnerable to a weak storey condition in the down-slope direction.				
10	**VERTICAL DISCONTINUITIES**: *Are all vertical elements in the lateral force resisting system continuous from the roof to the foundation?* Yes / 2 points Possible / 1 point No / 0 points				
11	**MASS**: *Are changes in story mass less than 100% from one storey to the next?* Light roofs, penthouse, and mezzanine floors need not be considered. Yes / 2 points Possible / 1 point No / 0 points				
12	**TORSION**: *Is building free of torsion-creating features?* - Building is regular, without torsion-creating features: Yes / 4 points - Building has moderate torsion creating features such as solid property line infill walls or double storey columns on one side: Some/ 2 points - Building has a severe torsion-creating feature such as an eccentric RCC lift core or shear				

No.	DUDBC Structural Assessment Checklist Item Modified for HSI Use	Yes	Possible/ Some	No	Evaluator Comments
	walls, OR is on a sloping site: No/ 0 points *Is the building on a sloping site?* - If flat site or less than a full storey gradient change from one side of the building to the other: Leave above values unchanged. - If a full storey gradient change or more from one side of the building to the other: Change to No / 0 points. **Note**: Sites with significant slope cause the building to twist during shaking in the cross-slope (parallel to road) direction.				
13	**ADJACENT BUILDINGS/POUNDING**: *Is the building separated from an adjacent structure by **MORE** than 1.5% of the height of the shorter of the building and adjacent structure?* **If Yes, give 4 points and skip the next two items. If No:** - Do the floors align vertically within 600mm? Yes: 2 points; Possible: 1 point; No: 0 points - One building is **NOT** 2 or more stories taller than the other. Yes: 2 points; Possible: 1 point; No: 0 points **Note**: Pounding criteria are from FEMA P-154 and ATC-78.				
14	**SHORT COLUMNS**: *Is the building free of short or captive columns?* The reduced height of a columns due to surrounding partial height double wythe (230mm) infill wall, etc. shall not be less than five times the dimension of the column in the direction of parapet, infill wall, etc. or 50% of the nominal height of the typical columns in that storey. - If <20% of columns in one line in a storey have short or captive column condition as defined above, Yes / 4 points - Unsure: Possible / 2 points - If >20% of columns in one line in a storey have short or captive column condition as defined above: No / 0 points **Note:** Condition that 20% of columns should have short column deficiency is from FEMA 154				
15	**JOINT ECCENTRICITY**: *Are girder and column centerlines aligned within 20% of the smallest column plan dimension?* - Yes, aligned within 20% of the smallest column plan dimension: Yes / 3 points - Possibly aligned / unknown: Possible / 1 point - No, eccentricity >20% of smallest column plan dimension: No / 0 points				
Infill Walls					
16	**CRACKS IN INFILL WALLS**: *Are infill and partition walls intact?* There shall be no existing diagonal cracks in infill walls or partitions that extend throughout a panel, are greater than 3mm, or have out of plane offsets in the bed joint greater than 3 mm.				

No.	DUDBC Structural Assessment Checklist Item Modified for HSI Use	Yes	Possible/ Some	No	Evaluator Comments
	- Undamaged /no diagonal cracks > 3mm or out-of-plane offsets in bed joints >3mm: Yes - A few cracks > 3mm or bed joint offsets >3mm: Some - Significant cracks >3 mm extending throughout a panel or bed joint offsets > 3mm: No No points are assigned, but item must be noted as a potential falling hazard. *Areas where infill can fall should not be used until the panel can be repaired or replaced.*				
17	**WALL CONNECTIONS**: *Do all infill walls have a positive connection to the frame to resist out-of-plane forces?* - Positive connection can be confirmed: Yes / 4 points - Lintel beams or bands (not considered a positive connection, but improve behavior): Some / 2 points - No lintel beams or bands can be confirmed: No / 0 points				
Diaphragms					
18	**DIAPHRAGM CONTINUITY**: *Are diaphragms continuous?* The diaphragms shall not be composed of split-level floors. - Continuous: there is not a split level at one of the floors or at the roof: Yes/ 2 points - There may be a split level: Possible/ 1 point - There is a split level: No/ 0 points				
19	**PLAN IRREGULARITY – REENTRANT CORNER**: *Is the building free of large re-entrant corners?* - Both projections from an interior corner **DO NOT** exceed 25% of the overall plan dimension in that direction: Yes / 2 points - One projection from an interior corner exceeds 25% of the overall plan dimension in that direction: Some / 1 point - Both projections from an interior corner exceeds 25% of the overall plan dimension in that direction: No / 0 points				
20	**DIAPHRAGM OPENINGS**: *Are diaphragms free of large openings?* - Diaphragms do not have ANY opening with a width over 50% of the total diaphragm width at that level: Yes / 2 points - Some openings or unclear: Some / 1 point - There large openings with a width over 50% of the total diaphragm opening at that level: No / 0 points				

Module 2. Wind, Flood and Wildfire Structural Checklist for Masonry and Concrete Buildings

This checklist is to be completed for each building being assessed. Answer each question below by selecting one of the three answers below it.

No.	Checklist Item	Raw Score			Evaluator Comments
		Yes	Possible / Some	No	
Wind *Note: for buildings with multiple roof types, rate the most vulnerable roof type.*					
1	**PRIOR DAMAGE** *Is the building free of prior wind damage?* No damage, or damage repaired and any deficiencies corrected: Yes / 6 points Damage partially repaired, or only partial correction of deficiencies: Some / 3 points Severe wind damage, repaired without correcting deficiencies: No / 0 points *If no prior, damaging event, leave blank and enter Not Applicable in Evaluator Comments.*				
2	**STRUCTURAL DESIGN** *Has building roof been designed for wind resistance?* Roof structure is concrete or truss designed and constructed to current wind provisions: Yes / 10 points Truss designed to older wind provisions: Some / 4 points Roof truss appears not to be designed or built for wind resistance OR truss not visible: No / 0 points *Note: This checklist is for reinforced concrete and masonry buildings, for which seismic loads govern lateral design. In other cases, the structural design of the main lateral system for wind must be evaluated.*				
3	**ROOF SHAPE AND STRUCTURE TYPE** *Is roof a wind-resistant shape and type?* Reinforced cast in place concrete roof deck: Yes / 6 points Light hipped roof: Some / 3 points Other light roofs (gable, monopitch): No / 0 points				
4	**ROOF OVERHANGS** *Are roof overhangs small or nonexistent?* No roof overhangs >50 cm OR roof is cast-in-place reinforced concrete: Yes / 6 points Roof overhang equal to 20in/50cm or less than 20in/50cm: Some/3 points Roof overhangs > 50cm: No / 0 points				

No.	Checklist Item	Raw Score			Evaluator Comments
		Yes	Possible / Some	No	
5	**ROOF-TO-WALL CONNECTIONS** *Does the roof have positive connections to resist uplift?* Heavy (reinforced concrete) roof or light roof with positive, code-compliant connections to resist uplift: Yes / 12 points Some positive connections: Some / 3 points No positive connection to resist uplift, or connections not visible: No / 0 points				
Flood					
6	**FOUNDATION SCOUR** *Given the nature of anticipated flooding and soils, is scour around and under the foundation **unlikely**?* Scour unlikely: Yes / 15 points Possible scour or unknown: Possible / 5 points Scour is considered likely: No / 0 points				
7	**BASEMENTS** *Are all building spaces above grade?* Yes/10 points Some/4 points No, there is a basement/0 points				
8	**ELEVATED PLINTH** *Is building plinth elevated above expected flood level?* Plinth elevated 0.5 m or more above expected/design flood level: Yes / 15 points Plinth elevated < 0.5 m above expected design flood level OR expected design flood level unknown and plinth elevated at least 0.5 m above ground: Some / 7 points Plinth not elevated: No / 0 points				

No.	Checklist Item	Raw Score			Evaluator Comments
		Yes	Possible / Some	No	
Wildfire					
9	**PROXIMITY OF BUILDINGS** *Are buildings adequately separated to help prevent the spread of fire?* Separation more than 15 m: Yes / 10 points Separation between 5 m and 15 m: Some / 5 points Separation less than 5 m : No / 0 points				
10	**DEFENSIBLE SPACE** *Does the building have a clear space around it, free of combustible (or fire-prone) vegetation, trees, and other materials?* There is no combustible vegetation, trees or other material within 30 m of building: Yes / 7 points There is no combustible vegetation , trees or other material within 10 m of building: Some / 3 points Combustible vegetation, trees or other material within 10 m of buildings: No / 0 points				
11	**FIRE-RESISTANT ROOF** *Is the roof structure constructed of fire resistant materials or adequately protected by fire-resistant roof covering?* Roof is reinforced concrete: Yes / 6 points Roof is steel truss with metal roof covering and no exposed timber elements: Some / 3 points Roof has exposed timber elements: No / 0 points				

Module 3A. Nonstructural Safety Hospital-wide

Non-structural elements include the hospital's medical equipment and supplies, contents, architectural elements, and building utility systems.
Description of the Hospital and the services that are considered by the hospital administration to be critical in a post-disaster scenario:
…….....
.....

3.A.1. Architectural safety	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
1. Safe conditions for movement outside the hospital buildings within the hospital premises **Safety ratings/Level:** ***Low*** *= Obstacles or damage to structure or road and walkways will impede vehicle and pedestrian access to buildings or endanger pedestrians;* ***Average*** *= Obstacles or damage to structure or road and walkways will not impede pedestrian access, but will impede vehicle access;* ***High*** *= No obstacles, or potential for only minor or no damage that will not impede pedestrian or vehicle access.*	☐	☐	☐	
3.A.2 Critical systems	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
2. Location of hospital's critical services (e.g., emergency), equipment (generators, sterilizers) and records in the hospital in relation to local hazards such as flooding, rockfalls, etc. **Safety ratings/Level:** ***Low*** *= No protection measures taken; subject to damage, failure and disruption of critical services and hospital operations in emergencies and disasters;* ***Average*** *= 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;* ***High*** *= 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.*	☐	☐	☐	

3. Emergency evacuation sites designated within hospital and evacuation routes to evacuation sites. **Safety ratings/Level:** ***Low*** *= Evacuation sites not designated/ emergency evacuation routes to evacuation sites subject to obstacles and damage that would impede evacuation;* ***Average*** *= Evacuation sites designated but evacuation routes to evacuation sites subject to obstacles and damage that may not impede evacuation to these sites.* ***High*** *= Designated evacuation sites have backup lighting and evacuation routes to these sites are not subject to obstacles or damage*	☐	☐	☐	
3.a Access routes to hospital and emergency evacuation routes from hospital **Safety ratings/Level:** ***Low*** *= Access routes and emergency evacuation routes outside the hospital subject to obstacles and damage that would impede access and the function of other elements, systems or operations;* ***Average*** *= Access routes and emergency evacuation routes outside the hospital subject to some obstacles and damage that would not impede access and function;* ***High*** *= No or minor potential for obstacles or damage that would impede access and the function of other elements, systems or operations.*	☐	☐	☐	
3.A.3 Critical systems	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
3.A.3.1 Electrical systems				

4. Capacity of on-site alternate sources of electricity (e.g., generators) ***Safety ratings/Level**:* ***Low** = Alternate source(s) is(are) missing or covers less than 30% of demand in critical areas, or can only be started manually;* ***Average** = Alternate source(s) covers 31–70% of demand in critical areas and starts automatically in less than 10 seconds in critical areas;* ***High** = Alternate source(s) start(s) automatically in less than 10 seconds and cover(s) more than 70% of demand in critical areas.*	☐	☐	☐	
5. Regular tests of alternate sources of electricity in critical areas **Safety ratings/Level**: **Low** = Tested at full load for one hour or more every 3 months or more; **Average** = Tested at full load for one hour or more every 1 to 3 months; **High** = Tested at full load for one hour or more at least monthly.	☐	☐	☐	
6. Condition and safety of on-site alternate source(s) of electricity **Safety ratings/Level**: **Low** = No alternate sources or generators are in poor condition or there are no protective measures; **Average** = Generators are in fair condition, or some measures provide partial protection and security; **High** = Generators are in good condition, well-secured and in good working order for emergencies.	☐	☐	☐	

7. Condition and safety of power lines, cables and cable ducts in the distribution system **Safety ratings/Level**: **Low** = power lines, cables and ducts are in poor condition, there are no protective measures; **Average** = power lines, cables and ducts are in fair condition; some measures provide partial protection and security; **High** = power lines, cables and ducts are in good condition, well-secured and in good working order.	☐	☐	☐	
8. Redundant system for the off-site electric power supply **Safety ratings/Level**: **Low** = There is only one connection to the off-site power supply; **Average** = There are two connections to the off-site power supply; **High** = There are more than two connections to the off-site power supply.	☐	☐	☐	
9. Condition and safety of the control panels, overload breaker switches **Safety ratings/Level**: **Low** = Control panels or other elements (other than transformer) are in poor condition, there are no protective measures; **Average** = Control panels or other elements are in fair condition; some measures provide partial protection; **High** = Control panels or other elements are in good condition, well-protected and in good working order.	☐	☐	☐	
10. Lighting system for critical areas and emergency exit pathways of the hospital **Safety ratings/Level**: **Low** = Poor level of lighting, there are no protective measures; **Average** = Lighting is satisfactory in the critical areas; some measures provide partial protection; **High** = Good levels of lighting and protection measures in place.	☐	☐	☐	

11. Condition and safety of internal and external lighting systems (other than critical areas) **Safety ratings/Level**: **Low** = Internal and external lighting systems are in poor condition, there are no protective measures; **Average** = In fair condition; some measures provide partial protection; **High** = In good condition, well-protected and in good working order.	☐	☐	☐	
12. External substations and transformers installed for hospital usage **Safety ratings/Level**: **Low** = No electrical substations installed for hospital demands or transformers not anchored; **Average** = Substations installed; some measures provide partial protection, but would be vulnerable to damage or disruption, do not provide enough power to the hospital; **High** = Electrical substations installed, transformers and substation equipment well-anchored, and provide enough power to the hospital in an emergency or disaster	☐	☐	☐	
13. Emergency maintenance and restoration of electric power supply and alternate sources **Safety ratings/Level**: **Low** = Documented procedures and maintenance/inspection records do not exist; **Average** = Documented procedures exist, maintenance/inspection records are up to date, personnel have been trained, but resources are not available; **High** = 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. A.3.2 Telecommunications systems				

14. Condition and safety of antennas **Safety ratings/Level**: **Low** = Antennas and bracing in poor condition, there are no protective measures; **Average** = Antennas and bracing are in fair condition, some measures provide partial protection; **High** = Antennas and bracing are in good condition, well-secured and protection measures are in place. IF THERE ARE NO ANTENNAS, LEAVE BOXES BLANK *AND PROVIDE COMMENT*.	☐	☐	☐	
15. Condition and safety of (internet and landline telephone **Safety ratings/Level**: **Low** = Internet and landline telephone systems in poor condition, there are no protective measures; **Average** = Internet and landline telephone systems in fair condition, some measures provide partial protection; **High** = Good condition, well-secured and other protection measures in place.	☐	☐	☐	
16. Alternate communication systems **Safety ratings/Level**: **Low** = Alternate communications systems (in addition to mobile phones) do not exist, are in poor condition, or do not function; **Average** = Hospital-wide alternate communications system (in addition to mobile phones) in fair condition, but is not tested on an annual basis; **High** = Alternate communication system (in addition to mobile phones) in good condition and tested at least annually.	☐	☐	☐	

17. Condition and safety of telecommunications equipment and cables **Safety ratings/Level**: **Low** = Telecommunications equipment and cables are in poor condition; there are no protective measures; **Average** = Equipment and cables are in fair condition; some measures provide partial protection; **High** = In good condition, well-secured and protected from hazards.	☐	☐	☐	
18. Effect of external telecommunications systems on hospital communications **Safety ratings/Level**: **Low** = External telecommunications systems cause major interference with hospital communications; **Average** = External telecommunications systems cause moderate interference with hospital communications; **High** = External communications cause no interference with hospital communications.	☐	☐	☐	
19. Safety of sites for telecommunication systems on hospital premises (such as servers, telephone exchange) **Safety ratings/Level**: **Low** = Sites for telecommunications systems are in poor condition, at high risk of failure due to hazards; there are no protective measures; **Average** = Sites in fair condition, some measures provide partial protection; **High** = Good condition, well-secured and other protective measures in place.	☐	☐	☐	

20. Condition and safety of internal communications systems (such as public address system, intercom) **Safety ratings/Level**: **Low** = Internal communications systems do not exist or are in poor condition; **Average** = Internal communications systems are in fair condition, but there are no alternate systems; **High** = Internal communications and back-up systems are in good working order.	☐	☐	☐	
21. Emergency maintenance and restoration of standard and alternate communications systems **Safety ratings/Level**: **Low** = Documented procedures and maintenance/inspection records do not exist; **Average** = Documented procedures exist, maintenance/inspection records are up to date, personnel have been trained, but resources are not available; **High** = 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. A.3.3 Water supply system				
22. Water reserves for hospital services and functions (advised to provide at least 300 litres per 24 hours per bed capacity in storage; this does not include water earmarked for firefighting purposes) **Safety ratings/Level**: **Low** = Sufficient for 24 hours or less, or water storage tank does not exist; **Average** = Sufficient for more than 24 hours but less than 72 hours; **High** = Guaranteed to cover at least 72 hours.	☐	☐	☐	

23. Location and safety of water storage tanks **Safety ratings/Level**: **Low** = The site is vulnerable with high risk of failure (e.g., structural, architectural and/or system vulnerabilities) or to flooding of surface-level tanks; **Average** = The site is exposed to moderate risk of failure (e.g., structural, architectural and/or system vulnerabilities) to flooding of surface-level tanks; **High** = The site is not exposed to visually identifiable risks (e.g., structural, architectural and/or system vulnerabilities) or to flooding of surface level tanks. IF THE HOSPITAL DOES NOT HAVE A WATER STORAGE TANK, LEAVE BOXES BLANK *AND PROVIDE COMMENT*.	☐	☐	☐	
24. Safety of the water distribution system **Safety ratings/Level**: **Low** = Less than 60% are in good operational condition without deterioration or leakages; **Average** = Between 60% and 80% are in good condition); **High** = Above 80% are in good condition.	☐	☐	☐	
25. Alternate water supply sources to the regular water supply **Safety ratings/Level**: **Low** = Alternate sources provide less than 30% of daily demand in an emergency or disaster scenario; **Average** = Alternate sources provide 30□80% of daily demand in an emergency or disaster scenario; **High** = Alternate sources provide more than 80% of daily demand in an emergency or disaster scenario.	☐	☐	☐	

26. Supplementary pumping system with connection to backup power supply **Safety ratings/Level**: **Low** = There is no back-up pump with backup power supply, and operational capacity does not meet minimum daily demand; **Average** = Supplementary pumps with backup power supply are in fair condition but would not meet the minimum daily demand for water; **High** = All supplementary pumps and back-up systems are operational and would meet the minimum demand for water.	☐	☐	☐	
27. Emergency maintenance and restoration of water supply systems **Safety ratings/Level**: **Low** = Documented procedures and maintenance/inspection records do not exist; **Average** = Documented procedures exist, maintenance/inspection records are up to date, personnel have been trained, but resources are not available; **High** = 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.A.3.4 Fire protection system				
28. Water supply for fire suppression **Safety ratings/Level**: **Low** = A separate source of permanent supply which could be used for fire suppression does not exist; **Average** = A separate source of permanent supply of water is available for fire suppression; there is limited capacity available, and no maintenance and testing has been conducted; **High** = A separate source of permanent water supply with significant capacity for fire suppression is available, regularly maintained and frequently tested.	☐	☐	☐	

29. Emergency maintenance and restoration of the manual and automatic fire protection systems **Safety ratings/Level**: **Low** = Documented procedures and maintenance/inspection records do not exist; **Average** = Documented procedures exist, maintenance/inspection records are up to date, personnel have been trained, but resources are not available; **High** = 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.A.3.5 Waste management systems				
30. Safety of non-hazardous wastewater systems **Safety ratings/Level**: **Low** = System for non-hazardous wastewater disposal does not exist or is in poor condition; **Average** = System is in fair condition, but little or no evidence of compliance and maintenance; **High** = Wastewater disposal system is in good condition with good capacity and evidence of compliance and maintenance.	☐	☐	☐	
31. Safety of hazardous wastewater and liquid waste **Safety ratings/Level**: **Low** = System for hazardous wastewater disposal does not exist or is in poor condition; **Average** = System is in fair condition but little or no evidence of compliance and maintenance; **High** = Disposal system has good capacity and evidence of compliance and maintenance.	☐	☐	☐	

32. Safety of non-hazardous solid waste system **Safety ratings/Level**: **Low** = System for solid waste disposal does not exist or is in poor condition; **Average** = System is in fair condition, but little or no evidence of compliance and maintenance; **High** = Disposal system is in good condition with good capacity and evidence of compliance and maintenance.	☐	☐	☐	
33. Safety of hazardous solid waste system (observe segregation or classification of waste, handling and storage, and collection and transportation) **Safety ratings/Level**: **Low** = System for hazardous waste disposal does not exist or is in poor condition; **Average** = System is in fair condition but little or no evidence of compliance and maintenance; **High** = Disposal system is in good condition with good capacity and evidence of compliance and maintenance.	☐	☐	☐	
34. Emergency maintenance and restoration of all types of hospital waste management systems **Safety ratings/Level**: **Low** = Documented procedures and maintenance/inspection records do not exist; **Average** = Documented procedures exist, maintenance/inspection records are up to date, personnel have been trained, but resources are not available; **High** = 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.A.3.6 Fuel storage systems (e.g. gas, gasoline and diesel)				

35. Fuel reserves for generators (as required to meet the demand for generator fuel at the maximum capacity of the hospital) **Safety ratings/Level**: **Low** = Sufficient to run critical services of hospital for 24 hours or less, or fuel tank does not exist; **Average** = Sufficient for more than 24 hours but less than 72 hours; **High** = Guaranteed to cover at least 72 hours.	☐	☐	☐	
36. Condition and safety of above-ground fuel tanks and/or LPG cylinders **Safety ratings/Level**: **Low** = Tanks are in poor condition; there are no anchors or tank enclosure; tanks are not safely located with respect to hazards; **Average** = Tanks are in fair condition, anchors and bracing are inadequate for major hazards; tank enclosure has some safety and security measures; **High** = Tanks are in good condition; anchors and bracing are in good condition for major hazards; the tank enclosure has adequate safety and security. IF THE HOSPITAL DOES NOT HAVE THESE SERVICES, LEAVE BOXES BLANK *AND PROVIDE COMMENT*.	☐	☐	☐	
37. Safe location of fuel storage away from hospital buildings **Safety ratings/Level**: **Low** = Fuel storage is not located in a secure site; **Average** = Site in fair condition and in fair location in relation to hazards; some measures provide partial protection; **High** = In good condition and good location, well-secured and other protection measures in place. IF THERE IS NO FUEL TANK, LEAVE BOXES BLANK *AND PROVIDE COMMENT*.	☐	☐	☐	

38. Condition and safety of the fuel distribution system (valves, hoses, connections) **Safety ratings/Level**: **Low** = Less than 60% of the system is in safe operational condition; **Average** = between 60% and 90% of the system is in good operational condition and has automatic shut-off valves; **High** = More than 90% of the system is in good operational condition and has automatic shut-off valves. IF THERE IS NO FUEL DISTRIBUTION SYSTEM, LEAVE BOXES BLANK *AND PROVIDE COMMENT*.	☐	☐	☐	
39. Emergency maintenance and restoration of fuel reserves **Safety ratings/Level**: **Low** = Documented procedures and maintenance/inspection records do not exist; **Average** = Documented procedures exist, maintenance/inspection records are up to date, personnel have been trained, but resources are not available; **High** = 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.A.3.7 Medical gases systems				
40. Location of storage areas for medical gases **Safety ratings/Level**: **Low** = 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; **Average** = Reserved areas in fair condition and fair location; some measures provide partial protection; **High** = In good condition, well-secured and other protective measures in place; storage is accessible.	☐	☐	☐	

41. Safety of storage areas for medical gas tanks and/or cylinders **Safety ratings/Level**: **Low** = Medical gas tanks and cylinders in storage areas are poor condition; no protection measures, not secured; personnel are not trained to operate medical gas and fire extinguishing equipment; **Average** = 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; **High** = Good condition, well-secured and protected, anchors are of good quality for major hazards; medical gas and fire extinguishing equipment operated by qualified personnel.	☐	☐	☐	
42. Condition and safety of medical gas distribution system (e.g. valves, pipes, connections) **Safety ratings/Level**: **Low** = Less than 60% of the system is in good working condition; **Average** = Between 60% and 80% of the system is in good working condition; **High** = More than 80% of the system is in good working condition.	☐	☐	☐	
43. Condition and safety of medical gas cylinders and related equipment in the hospital **Safety ratings/Level**: **Low** = Medical gas tanks and cylinders in hospital areas are in poor condition, no protective measures; not secured; **Average** = Medical gas tanks and cylinders are in fair condition; the quality of anchors and braces is inadequate; some measures provide partial protection; **High** = Good condition, well-secured and protected; anchors are of good quality for major hazards.	☐	☐	☐	

44. Availability of alternative sources of medical gases **Safety ratings/Level**: **Low** = Alternative sources are not available; **Average** = Alternative sources in place but delivery of supplies takes longer than 3 days; **High** = Sufficient alternative sources are available at short notice (less than 3 days).	☐	☐	☐	
45. Emergency maintenance and restoration of medical gas systems **Safety ratings/Level**: **Low** = Documented procedures and maintenance/inspection records do not exist; **Average** = Documented procedures exist, maintenance/inspection records are up to date, and personnel have been trained; **High** = 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.A.4 Equipment and supplies	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
3.A.4.2 Medical and laboratory equipment and supplies used for diagnosis and treatment				
46. Safety of medical equipment in operating theatres and recovery rooms **Safety ratings/Level**: **Low** = The operating theatres are in an unsafe location, equipment is lacking or in poor condition, or there are no protective measures; **Average** = The operating theatres are in a safe location, equipment is in fair condition, and some measures provide partial protection; **High** = Operating theatres are in a safe location, equipment is in good condition, is well-secured, and measures provide protection.	☐	☐	☐	

47. Condition and safety of radiology and imaging equipment **Safety ratings/Level**: **Low** = The radiology and imaging equipment is not in a safe location, equipment is lacking or in poor condition, or there are no protective measures; **Average** = The equipment is in a safe location, is in fair condition, and some measures offer partial protection; **High** = Equipment is in a safe location, is in good condition, well-secured and measures provide good protection.	☐	☐	☐	
48. Condition and safety of laboratory equipment and supplies **Safety ratings/Level**: **Low** = Biosafety measures are poor, laboratory equipment is lacking or in poor condition, or there are no protective measures; **Average** = Biosafety measures are in place, the equipment is in fair condition, and some measures provide partial protection; **High** = Biosafety measures are in place, equipment is in good condition, is well-secured, and measures provide good protection.	☐	☐	☐	
49. Condition and safety of medical equipment in intensive or intermediate care unit **Safety ratings/Level**: **Low** = The medical equipment is lacking or in poor condition, or there are no protective measures; **Average** = The equipment is in fair condition and some measures provide partial protection; **High** = Equipment is in good condition, is well-secured, and measures provide good protection.	☐	☐	☐	

50. Condition and safety of equipment and furnishings in the pharmacy **Safety ratings/Level**: **Low** = The equipment in the pharmacy is lacking or in poor condition, or there are no protective measures; **Average** = The equipment is in fair condition and some measures provide partial protection; **High** = Equipment is in good condition, is well-secured and measures provide good protection.	☐	☐	☐	
51. Condition and safety of equipment and supplies in the sterilization services **Safety ratings/Level**: **Low** = Equipment is lacking or in poor condition, or there are no protective measures; **Average** = Equipment is in fair condition and some measures provide partial protection; **High** = Equipment is in good condition, is well-secured, and measures provide good protection.	☐	☐	☐	
52. Condition and safety of medical equipment for obstetric emergencies and neonatal care **Safety ratings/Level**: **Low** = Equipment is lacking or in poor condition, or there are no protective measures; **Average** = Equipment is in fair condition and some measures provide partial protection; **High** = Equipment is in good condition, is well-secured, and measures provide good protection.	☐	☐	☐	

53. Condition and safety of medical equipment and supplies for emergency care for burns **Safety ratings/Level**: **Low** = Equipment is lacking, is in poor condition, or there are no protective measures; **Average** = Equipment is in fair condition and some measures provide partial protection; **High** = Equipment is in good condition, is well-secured, and measures provide good protection. IF THE HOSPITAL DOES NOT HAVE THESE SERVICES, LEAVE BOXES BLANK *AND PROVIDE COMMENT*.	☐	☐	☐	
54. Condition and safety of medical equipment for nuclear medicine and radiation therapy **Safety ratings/Level**: **Low** = Equipment is lacking, is in poor condition, or there are no protective measures; **Average** = Equipment is in fair condition and some measures provide partial protection; **High** = Equipment is in good condition, is well-secured and measures provide good protection. IF THE HOSPITAL DOES NOT HAVE THESE SERVICES, LEAVE BOXES BLANK *AND PROVIDE COMMENT*.	☐	☐	☐	
55. Supply of medical gases in storage **Safety ratings/Level**: **Low** = Less than 1-day supply; **Average** = Supply for between 1 and 2 days; **High** = Supply for at least 3 days.	☐	☐	☐	
56. Mechanical volume ventilators **Safety ratings/Level**: **Low** = Non-existent; **Average** = Supply covers less than 72 hours at maximum hospital capacity; **High** = Supply guaranteed for at least 72 hours at maximum hospital capacity.	☐	☐	☐	

57. Electromedical equipment **Safety ratings/Level**: **Low** = Non-existent; **Average** = Supply covers less than 72 hours at maximum hospital capacity; **High** = Supply guaranteed for at least 72 hours at maximum hospital capacity	☐	☐	☐	
58. Life-support equipment **Safety ratings/Level**: **Low** = Non-existent; **Average** = Supply covers less than 72 hours at maximum hospital capacity; **High** = Supply guaranteed for at least 72 hours at maximum hospital capacity.	☐	☐	☐	
59. Supplies, equipment or crash carts for cardiopulmonary arrest **Safety ratings/Level**: **Low** = Non-existent; **Average** = Supplies and equipment for cardiopulmonary emergencies (or crash carts) in good condition but cover less than 72 hours at maximum hospital capacity; **High** = Supply and equipment for cardiopulmonary emergencies (or crash carts) guaranteed in good condition and adequate supplies for at least 72 hours at maximum hospital capacity.	☐	☐	☐	

Evaluator comments:

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Name/signature of evaluator(s)

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Module 3B. Nonstructural Safety for Individual Buildings

Nonstructural elements include the hospital's medical equipment and supplies, contents, architectural elements, and building utility systems.

Description of the building and the critical services in it (e.g. Emergency Department, ICU, CSSD etc):
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Items in the table below should be completed for each individual building for which a building-specific Module 3 assessment is required.

3.B.1. Architectural safety	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
1. Major damage and repair of nonstructural elements (external cladding, suspended ceilings, glass panes, etc.) **Safety ratings/level**: **Low** = Major damage and no repairs completed; **Average** = Moderate damage, building only partially repaired; **High** = Minor or no damage, or building fully repaired. *IF SUCH AN EVENT HAS NOT OCCURRED IN THE VICINITY OF THE HOSPITAL, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	
2. Condition and safety of doors, exits and entrances **Safety ratings/level**: **Low** = 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 45in/115cm; **Average** = 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 45in/115cm; **High** = 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 45in/115cm.	☐	☐	☐	

3. Condition and safety of windows and shutters **Safety ratings/level**: **Low** = 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); **Average** = In fair condition, subject to damage, but damage would not impede the function of this and other elements, systems or operations; **High** = In 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.	☐	☐	☐	
4. Condition and safety of other elements of the building envelope (e.g., outside walls, facings, claddings) **Safety ratings/level**: **Low** = Building envelope in poor condition, subject to damage which would impede the function of this and other elements, systems or operations; **Average** = In fair condition, subject to damage but damage would not impede the function of this and other elements, systems or operations; **High** = In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations.	☐	☐	☐	
5. Condition and safety of roofing **Safety ratings/level**: **Low** = Roofing in poor condition, subject to damage which would impede the function of this and other elements, systems or operations; **Average** = In fair condition, subject to damage but damage to element(s) would not impede the function of this and other elements, systems or operations; **High** = In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations.	☐	☐	☐	

6. Condition and safety of railings and parapets (railings and parapets to stairways, corridors and walkways inside and outside) **Safety ratings/level**: **Low** = Railings and parapets in poor condition, subject to damage which would impede the function of this and other elements, systems or operations; **Average** = Subject to damage, but damage to element(s) would not impede the function of this and other elements, systems or operations; **High** = No or minor potential for damage that would impede the function of this and other elements, systems or operations.	☐	☐	☐	
7. Condition and safety of other architectural elements (e.g., cornices, ornamental items, flower pots, statues, chimneys, sign boards) **Safety ratings/level**: **Low** = Other architectural element(s) in poor condition, subject to damage which would impede the function of this and other elements, systems or operations; **Average** = In fair condition, element(s) are subject to damage but damage would not impede the function of this and other elements, systems or operations; **High** = In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations.	☐	☐	☐	

8. Safe conditions for movement inside the building (e.g., corridors, stairs) **Safety ratings/level**: **Low** = Obstacles (disused furniture/equipment, oxygen cylinders etc.) and damage to element(s) will impede movement inside the building and endanger occupants; **Average** = Obstacles or damage to elements will not impede movement of people but will impede movement of stretchers, wheeled equipment; **High** = No obstacles, potential for no or minor damage which will not impede movement of people or wheeled equipment.	☐	☐	☐	
9. Condition and safety of internal walls and partitions **Safety ratings/level**: **Low** = Internal walls and partitions in poor condition, subject to damage which would impede the function of this and other elements, systems or operations; **Average** = In fair condition, element(s) are subject to damage, but damage would not impede the function of this and other elements, systems or operations; **High** = In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations.	☐	☐	☐	

10. Condition and safety of false or suspended ceilings **Safety ratings/level**: **Low** = False or suspended ceilings in poor condition, subject to damage which would impede the function of this and other elements, systems or operations; **Average** = In fair condition, element(s) subject to damage, but damage would not impede the function of this and other elements, systems or operations; **High** = In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations. *IF THE HOSPITAL DOES NOT HAVE FALSE OR SUSPENDED CEILINGS, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	
11. Condition and safety of the elevator system **Safety ratings/level**: **Low** = Elevator system in poor condition, subject to damage which would impede the function of this and other elements, systems or operations; **Average** = In fair condition, element(s) subject to damage, but damage would not impede the function of this and other elements, systems or operations; **High** = In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations. *IF THERE ARE NO ELEVATORS, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	

12. Condition and safety of stairways and ramps **Safety ratings/level**: **Low** = In poor condition, subject to damage or there are obstacles, which would impede the function of this and other elements, systems or operations; **Average** = In fair condition, subject to damage, but damage and obstacles would not impede the function of this and other elements, systems or operations; **High** = In good condition, no obstacles, potential for no or minor damage that would impede the function of this and other elements, systems or operations. *IF THERE ARE NO STAIRS AND RAMPS, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	
13. Condition and safety of floor coverings **Safety ratings/level**: **Low** = Floor coverings in poor condition, subject to damage which would impede the function of this and other elements, systems or operations; **Average** = In fair condition, subject to damage, but damage would not impede function; **High** = In good condition, no or minor potential for damage that would impede the function of this and other elements, systems or operations.	☐	☐	☐	
14. Emergency exits and evacuation routes **Safety ratings/level**: **Low** = Exit and evacuation routes are not clearly marked, and many are blocked; **Average** = Some exit and evacuation routes are marked, and most are clear of obstacles; **High** = All exit and evacuation routes are clearly marked and free of obstacles.	☐	☐	☐	

3.B.2 Critical systems	**Safety level**	**Observations**

	Low	Average	High	(evaluators' comments)
15. Physical security of building, equipment, staff and patients **Safety ratings/level**: **Low** = No measures are in place; **Average** = Some physical security protection is in place (e.g., locked storage for supplies and equipment, asset tracking and inventory control); **High** = 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).	☐	☐	☐	
3.B.3 Fire protection systems	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
16. Condition and safety of the passive fire protection system (hospital design incorporates firewalls, compartmentation or fire-rated enclosure and has designated escape routes) **Safety ratings/level**: **Low** = Passive systems are not in place or its elements are subject to damage, and damage would impede the function of this and other elements, systems or operations; **Average** = Passive systems are in place, element(s) are subject to damage, but damage would not impede function; **High** = Passive systems are in place, and there is no or minor potential for damage that would impede the function of this and other elements, systems or operations.	☐	☐	☐	
17. Fire/smoke detection systems **Safety ratings/level**: **Low** = No system has been installed/ system not functioning; **Average** = System is partially installed, or infrequently maintained and tested; **High** = System is installed and well-maintained and tested frequently.	☐	☐	☐	

18. Manual fire suppression systems (fire extinguishers and/or wet riser system) **Safety ratings/level**: **Low** = No system has been installed; inspections do not occur; fire extinguishers are not available/ less than 10% of personnel have been trained. **Average** = System is partially installed, or system is installed, but no maintenance or testing; inspections are incomplete or outdated; fire extinguishers are available/ less than 40% personnel have been trained. **High** = System is fully installed and regularly maintained and tested frequently; inspections are complete and up to date: fire extinguishers are available and maintained/ Above 70% personnel have been trained.	☐	☐	☐	
19. Automatic fire suppression systems (such as sprinkler systems) **Safety ratings/level**: **Low** = No system has been installed; inspections do not occur; **Average** = System is partially installed, or system is installed, but no maintenance or testing; inspections are incomplete or outdated; **High** = System is fully installed and regularly maintained and tested frequently; inspections are complete and up to date.	☐	☐	☐	
20. Fire evacuation routes: Maximum travel distance. 20.a Maximum Travel distance (one-way Travel) **Safety ratings/level**: **Low** = Distance to nearest exit/staircase/ramp is over 82ft/25m; **Average** = Distance to nearest exit/staircase/ramp is below 82ft/25m but above 49ft/15m; **High** = Distance to nearest exit/staircase/ramp is below 49ft/15m.	☐	☐	☐	

20.b Maximum Travel distance (Two-way Escape) **Safety ratings/level**: **Low** = Distance to nearest exit/staircase/ramp is over 148ft/45m; **Average** = Distance to nearest exit/staircase/ramp is below 148ft/45m but above 98ft/30m; **High** = Distance to nearest exit/staircase/ramp is below 98ft/30m.	☐	☐	☐	
3.B.4 Heating, ventilation, and air-conditioning (HVAC) systems	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
21. Adequate location of enclosures for HVAC equipment **Safety ratings/level**: **Low** = HVAC enclosures are not accessible and they are not located in a safe site; there are no protective measures; **Average** = HVAC enclosures are accessible, located at a safe site; some measures provide partial protection from hazards; **High** = HVAC enclosures are accessible, in a safe location and protected from hazards. *IF THERE IS NO HVAC, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	
22. Safety of enclosures for HVAC equipment **Safety ratings/level**: **Low** = HVAC equipment is not accessible; no protection measures for safe operation and maintenance; **Average** = HVAC is accessible; some measures provide partial protection; **High** = HVAC equipment is accessible, wide range of protective measures in place. *IF THERE IS NO HVAC, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	

23. Safety and operating condition of HVAC equipment (e.g. boiler, exhaust) **Safety ratings/level**: **Low** = HVAC equipment in poor condition, not maintained; **Average** = HVAC equipment in fair condition; some measures provide partial protection, but no regular maintenance; **High** = Good condition, well-secured and protected from hazards (e.g., anchors are of good quality); regular maintenance and testing of controls and alarms conducted. *IF THERE IS NO HVAC, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	
24. Adequate supports for ducts and review of flexibility of ducts and piping that crosses expansion joints **Safety ratings/level**: **Low** = Supports are lacking and connections are rigid; **Average** = Supports are in fair condition or connections are flexible; **High** = Supports are in good condition and connections are flexible. *IF THERE IS NO HVAC, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	
25. Condition and safety of pipes, connections and valves **Safety ratings/level**: **Low** = Less than 60% of pipes are in good condition; limited protective measures against hazards; **Average** = Between 60% and 80% are in good condition; some measures provide partial protection against hazards; **High** = Above 80% are in good condition and are well-secured and protected against hazards. *IF THERE IS NO HVAC, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	

26. Condition and safety of air-conditioning equipment **Safety ratings/level**: **Low** = Air-conditioning units in poor condition, not secured; **Average** = Air-conditioning units are in fair condition; some measures provide partial protection (e.g., quality of anchors and braces is inadequate); **High** = Good condition, well-secured and protected from hazards (e.g., anchors are of good quality). *IF THERE IS NO HVAC, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	
27. Operation of air-conditioning system (including negative pressure areas) **Safety ratings/level**: **Low** = Air-conditioning system has no capability for establishing zones of the hospital; **Average** = Air-conditioning system can establish zones, but has no capacity to separate air circulating between high-risk areas and other areas of the hospital; **High** = Air-conditioning system can isolate air from high-risk areas; negative pressure rooms are available. *IF THERE IS NO HVAC, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	

28. Emergency maintenance and restoration of HVAC systems **Safety ratings/level**: **Low** = Documented procedures and maintenance/inspection records do not exist; **Average** = Documented procedures exist, maintenance/inspection records are up to date, personnel have been trained, but resources are not available; **High** = 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. *IF THERE IS NO HVAC, LEAVE BOXES BLANK AND PROVIDE COMMENT.*	☐	☐	☐	

3.B.5 Office and store furnishing and equipment	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
29. Safety of shelving and shelf contents **Safety ratings/level**: **Low** = Shelving is not safely located (or in seismic and wind-prone areas not attached to walls in more than 20% of cases); **Average** = Shelving is safely located (and attached to walls in seismic and wind-prone areas) and contents are secured in 20□80% of cases; **High** = More than 80% of shelving and the contents of shelves are safely located, attached to walls, and contents are secured.	☐	☐	☐	
30. Safety of computers and printers **Safety ratings/level**: **Low** = No measures to protect computers from hazards are in place; **Average** = Computers are in safe locations, some measures offer partial protection from hazards; **High** = Computers are in safe locations, are well-secured, and good protective measures are in place.	☐	☐	☐	
3.B.6 Others	**Safety level**			**Observations**

	Low	Average	High	(evaluators' comments)
31. Seismic protection of the water distribution system **Safety ratings/level**: **Low** = No seismic bracing for suspended pipes or flexible connections for pipes at tanks or building separations; **Average** = Some seismic bracing for suspended pipes or flexible connectors; **High** = Suspended pipes seismically braced and flexible connectors provided throughout.	☐	☐	☐	
32. Condition and safety of medical gas cylinders and related equipment in the building **Safety ratings/level**: **Low** = Medical gas tanks and cylinders in hospital areas are in poor condition, no protective measures; not secured; **Average** = Medical gas tanks and cylinders are in fair condition; the quality of anchors and braces is inadequate; some measures provide partial protection; **High** = Good condition, well-secured and protected; anchors are of good quality for major hazards.	☐	☐	☐	
33. Presence and adequacy of lightning protection system in the building **Safety ratings/level**: **Low** = No lightning protection systems are in place; **Average** = Some lightning protection system is in place but not as per codal provisions / not maintained well; **High** = Good condition, built and maintained as per latest codal provisions. (Example codes are the Indian standard IS: 2309 and British Standard BS EN/IEC 62305 and follow provisions for buildings where failure of internal systems immediately endangers human life.)	☐	☐	☐	

Comments on the results of Module 3 B for. ..... Building which is No……out of ……. buildings for which Module 3 B forms have been filled.

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Name/signature of evaluator(s)

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Module 4: Emergency and Disaster Management

4.1 Coordination of emergency and disaster management activities	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
112. Hospital Emergency/Disaster Committee **Safety ratings/level**: **Low** = Committee does not exist, or 1–3 departments or disciplines represented; **Average** = Committee exists with 4–5 departments or disciplines represented, but is not fulfilling functions effectively; **High** = Committee exists with 6 or more departments or disciplines represented and is fulfilling functions effectively.	☐	☐	☐	
113. Committee member responsibilities and training **Safety ratings/level**: **Low** = Committee does not exist or members are untrained and responsibilities not assigned; **Average** = Members have received training and have been officially assigned; **High** = All members are trained and are actively fulfilling their roles and responsibilities.	☐	☐	☐	
114. Designated emergency and disaster management coordinator **Safety ratings/level**: **Low** = There is no staff member who has been assigned responsibilities as the emergency/disaster management coordinator; **Average** = Emergency/disaster management coordination tasks have been assigned to a staff member, but it is not his/her main task; **High** = A staff member is assigned the emergency and disaster management coordination responsibilities as his/her main task, is fulfilling the role of implementing the hospital's preparedness programme.	☐	☐	☐	

115. Preparedness programme for strengthening emergency and disaster response and recovery **Safety ratings/level**: **Low** = A programme for strengthening preparedness, response and recovery does not exist or, if it exists, no preparedness activities are being implemented; **Average** = A programme for strengthening preparedness, response and recovery exists and some activities are being implemented; **High** = A programme for strengthening preparedness, response and recovery is being fully implemented under the leadership of the *Hospital Emergency/Disaster Committee*.	☐	☐	☐	
116. Hospital incident management system **Safety ratings/level**: **Low** = No arrangements for hospital incident management exist; **Average** = Staff assigned to key hospital incident management positions but with no written procedures to operationalize its functions; **High** = Hospital incident management procedures exist and are fully operational with properly trained personnel to assume different coordination roles and responsibilities.	☐	☐	☐	
117. Emergency Operations Centre (EOC) **Safety ratings/level**: **Low** = The EOC is not designated or is in an unsafe or insecure location; **Average** = The designated EOC is in a safe, secure and accessible location, but would have limited operational capacity immediately in an emergency; **High** = The EOC is in a safe, secure, and accessible location with immediate operational capacity.	☐	☐	☐	
118. Coordination mechanisms and cooperative arrangements with local emergency/disaster management agencies **Safety ratings/level**: **Low** = No arrangements exist; **Average** = Arrangements exist but are not fully operational; **High** = Arrangements exist and are fully operational.	☐	☐	☐	

119. Coordination mechanisms and cooperative arrangements with the health-care network **Safety ratings/level**: **Low** = No arrangements exist; **Average** = Arrangements exist but are not fully operational; **High** = Arrangements exist and are fully operational.	☐	☐	☐	
4.2 Hospital emergency and disaster response and recovery planning	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
120. Hospital emergency or disaster response plan **Safety ratings/level**: **Low** = Plan is not documented; **Average** = Documented plan is complete, but is not easily accessible, not up to date (more than 12 months since the last update); **High** = Plan is complete, easily accessible, reviewed/updated at least annually, and resources are available to implement the plan.	☐	☐	☐	
121. Hospital hazard-specific sub-plans **Safety ratings/level**: **Low** = Hazard-specific response sub-plans are not documented; **Average** = Documented plans are complete but not easily accessible, not up to date (more than 12 months since last review/update); **High** = Documented plans are complete, reviewed/updated at least annually, and resources are available to implement the plans.	☐	☐	☐	
122. Procedures to activate and deactivate plans **Safety ratings/level**: **Low** = Procedures do not exist or exist only as a document; **Average** = Procedures exist, personnel have been trained, but procedures are not updated or tested annually; **High** = Up-to-date procedures exist, personnel have been trained, and procedures have been tested at least annually.	☐	☐	☐	

123. Hospital emergency and disaster response plan exercises, evaluation and corrective actions **Safety ratings/level**: **Low** = Response plan and sub-plans have not been tested; **Average** = Response plan or sub-plans are tested, but are not tested at least annually; **High** = Response plan or sub-plans are tested at least annually and updated according to the exercise results.	☐	☐	☐	
124. Hospital recovery plan **Safety ratings/level**: **Low** = Recovery plan is not documented; **Average** = Documented plan is complete, but not easily accessible, not up-to-date (more than 12 months since last review/update); **High** = Documented plan is complete, easily accessible, and reviewed/updated at least annually.	☐	☐	☐	
4.3 Communication and information management	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
125. Emergency internal and external communication **Safety ratings/level**: **Low** = Central internal and external communication system functions inconsistently or incompletely; operators are not trained in emergency communication; **Average** = System functions appropriately, operators have received some training in emergency communication, tests are not conducted at least annually; **High** = System functions completely and operators are fully trained in emergency use, and tests of the system are conducted at least annually.	☐	☐	☐	
126. External stakeholder directory **Safety ratings/level**: **Low** = Directory of external stakeholders does not exist; **Average** = Directory exists but is not current (more than 3 months since it was updated); **High** = Directory is available, is up to date and is held by key emergency response staff.	☐	☐	☐	

127. Procedures for communicating with the public and media **Safety ratings/level**: **Low** = Procedures do not exist, no spokesperson nominated; **Average** = Procedures exist and nominated spokespersons have been trained; **High** = Procedures exist, nominated spokespersons have been trained, and procedures have been tested at least annually.	☐	☐	☐	
128. Management of patient information **Safety ratings/level**: **Low** = Procedures for emergency situations do not exist; **Average** = Procedures for emergency situations exist and personnel have been trained, but no resources are available; **High** = Procedures for emergency situations exist, personnel have been trained, and resources are in place for implementation.	☐	☐	☐	
4.4 **Human resources**	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
129. Staff contact list **Safety ratings/level**: **Low** = Contact list does not exist; **Average** = List exists, but is not current (more than 3 months since it was updated); **High** = List is available and up to date.	☐	☐	☐	
130. Staff availability **Safety ratings/level**: **Low** = Less than 50% of staff are available to run each department adequately; **Average** = 50□80% of staff are available; **High** = 80□100% of staff are available.	☐	☐	☐	

131. Mobilization and recruitment of personnel during an emergency or disaster **Safety ratings/level**: **Low** = Procedures do not exist or exist only in a document; **Average** = Procedures exist and personnel have been trained, but the human resources for an emergency situation are not available; **High** = Procedures exist, personnel have been trained, and the human resources are available to meet anticipated needs in an emergency.	☐	☐	☐	
132. Duties assigned to personnel for emergency or disaster response and recovery **Safety ratings/level**: **Low** = Emergency assignments do not exist or are not documented; **Average** = Duties are identified, some (but not all) personnel receive written assignments or training; **High** = Written duties are assigned, and training or an exercise is conducted for all personnel at least annually.	☐	☐	☐	
133. Well-being of hospital personnel during an emergency or disaster **Safety ratings/level**: **Low** = A designated space and measures do not exist; **Average** = Space has been designated, but measures cover less than 72 hours; **High** = Measures are ensured for at least 72 hours.	☐	☐	☐	
4.5 Logistics and finance	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
134. Agreements with local suppliers and vendors for emergencies and disasters **Safety ratings/level**: **Low** = No arrangements exist; **Average** = Arrangements exist, but are not fully operational; **High** = Arrangements exist and are fully operational.	☐	☐	☐	

135. Transportation during an emergency **Safety ratings/level**: **Low** = Ambulances and other vehicles and modes of transportation are not available; **Average** = Some vehicles are available, but not in sufficient numbers for a major emergency or disaster; **High** = Appropriate vehicles in sufficient numbers are available during emergencies/disasters.	☐	☐	☐	
136. Food and drinking-water during an emergency **Safety ratings/level**: **Low** = Procedures for food and drinking-water for emergencies are non-existent; **Average** = Procedures exist, food and drinking-water is guaranteed for less than 72 hours; **High** = Food and drinking-water for emergencies is guaranteed for at least 72 hours.	☐	☐	☐	
137. Financial resources for emergencies and disasters **Safety ratings/level**: **Low** = Emergency budget or mechanism to access emergency funds is not in place; **Average** = Funds are budgeted and mechanisms are available but cover less than 72 hours; **High** = Sufficient funds are guaranteed for 72 hours or more.	☐	☐	☐	
4.6 Patient care and support services	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
138. Continuity of emergency and critical care services **Safety ratings/level**: **Low** = Procedures do not exist or exist only as a document; **Average** = Procedures exist; personnel have been trained but would not be available at all times; **High** = Procedures exist, personnel have been trained, and resources are available to implement procedures at maximum hospital capacity for emergency and disaster situations at all times.	☐	☐	☐	

139. Continuity of essential clinical support services **Safety ratings/level**: **Low** = Procedures do not exist or exist only as a document; **Average** = Procedures exist and personnel have been trained but would not be available at all times; **High** = Procedures exist, personnel have been trained, and resources are available to implement procedures at maximum hospital capacity for emergency and disaster situations at all times.	☐	☐	☐	
140. Expansion of usable space for mass casualty incidents **Safety ratings/level**: **Low** = Space for expansion has not been identified; **Average** = Space has been identified; equipment, supplies and procedures are available to carry out the expansion and staff have been trained, but testing has not been conducted; **High** = Procedures exist and have been tested, personnel have been trained, and equipment, supplies and other resources are available to carry out the expansion of space.	☐	☐	☐	
141. Triage for major emergencies and disasters **Safety ratings/level**: **Low** = Designated triage location or procedures do not exist; **Average** = Triage location and procedures exist and personnel have been trained, but procedures have not been tested for emergency and disaster situations; **High** = Location and procedures exist and have been tested, personnel have been trained, and resources are in place to implement at maximum hospital capacity in emergency and disaster situations.	☐	☐	☐	
142. Triage tags and other logistical supplies for mass casualty incidents **Safety ratings/level**: **Low** = Nonexistent; **Average** = Supply covers less than 72 hours of maximum hospital capacity; **High** = Supply guaranteed for at least 72 hours of maximum hospital capacity.	☐	☐	☐	

143. System for referral, transfer and reception of patients **Safety ratings/level**: **Low** = Procedures do not exist or exist only as a document; **Average** = Procedures exist and personnel have been trained, but procedures have not been tested for emergency or disaster situations; **High** = Procedures exist and have been tested, personnel have been trained, and resources are available to implement measures at maximum hospital capacity in emergency or disaster situations.	☐	☐	☐	
144. Infection surveillance, prevention and control procedures **Safety ratings/level**: **Low** = Policies and procedures do not exist; standard precautions for infection prevention and control are not followed routinely; **Average** = Policies and procedures exist, standard precautions are routinely followed, personnel have been trained, but the level of resources required for emergency and disaster situations, including epidemics, is not available; **High** = Policies and procedures exist, infection prevention and control measures are in place, personnel have been trained, and resources are available to implement measures at maximum hospital capacity in emergency and disaster situations.	☐	☐	☐	
145. Psychosocial services **Safety ratings/level**: **Low** = Procedures do not exist or exist only as a document; **Average** = Procedures exist and personnel have been trained, but the level of resources required for emergency and disaster situations is not available; **High** = Procedures exist, personnel have been trained, and resources are available for implementation of procedures at maximum hospital capacity in emergency and disaster situations.	☐	☐	☐	

146. Post-mortem procedures in a mass fatality incident **Safety ratings/level**: **Low** = Procedures for a mass fatality incident do not exist or exist only as a document; **Average** = Procedures exist and personnel have been trained, but the level of resources required for emergency and disaster situations is not available; **High** = Procedures exist, personnel have been trained, and resources are available for implementation of procedures at maximum hospital capacity in emergency and disaster situations.	☐	☐	☐	
4.7 Evacuation, decontamination and security	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
147. Evacuation plan **Safety ratings/level**: **Low** = Plan does not exist or exists only as a document; **Average** = Plan exists and personnel have been trained in procedures, but tests are not conducted regularly; **High** = Plan exists, personnel have been trained, and evacuation drills are held at least annually.	☐	☐	☐	
148. Decontamination for chemical and radiological hazards **Safety ratings/level**: **Low** = No personal protective equipment is available for immediate use by hospital staff, or no decontamination area exists; **Average** = Personal protective equipment is available for immediate use, decontamination areas are established, but staff training and drills are not conducted annually; **High** = Personal protective equipment is available for immediate use, decontamination areas are established, and personnel are trained and tested at least annually.	☐	☐	☐	

149. Personal protection equipment and isolation for infectious diseases and epidemics **Safety ratings/level**: **Low** = No personal protective equipment is available for immediate use by hospital staff, or no isolation area exists; **Average** = Supply is available for immediate use, but is sufficient for less than 72 hours of maximum hospital capacity; isolation areas are established, but staff training and testing of procedures are not conducted annually; **High** = Supply is guaranteed for at least 72 hours of maximum hospital capacity and alternate sources are in place for resupply; isolation areas are established, staff training and testing of procedures are conducted at least annually.	☐	☐	☐	
150. Emergency security procedures **Safety ratings/level**: **Low** = Emergency security procedures do not exist or exist only as a document; **Average** = Documented procedures exist and personnel have been trained in emergency security procedures but testing is not conducted at least annually; **High** = Personnel are trained, and tests of the documented procedures are held at least annually.	☐	☐	☐	
151. Computer system network security **Safety ratings/level**: **Low** = The hospital does not have a computer security system plan and procedures in place; **Average** = The hospital has a basic cyber security plan in place but it is not monitored and updated regularly; **High** = The hospital has a cyber-security plan in place and it is updated regularly.	☐	☐	☐	

Comments on the results of Module 4

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Name/signature of evaluator(s)

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FIRE SAFETY ASSESSMENT CHECKLIST B

(Please read the guidance note below before proceeding with inspecting the hospital premises using the Fire Safety Assessment Checklist B.)

INSTRUCTION NOTE

1. This fire safety assessment checklist has two parts:

Part 1 – Facility-wide assessment: This part contains general points about the whole hospital. The assessor will have one copy of Part 1 to be duly filled by verification of documents, records, and consultation

Part 2 – Building-specific assessment: This part contains detailed points regarding the fire detection, protection, and prevention systems in each building in the healthcare facility. When an assessor visits a hospital, s/he will have separate copies of Part 2 for assessment if there are more than seven buildings.

2. Minimum qualification for assessors (not to be limited to):

- Certified Fire officer / Fire Engineer;
- Electrical / Mechanical/ Civil Engineer / Architect;
- Post Graduate in Disaster Management/Hospital Administration
- Safety and Security officer in a health facility (HSE Officer)
- Senior Hospital Staff member (5+ years of experience in the same hospital)

The qualified assessor/fire expert should thoroughly know the country's specific standards and safety norms for hospital buildings' structural, fire, and electrical safety.

3. **Recommended evaluation method**:

- Pre-assessment opening meeting with hospital management, Hospital Disaster Management Committee (HDMC) including representatives from the maintenance department, and department heads.
- Consultation with members of the HDMC (Hospital Disaster Management Committee) and maintenance staff.
- Verification of documents/records (including HDMP, previous assessment reports, Hospital safety NOC, other regulation certificates, etc)
- Observation and inspection of the facility/building
- Final presentation to the hospital management and discussion of the recommendations

4. A staff member designated by the management (well acquainted with the facility and systems) shall accompany the assessor during the fire safety assessment.
5. The assessment report and recommendations based on the observations shall be submitted to the hospital management.
6. The assessors should note which codes/standards the facility follows and consider those codes throughout the checklist.
7. While assessing a hospital, only one copy of Part A would be required but the number of copies of Part B of the checklist will depend on the number of buildings the hospital has.
8. Before using the Checklist for the assessment, it is recommended that the assessors read the Evaluator's Guide.

INFORMATION ABOUT THE HOSPITAL

1.	**Name of the hospital**	
2.	**Address**	
3.	**Contact Details of the Hospital**	Phone No.: Email Address:
4.	**Type of establishment**	
5.	**Total number of personnel**	Medical staff: Non-medical staff:
6.	**Total number of beds**	
7.	**Average bed occupancy rate (in normal situations)**	
8.	**Names and contact details of the Hospital Disaster Management Committee**	
9.	**HDMC representatives accompanying the assessors**	
10.	**Assessor's Detail**	Name & Designation:
		Phone No.:

PART 1 – FACILITY-WIDE ASSESSMENT

		Safety Levels			Observations
		Low	Average	High	(Evaluator's comments)
A.	**GENERAL SAFETY REQUIREMENTS**				
	Regulatory compliance of fire safety systems				
1.	**Regulatory compliance of the automatic fire detection and alarm systems including MCPs** **Safety Ratings:** **Low**= No system has been installed although required by the latest regulations; **Average**= Systems are partially installed or partially comply with the required standards; **High**= Systems not required or all systems are installed as per specific standards and cover the entire facility.				
2.	**Regulatory compliance of sprinkler systems installed in the facility** **Safety Ratings:** **Low**=No systems are installed but are required; **Average**= Partially installed but are not compliant with the latest safety norms; **High**= Systems not required or systems installed in the specified areas and complied with safety norms.				
3.	**Regulatory compliance of the internal and external hydrant systems (water tanks, pumps, wet risers, downcomers, hose reel, yard hydrant, and drencher), installed in the facility** **Safety Ratings:** **Low**= No systems are installed; **Average**= Partially installed but are not compliant with the latest safety norm; **High**= System not required or equipment installed in the specified areas and complied with safety norms.				

		Safety Levels			Observations
		Low	**Average**	**High**	**(Evaluator's comments)**
4.	**Regulatory compliance of the emergency Public Address System (PAS) installed throughout the facility** **Safety Ratings:** **Low**= No PAS systems installed; **Average**= Partially installed; **High**= Not required by regulation or all required systems covering the entire facility are installed as per the safety norm.				
5.	**Regulatory compliance of the fireman talk-back systems installed throughout the facility** **Safety Ratings:** **Low**= No firefighter communication systems installed; **Average**= Partially installed; **High**= Fireman talk-back systems covering the entire facility are installed as per the safety norms or a firefighter radio system shown to work throughout the facility or system is not required;				
6.	**The proximity of buildings and exposure hazards (wind tunnel effect and fire)** **Safety ratings:** **Low**= Separation less than 5m, exterior walls not fire rated or openings are evident*;* **Average**= Separation between 5m and 15m, and /or external firefighting systems like yard hydrant, and fire bucket partially provided; **High**= Separation of more than 15m and external firefighting systems like yard hydrant, and fire bucket provided throughout the facility;				

		Safety Levels			Observations
		Low	Average	High	(Evaluator's comments)
7.	**Electrical equipment such as transformers and generators, switchgear, cables, accessories, and other appliances, are installed in compliance with the local electrical regulatory norms for hospital buildings, and statutory inspection certificates are renewed regularly** **Safety Ratings:** **Low**= Electrical systems installed do not comply with norms and have no certification; **Average**= Some systems comply partially and certification is not renewed regularly; **High**= All electrical equipment installed is as specified in the regulatory norms and inspections certificates are renewed regularly.				
8.	**An uninterrupted power supply is provided in a different circuit available for emergency lighting systems, covering all exit routes (corridors and stairs), signages, PAS, fire alarms, and protection systems.** **Safety Ratings:** **Low**= Lack of emergency power supply for the fire alarm and protection systems and emergency lighting on all staircases and exit routes; **Average**= Separate emergency lighting and power systems are partially installed; however, they are neither tested nor maintained regularly; **High**= Well maintained backup power supply for fire alarm and protection systems and emergency lighting in the evacuation routes, exits, stairs, corridors, and signages.				

		Safety Levels			Observations
		Low	**Average**	**High**	**(Evaluator's comments)**
9.	**The general management of safety measures for handling, segregation, and storage of all combustible materials (fuel, sanitizing liquids, laboratory chemicals, cooking oil and gas, interior finishes, laundry, linen, and soiled linen) across the facility** **Safety Ratings:** **Low**=Unsafe handling, cluttered and unauthorized storage/improper segregation of combustible materials, no proper system for material management exists; **Average**= Segregated storage of the combustible materials, but in unsafe locations like poorly maintained basements or near the kitchen; **High**= A well-defined material management system exists for handling, segregation, labeling, and storage of combustible materials and regular inspection.				
10.	**The general management of safety measures for medical gas storage/distribution across the facility** **Safety Ratings:** **Low**= Unsafe handling and storage of medical gases; no proper system exists for medical gas distribution (piped or cylinders); **Average**= Segregated storage of the medical gas cylinders, but in questionable locations like poorly maintained basements and near the exit routes; **High**= A well-planned medical gas distribution exists (piped or cylinders), and proper systems are established for segregated safe storage, safe handling, labeling, and regular inspection.				

		Safety Levels			Observations
		Low	**Average**	**High**	**(Evaluator's comments)**
11.	**Accessibility for fire and rescue services (fire engine, personnel, and equipment) around all buildings throughout the facility (including gates)** **Safety Ratings:** **Low**= Fire vehicle access is severely limited to the buildings; **Average**= Fire vehicle access is provided to the buildings but vehicle and firefighter access around the exterior of the buildings is limited; **High**= Fire vehicle access is provided to all buildings and around the buildings as per the regulations. The accessible entry/exits for fire and rescue services (personnel, and equipment) throughout the facility have been reviewed and approved by the local fire service.				
B.	**FIRE MANAGEMENT PRACTICES**				
B.1	**Capacity Building and Training programs**				
12.	**Capacity building of staff on fire safety and prevention measures** **Safety Ratings:** **Low**=No training and awareness workshops imparted to make the staff aware of fire safety and handle emergencies in the last two years; **Average**= Limited staff members are adequately sensitized regarding fire safety and trained to identify the risk and prevent fire events; **High**= All staff well trained for identifying, preventing, and controlling fire emergencies.				**Date of last training:**

		Safety Levels			Observations
		Low	**Average**	**High**	**(Evaluator's comments)**
13.	**Operational training (Emergency use of firefighting equipment)** **Safety Ratings:** **Low**= No training given to staff on fire alarm and suppression systems, handling of extinguishers, and emergency evacuation in the last two years; **Average**= Training rendered partially for firefighting and emergency evacuation but not regularly or to all staff; **High**=All staff trained regularly (even the recruits) for handling the emergency and risk assessment along with firefighting.				**Date of last training:**
B.2	**Emergency Preparedness Planning**				
14.	**Preparation and updating of Hospital Disaster Management Plan (HDMP) including evacuation plans** **Safety Ratings:** **Low**=No HDMP exists for the facility; **Average**= The facility has HDMP but is not updated and staff is not trained on the HDMP; **High**= The facility has an updated HDMP that includes hospital risk assessment, with staff sensitized well about their roles and responsibilities during emergencies.				
15.	**Availability of designated assembly areas/evacuation sites/open spaces outside the building in the facility** **Safety Ratings:** **Low**= Adequate space not available, but access to public way available; **Average**= Evacuation spaces designated but not available at all times, cluttered and/or used for parking and other purposes; **High**= Designated assembly areas/evacuation sites/open spaces are provided in the facility, available at all				

		Safety Levels			Observations
		Low	**Average**	**High**	**(Evaluator's comments)**
	times, with well-illuminated signages and power supply backup.				
16.	**Tabletop exercise (TTX), Simulation, and Mock drill** **Safety Ratings:** **Low**=No practice or testing of HDMP through mock exercises; **Average**= TTX, mock drills, and simulation exercises are held involving limited staff/departments or not regularly; **High**= The facility schedules mock exercises for all staff/ departments in the activity calendar and conducts drills and departmental TTX to test the HDMP and update and train the staff as per the calendar.				
B.3	**Preventive maintenance**				
17.	**Scheduled inspection and maintenance of Fire alarm system and fire protection system** **Safety Ratings:** **Low**=No scheduled inspection or regular maintenance of fire alarm system and fire protection system; **Average**= Inspection of fire alarm and protection systems and/or follow-up action for maintenance is done at irregular intervals; **High** = Regular inspection and maintenance done for all fire alarm and protection systems as per documented procedures, inspection records kept up to date, personnel have been trained, and resources are in place for implementing emergency maintenance and restoration.				

		Safety Levels			Observations
		Low	**Average**	**High**	**(Evaluator's comments)**
18.	**Documentation and record keeping** **Safety Ratings:** **Low**= Documented procedures and inspection records do not exist for regulatory compliance, scheduled inspection, maintenance, and staff training; **Average**= Partial documentation and improper file management of the inspection and training records; **High**= Well-maintained records and documents with evidence (photos, video) of inspection readily available to the inspection officer/ administration and other concerned authorities.				

PART 2 – BUILDING SPECIFIC ASSESSMENT

Part 2 of the checklist will be used to assess all the buildings in the facility. Assuring the availability of the operational fire detection, alarm, prevention, and suppression systems by the building's maximum occupancy and patient mobility is crucial.

In this regard, it is essential that, while assessing each building, the evaluators acknowledge the building as falling to one of the following building categories and assign them a fire safety rate in each question according. Evaluators are strongly encouraged to provide significant observations and comments in the "observation (Evaluator's comment)" section.

Building Categories

- High Occupancy, Low Mobility: Building with significantly high footfall 24*7, however, patients in the building are incapable or have limited mobility.
- High Occupancy, High Mobility: Although there is constant footfall within the building during day or night, patients are capable to move on their own or with little help during evacuation if necessary.
- Low Occupancy, Low Mobility: Building with fewer occupants and fewer patients moving around.
- Low Occupancy, High Mobility: Building that is less occupied but has high mobility of patients or staff during any time of day or night.

Mention the name of the building and choose the correct building category for the building.

S.No.	Building Name	Building Categories			
		High Occupancy, Low Mobility	High Occupancy, High Mobility	Low Occupancy, Low Mobility	Low Occupancy, High Mobility
1.					
2.					
3.					
4.					
5.					
6.					
7.					

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
A.	**ACTIVE FIRE PROTECTION SYSTEM**					
A.1	**Fire Alarm/Detection Systems**					
	Date of the last testing:					
19.	**Condition, and safety of Smoke/Heat detectors and MCPs** **Safety Ratings:** **Low**= The non-availability of smoke and heat detection systems; and MCPs; **Average**= Smoke/heat detectors and MCPs are partially available but non-functional and/or not tested regularly; no provision of emergency power or battery backup; **High**= Best-suited smoke/heat detectors and MCPs installed at all required locations in the building and linked with the fire alarm system, tested regularly and functional; Emergency power and/or battery backup is provided.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				
20.	**Integration of fire alarm control panels with ventilation, access control, and smoke control system (where provided)** **Safety Ratings:** **Low**= Fire alarm system is not linked with the available fire/smoke dampers, AHUs, exhaust fans, or access control systems;	1.				
		2.				
		3.				
		4.				
		5.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	Average=Linkage of the devices is done partially or is non-functional, access control as connected to the fire alarm system is by the regulations; **High**= All systems integrated with the fire alarm system.	6.				
		7.				
21.	**Regular testing of fire alarm systems and other integrated systems to ensure the functionality** **Safety Ratings:** **Low**= No testing of the fire alarm system and its integrated components; **Average**= Testing is done but not regularly; **High**= Regularly tested as per safety norms to ensure the good working condition of all systems integrated with the fire alarm systems;	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				
22.	**Availability of operational public address (PA) system with emergency power backup to be used during emergencies** **Safety Ratings:** **Low**= PA system is not readily available/Non-operational PA system; **Average**= PA system is installed but without a power backup; **High**= Operational PA system and appropriate speaker systems with a power backup.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
A.2	**Fire Protection/Suppression system**					
	Date of the last testing:					
23.	**Extent and condition of the internal wet riser system to assist firefighters in manual fire fighting** **Safety ratings:** **Low**= Wet riser system is not provided in case of buildings with patient rooms at or higher than 3 stories above grade; **Average**= Wet riser system is provided but the system is manual needing a boost by the fire engine which can be provided, not functional in automatic mode; testing is not done regularly; **High**= Building is 2 stories or less or wet riser systems and fittings are provided and functional in automatic mode; maintenance and testing are done regularly.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				
24.	**Condition and safety of external fire hydrant systems** **Safety Ratings:** **Low**=Non availability of fire hydrant system; **Average**= Firefighting equipment (hydrant, valves, hoses, water monitors) installed partially, irregularly spaced testing not done regularly; **High**= One-storey building or fire hydrants are well-connected and placed at	Date of the last testing:				
		1.				
		2.				
		3.				
		4.				
		5.				
		6.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	required intervals, frequently tested, and functional with clearly labeled discharge headers.	7.				
25.	**Condition and functionality of fire sprinkler system** **Safety Ratings:** **Low**=Less than 5% of the building is sprinklered or the sprinkler system is not functional; **Average**= Fire sprinkler system installed partially in the building, such as key areas are protected, limited documentation of testing; **High**= A sprinkler system installed and functional throughout the building, tested, and inspected periodically.	Date of last Inspection (including flushing):				
		1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				
26.	**Availability of suitable fire extinguishers according to the nature of risk throughout the building** **Safety Ratings:** **Low**= No fire extinguishers are installed in the building; **Average**= Fire extinguishers have been installed but are unsuitable or inaccessible; no regular testing and maintenance; staff not trained; **High**= Suitable extinguishers are installed in all necessary locations and accessible; well maintained and tested periodically (with tags mentioning the recent	1.				
		2.				
		3.				
		4.				
		5.				
		6.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	inspection date, and expiry date); Staff trained to operate fire extinguishers during emergencies.	7.				
A.3	**Ventilation System**					
27.	**Condition and safety of ventilation in non-central AC buildings** **Safety Ratings:** **Low**= Openable windows provided, but permanently locked or obstructed by extra construction; **Average**= Windows are provided but difficult to access and/or open; **High**= Easily accessible windows, openable or break-out windows (tempered); or connected to the automatic fire alarm system.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				
28.	**The functionality of dampers in air handling units (AHUs) in centrally air-conditioned spaces** **Safety Ratings:** **Low**= Fire/smoke dampers are not provided in the ducts connected to AHUs. AHUs are not provided with automatic shutdown; **Average**= Fire dampers provided, no smoke dampers. AHUs are provided with automatic shutdown (smoke detectors); **High**= Fire/smoke dampers provided and connected to the smoke detection or the Fire	Date of the last testing:				
		1.				
		2.				
		3.				
		4.				
		5.				
		6.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	Alarm System to close automatically in case of fire. AHUs are provided with automatic shutdown (smoke detectors).	7.				
29.	**The smoke control system, if provided, leading to the pressurization of the staircase is provided in high-rise buildings** **Safety Ratings:** **Low**= System for staircase pressurization is not available; **Average**= System for staircase pressurization provided; however, fans, connectors, and ducts are not as per required standards in terms of quality, accessibility, and security; Lack routine testing and maintenance; **High**= Either not a high rise or staircase pressurization system provided. They are tested, well-maintained, and functional. Alternatively, exterior open-air stairs are provided, fire separated from the interior of the building by fire-resistive barriers.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				
B.	**PASSIVE FIRE PROTECTION SYSTEM**					
B.1	**Structural Design Aspects**					
30.	**Condition and Safety of the building structure (including interior wall paneling, false ceiling, and exterior cladding) and construction materials**	1.				
		2.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	Safety ratings: **Low**= Structural frame, bearing walls, floors/roofs, and exterior walls are combustible; **Average**= Structural frame and bearing walls are non-combustible or partially combustible and fire-resistive. Floor and roofs and exterior walls are combustible. Interior walls are of combustible construction; **High**= Building is only one-storey or structural frame and bearing walls are fire resistive non-combustible and floor and roofs and exterior walls are non-combustible. Interior full-height walls are of non-combustible construction.	3.				
		4.				
		5.				
		6.				
		7.				
31.	**Provision of floor-by-floor compartmentation** **Safety Ratings:** **Low**= For multi-storey buildings, more than 2 patient room floors are interconnected without protection by shafts or equivalent fire protection, **Average**= No more than two floors are unseparated from each other. Connections between floors are by fire-rated shafts such as stair shafts, Full-height walls with self-closing doors creating protective corridors per regulations. Elevator lobbies might not be enclosed;	1.				
		2.				
		3.				
		4.				
		5.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	High= One-storey building or no more than 2 floors are unseparated from each other plus a minimum of two separate smoke zones with full height partitions on every patient floor. Corridors are protected as per regulations. Regular inspection of walls and stair shaft fire-rated doors.	6.				
		7.				
32.	**Condition and safety of fire doors (doors to corridors, doors to patient rooms/suites, or hazardous areas)** **Safety Ratings:** **Low**= Fire doors are missing in key areas, Doors have no self-closers where required, or are blocked open and kept from closing; **Average**= Doors in key areas are self-closing but are damaged and might not close tight or latch. Fire doors may be solid but might not have a fire rating label; **High**= Fire-rated doors are provided in key areas and labeled and completely segregate the area/shaft. The doors are provided with self-closers and close tightly.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
33.	**Design and protection of stairways, stairway enclosures, and other shafts** **Safety Ratings:** **Low**= In buildings with more than one-storey, exit stairways doors are self or automatic closing or are not fire-rated or solid wood core; openings and penetrations to stair shafts are not sealed; vertical HVAC shafts are not protected with fire/smoke dampers; **Average**= In buildings with more than one-storey, the stair shafts and other shafts follow applicable building regulations about enclosure/separations but are in poor condition (unsealed penetrations, improper interior finish, without required fire or smoke, rated doors and dampers); **High**= The building is either a one-storey building or the stair shafts and other vertical shafts are constructed as per building regulations and are in good condition, with fire-rated walls, doors, dampers, etc.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				
34.	**The number of stairways and maximum travel distance to any stairway** **Safety ratings/level:** **Low** = In buildings with more than one- storey inadequate	1.				
		2.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	number of stairways or only 1 stairway from an upper floor. Distance to nearest exit/staircase/ramp is over 45m; **Average**= The distance to the nearest exit/staircase/ramp is below 45m but above 30m; every storey has a minimum of two enclosed stairways, well separated so that a fire near one doesn't block access to the other; **High**= The distance to the nearest exit/staircase/ramp is below 30m, every storey has a minimum of two enclosed stairways, well separated so that a fire near one doesn't block the other.	3.				
		4.				
		5.				
		6.				
		7.				
35.	**Access to and through the means of egress: Stairways, ramps, exit routes, and corridors** **Safety Ratings:** **Low**= Stairways/stair shafts, corridors, and exit routes are damaged, and/or restricted (blocked with stored items, exterior exit doors locked/ chained), no emergency exit illumination; **Average**= The stairways, corridors, and exit routes are in fair condition and usable. None found locked in the direction of egress, but with some obstructions/damaged furniture/equipment storage and/or without emergency lighting or visible glow-in-the-	1.				
		2.				
		3.				
		4.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	dark strips, exit route signage provided but not illuminated; **High**= The staircase, corridors, and exit routes are in good condition, accessible without any blockages, with visible glow-in-the-dark strips, or emergency egress illumination as per required standards and illuminated exit route signs. Height of stair risers, number of stairs per flight, inclination angle, handrails, headroom at landing, and width of corridors are in accordance with regulations, Evacuation maps may be provided.	5.				
		6.				
		7.				
36.	**Availability of well-marked refuge areas in high-rise buildings** **Safety Ratings:** **Low**=There are no demarcated refuge areas. **Average**= The refuge space is demarcated but not adequate and/or not protected with fire-resistant doors and walls; **High**= Refuge area is available at strategic locations as required, constructed with fire-resistant doors/walls/floors, and has well-illuminated signages and adequate space. This may include an emergency two-way communication device provided in the refuge area for occupants to call for assistance.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
B.2	**Functional aspects**					
37.	**Safety and condition of fuel storage tanks** **Safety Ratings:** **Low**= Fuel piping or fuel stored in unsafe surroundings and tanks presenting a clear fire hazard; **Average**= Fuel storage tanks or piping are in poor condition with inadequate safety measures (Safety measures include that tank be in a fire-separated room, underground, or the necessary distance from any building; **High**= The storage site is in good condition, and well-secured with appropriate fire extinguishers or extinguishing systems; fuel tanks and piping are accessible and are inspected periodically.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				
38.	**Storage and safety of medical gas cylinders** **Safety Ratings:** **Low**= There is no specific location for medical gas cylinder storage or the site is located in a high-risk area without safety measures; **Average**= The medical gas cylinders are stored securely in a safe location, but without a proper fire extinguishing system; the shut-off valve system is not clear or intuitive, medical gas distribution has	1.				
		2.				
		3.				
		4.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	maintenance issues and is not appropriately labeled; **High=** Medical gas stored securely in a safe location (no ignition sources nearby) with a secured cylinder, well labeled and proper distribution system with secure pipelines and accessible shutoff valves; systems inspected and maintained periodically. Might be electronically monitored.	5.				
		6.				
		7.				
39.	**Condition and functionality of fire pump room equipment (if provided)** **Safety Ratings:** **Low**= The non-availability of an exclusive fire pump room or inadequate equipment or unsuitable location, no test reports available; **Average**= Pump room has the necessary equipment, however, has no reliable backup diesel-led power supply; irregular testing, and poor maintenance; **High**= No fire pump needed or an operational pump room with fire pumps, jockey pumps, and diesel fire pumps of stipulated specifications and functionality; periodic inspection and maintenance are done and an alternate backup pumping system and fuel storage are available.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
40.	**Fire tank/reservoir and water supply for fire suppression along with fire tank filling mechanism** **Safety Ratings:** **Low** = No separate fire tank /reservoir available and/or no permanent on site (uninterrupted/reliable supply) source for water provided but municipal water supply provided; **Average**= Fire tank/reservoir is provided but in a vulnerable location or without a permanent (uninterrupted/reliable supply) supply source with limited capacity for fire suppression; **High**=The fire tank/reservoir is provided, a permanent (uninterrupted/reliable supply) water supply source with significant capacity for fire suppression ensured and operational.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				
41.	**Disposal of combustible waste** **Safety Ratings:** **Low**=No system for solid waste/ combustible waste disposal or the system is in poor condition; **Average**= There is a system for ensuring safe and regular disposal of combustible waste but no trained staff and no documented procedures and maintenance records;	1.				
		2.				
		3.				
		4.				
		5.				

			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	High=The disposal system is in good condition and works in optimum capacity; regularly inspected and maintained; documented procedures exist.	6.				
		7.				
C.	**Electrical System**					
42.	**Condition and safety of the main electrical panel room and other rooms containing transformers of significant size (e.g., 112.5 KVa or greater/or see country's specific requirements)** **Safety Ratings:** **Low**= Main electrical panel room and transformer rooms are installed without any fire protection and ventilation, not in fire-separated rooms, also may be unseparated from other spaces; **Average**= Transformer room/main panel is appropriately accessible, in a separate room or rooms but may not be separated by fire barriers. Fire protection and ventilation for the main transformer room/main electrical panel is inadequate and /or with irregular inspection and maintenance; **High**= Electrical panel/transformer room has suitable fire suppression measures, or in a room separated from other building spaces by fire barriers, fire-protected access doors, no water sources, and a proper ventilation system.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				

			Safety Levels			Observations
		Building No.	Low	Average	High	(Evaluator's comments)
43.	**The distribution panels with breaker switches at all levels/floors are installed in a separate location with necessary identification/labeling and fire protection** **Safety Ratings:** **Low**= Electric panels not installed in a safe location and are not fire protected; **Average**= Panels installed separately but not sufficiently protected or labeled; **High**= Panels are installed in a separate location with necessary identification/labeling for breaker switches and protected from fire risk with no combustibles stored in the panel locations, and staff trained to operate the breaker switch during emergencies.	1.				
		2.				
		3.				
		4.				
		5.				
		6.				
		7.				
44.	**Condition and safety of electrical equipment, cables, wires, and earthing** **Safety Ratings:** **Low**= Electrical equipment has unsuitable power sockets; cable and wires are not properly insulated and have no proper earthing; no inspection or maintenance, conduit is not provided for all wiring; **Average**= Equipment has suitable but insufficient power sockets and/or use multipin; Earthing and insulation	1.				
		2.				
		3.				

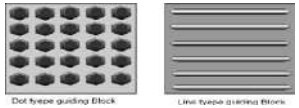
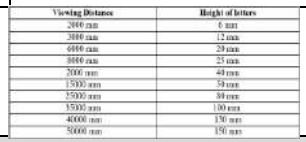
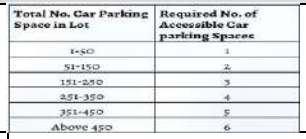
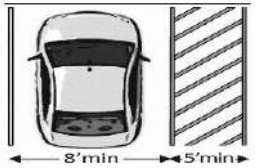
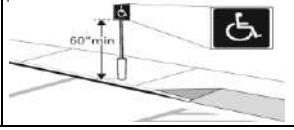
			Safety Levels			Observations
		Building No.	**Low**	**Average**	**High**	**(Evaluator's comments)**
	partially provided and/or irregular inspection and maintenance but no documentation, wiring is provided in conduit or raceways by the national regulations, conduit penetrations of floors and full height walls are not consistently sealed; **High**= All electrical equipment has suitable and sufficient power sockets cables and wires are properly insulated and a suitable earthing system is provided; identification and labeling are done; regular inspection and maintenance are ensured and documented. Conduits or raceways are provided for the wiring and penetrations of floors and full-height walls are sealed.	4.				
		5.				
		6.				
		7.				

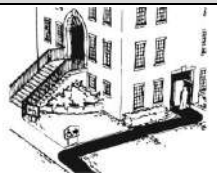
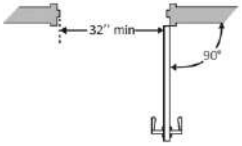
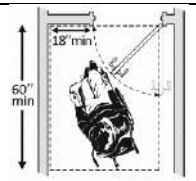
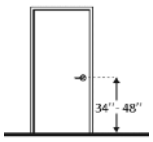
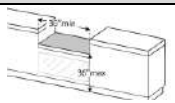
List of the documents reviewed during the assessment

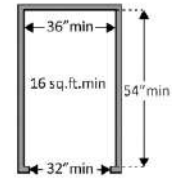
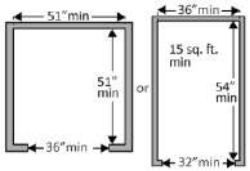
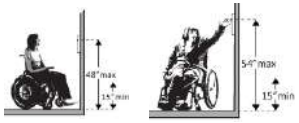
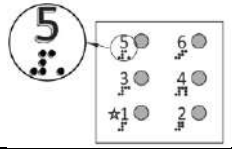
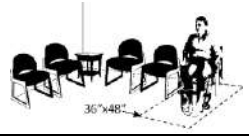
List of the key informants who were consulted during the assessment

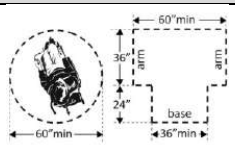
ACCESS AUDIT CHECKLIST FOR HOSPITAL SAFETY ASSESSMENT

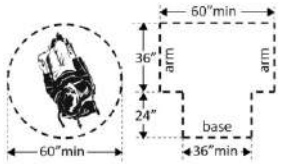
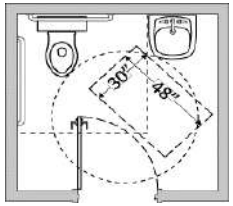
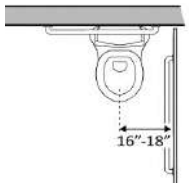
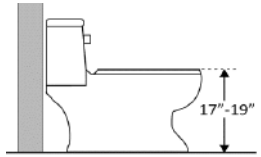
NAME OF HOSPITAL:	**NAME OF EVALUATOR:**
ADDRESS:	**CONTACT NO.:**
	DIRECTOR/MEDICAL SUPERINTENDENT:
DATE OF SURVEY/ASSESSMENT:	**CONTACT NO.:**

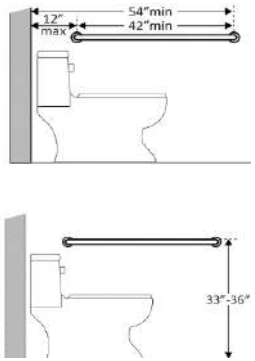
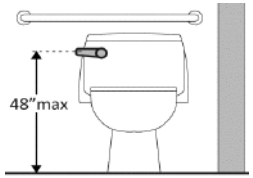
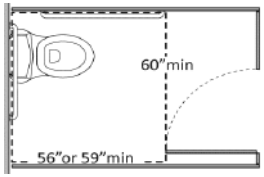
S.N	PARAMETERS	STANDARD	OBSERVATION	RECOMMENDATIONS
REACHING THE HOSPITAL				
1	Are there any kind of barriers or hurdles in sidewalk for movement?	Barriers that can risk injuries are identified and removed or covered or smoothened		
2	Are tactile blocks laid in sidewalk and road crossing place? (Please check the access route to hospital, key service areas and basic amenities)			
3	Are there visible and legible sign post/ Information board?			
PARKING				
4	If parking is provided for the public, are there adequate number of accessible car spaces provided?			
5	Is there a scooter (with supportive wheels) accessible space?	At least 4 feet wide and 5 feet long, with at least 3 feet gap between two parked scooters		
6	Are accessible spaces at least 8 feet (2.4m) wide with an access aisle at least 5 feet (1.5m) wide?			
7	Do the access aisles adjoin an accessible route?			
8	Are accessible spaces identified with a sign that includes the International Symbol of Accessibility?			

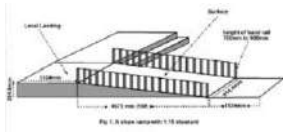
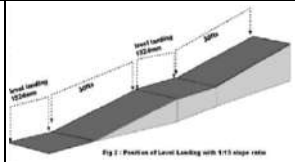
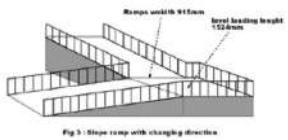
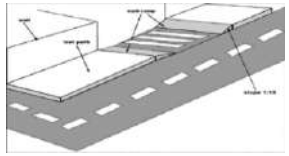
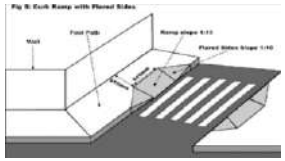
ENTRANCE (Please check main entrance, emergency dept., OPD, Lab, X-Ray, Physiotherapy, Wards, Drinking water, Toilet etc.)				
9	Is the entrance accessible? If the entrance is not accessible, is there an alternative accessible entrance? Can the alternative accessible entrance be used independently and during the same hours as the main entrance?			
10	Is the clear opening width of the accessible entrance door at least 32 inches (0.8m), between the face of the door and the stop, when the door is open 90 degrees?			
11	If there is a front approach to the pull side of the door, is there at least 18 inches (0.46m) of maneuvering clearance beyond the latch side plus at least 60 inches (1.5m) clear depth?			
12	If the threshold is vertical is it no more than ¼ inch high?			
13	Is the door handle no less than 34 inches (0.86m) and no greater than 48 inches (1.2m)above the floor or ground surface?			
DOOR (Please check the doors at main entrance, emergency dept., OPD, Lab, X-Ray, Physiotherapy, Wards, Drinking water, Toilet etc.)				
14	Can the door be opened easily? Is the door handle operable with one hand and does not require tight grasping, pinching or twisting of the wrist?			
COUNTER - SOCIAL SECURITY UNIT, RECEPTION, CASHIER and PHARMACY				
15	One low-level counter no higher than 36 inches above the floor? At least 36 inches long/breadth?			

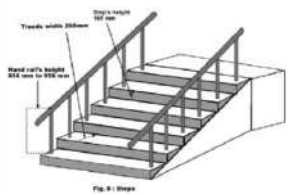
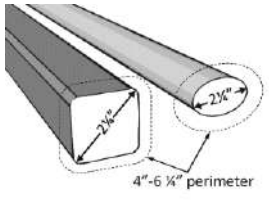
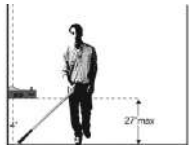
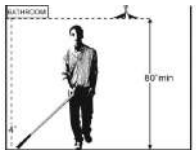
LIFT/ELEVATOR				
16	Does the lift connect all stories/floor levels of the hospital?	It should connect to floor levels where a person with disability will need access e.g. lab, X ray, therapy rooms, ward etc.		
17	If there is a elevator, does the sliding door reopen automatically when obstructed by an object or person?			
18	Are there horizontal grab bars at the maximum height of 3 feet (0.9m)?			
19	Is the interior at least 54 inches (1.4m) deep by at least 36 inches (0.9m) wide with at least 16 sq. ft. (4.9m) of clear floor area? Is the door opening width at least 32 inches (0.8m)?			
20	The interior should be at least 51 inches (1.3m) deep by 51 inches (1.3m) wide with a door opening width of at least 36 inches (0.9m)? Or At least 54 inches (1.4m) deep by at least 36 inches wide with at least 15 sq. ft. (4.6m) of clear floor area and a door opening width of at least 32 inches (0.81m)?			
21	The control buttons are no less than 15 inches (0.38m) and no greater 42 inches (1.1m) above the floor? (or) Up to 48 inches (1.2m) above the floor for a parallel approach?			
22	Are the control buttons designated with raised characters? Are the control buttons designated with Braille?			
23	Are there audible signals which sound as the lift passes or is about to stop at a floor? or, visual signals?			
WAITING ROOM				
24	Is there at least one space at least 36 inches (0.9m) wide by at least 48 inches (1.2m) long for a person in a wheelchair?			

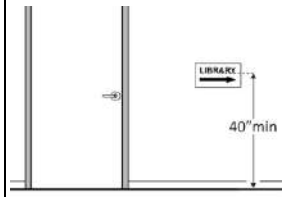
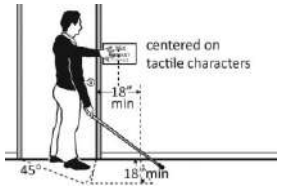
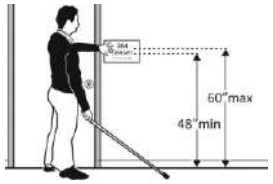
ROOM - (Please check the rooms in emergency, OPD, Lab, X-Ray etc.)				
25	Is there clear floor space available for a person in a wheelchair to turn around, i.e. a circle at least 60 inches (1.5m) in diameter or a T-shaped space within a 60-inch square?			
26	Are examination tables available that provide transfer heights (range of 17" (0.4m) -18" (0.5m)) to allow wheelchair users to transfer onto and off of the exam table?			
WARD / PATIENT ROOMS				
27	Are there at least 10% (but no fewer than one) bed or patient room with accessible bed and mobility features?			
28	In a long-term care facility, do a minimum of 50% of rooms/beds are accessible?			
29	Is there a minimum 2'-6" x 4'-0" clear maneuvering space on both sides of the bed(s)?			
CANTEEN / RESTAURANT/ TEA SHOP				
30	Are at least 5%, but no fewer than one, of seating and standing spaces accessible for people who use wheelchairs?			
31	The top of the table no less than 28 inches (0.7m) and no greater than 34 inches (0.86m) above the floor with knee space at least 27 inches (0.7m) high and at least 30 inches (0.76m) wide? Note: For children, the top should be no less than 26 inches (0.66m) and no greater than 30 inches (0.76m) above the floor and the knee space may be 24 inches (0.61m) high.			
DRINKING WATER				
32	Can the water tap be easily maneuvered by a person in a wheelchair? (30 (0.76m) to 36 inches (0.91m) from ground level)			
33	Is the surface non-slippery?			

TOILET				
34	If toilet rooms are available to the public, is at least one toilet room accessible?			
35	Is there a sign at the accessible toilet room with the International Symbol of Accessibility?			
36	Is there clear floor space available for a person in a wheelchair to turn around, i.e. a circle at least 60 inches (1.5m) in diameter or a T-shaped space within a 60-inch (1.5m) square?			
37	In a single user toilet room if the door swings in and over a clear floor space at an accessible fixture, is there a clear floor space at least 30 (0.8m) x 48 inches (1.2m) beyond the swing of the door?			
38	Is the facility commode? Is the centerline of the water closet no less than 16 inches (0.4m) and no greater than 18 inches (0.5m) from the side wall or partition?			
39	Is the height of the water closet no less than 17 inches (0.4m) and no greater than 19 inches (0.5m) above the floor measured to the top of the seat?			

40	Is there a grab bar at least 42 inches (1.1m) long on the side wall? Is it located no more than 12 inches (0.3m) from the rear wall? Does it extend at least 54 inches (1.4m) from the rear wall? Is it mounted no less than 33 inches (0.83m) and no greater than 36 inches (0.9m) above the floor to the top of the gripping surface? Is the space between the wall and the grab bar 1 ½ inches?			
41	If the flush control is hand operated, is the operable part located no higher than 48 inches (1.2m) above the floor?			
42	Is the height of the urinal not more than 30 inches (0.76m)?			
43	If the door swings in, is the minimum required compartment area provided beyond the swing of the door (60 inches (1.5m) x 56 inches (1.4m) if water closet is wall hung or 59 inches (1.5m) if water closet is floor mounted)?			

CIRCULATE - INTERNAL MOVEMENT (Please check the route to emergency dept., OPD, Lab, X-Ray, Physiotherapy, Wards, Drinking water, Toilet etc.)				
44	Is the route stable, firm and slip-resistant?			
45	Is the route at least 36 inches (0.9m) wide?			
46	Is the running slope no steeper than 1:15, i.e. for every inch of height change there are at least 10 inches of route run? Note: If the running slope is steeper than 1:15, treat as a ramp and add features such as edge protection and handrails			
47	Is there a level landing for every 30 feet (9.1m) slope?			
48	Is there a slope ramp with changing direction?			
KERB RAMPS				
49	If the accessible route crosses a kerb, is there a kerb ramp?			
50	Is there a kerb ramp with flared sides?			

STAIRS (Please check the stairs to emergency dept., OPD, Lab, X-Ray, Physiotherapy, Wards, Toilet etc.)				
51	Is the tread not less than 11 inches (0.28m) wide? Is the riser not more than 6.5 inches (0.17m) high?			
52	Is the surface of the stairs slip-resistant?			
53	Does stairs have continuous rails on both sides? Do they extend 12 inches (0.31m) beyond the top and bottom of any flight?			
54	Is the height of the rail between 34 inches (0.31m) and 38 inches (0.97m)?			
55	If the handrail gripping surface is circular, is it no less than 1 ¼ inches (0.03m) and no greater than 2 inches (0.05m)in diameter?			
56	If the handrail gripping surface is noncircular: Is the perimeter no less than 4 inches (0.1m) and no greater than 6¼ inches (0.16m)?			
57	Do all objects on circulation paths through public areas, e.g. fire extinguishers, drinking facility, signs, etc., protrude no more than 4 inches (0.1m) into the path? (or) If an object protrudes more than 4 inches (0.1m), is the bottom leading edge at 27 inches (0.7m) above the floor? (or) Is the bottom leading edge at 80 inches (2m) or higher above the floor?	 		

SIGNAGE (Please check the signage at main entrance, emergency dept., OPD, Lab, X-Ray, Physiotherapy, Wards, Drinking water, Toilet etc.)				
58	If there are signs that provide direction to or information about interior spaces: Do text characters contrast with their backgrounds? Is the sign mounted so that characters are at least 40 inches (1m) above the floor?			
59	Are there signs for designating permanent rooms and spaces e.g. room numbers and letters, room names, and exit signs? Do text characters contrast with their backgrounds? Are text characters raised? Is there Braille? Is the sign mounted: On the wall on the latch side of the door? Note: Signs are permitted on the push side of doors with closers and without holdopen/self-closing doors/devices.			
60	With clear floor space beyond the arc of the door swing between the closed position and 45-degree open position, at least 18 (0.45m) x 18 inches (0.45m) centered on the tactile characters? So the baseline of the lowest character is at least 48 inches (1.2m) above the floor and the baseline of the highest character is no more than 60 inches (1.5m) above the floor? Note: If the sign is at double doors with one active leaf, the sign should be on the inactive leaf; if both leaves are active, the sign should be on the wall to the right of the right leaf.	 		

ACCESSIBILITY (DISABILITY INCLUSION) MODULE

1. Coordination of emergency and disaster management activities	Safety level			Observations (evaluators' comments)
	Low	Average	High	
1.1 Hospital Disaster Committee *Safety ratings:* *Low = Committee does not exist/does not include staff/person with disability, or 1–3 departments (does not include physiotherapy department) or disciplines represented;* *Average = Committee exists and includes staff/persons with disabilities with 4–5 departments (including physiotherapy department) or disciplines represented, but is not fulfilling functions effectively;* *High = Committee exists and includes staff/persons with disabilities with 6 or more departments including physiotherapy department or disciplines represented and is fulfilling functions effectively.*	☐	☐	☐	
Recommended evaluation methods: interview and review of documentation (including terms of reference). Evaluators should 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. Evaluators should verify that the hospital positions on the Hospital Emergency/Disaster 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, physiotherapy in-charge, Social Service Unit (SSU), staff with disability or persons with disability. The leadership and commitment of senior executives provides critical support for emergency and disaster management, including for preparedness, response and recovery. Evaluators should obtain a copy of the committee's terms of reference and verify that the list of members corresponds to current personnel. Evaluators should determine if the committee functions effectively by meeting on a regular *basis* and taking action to fulfill its responsibilities via effective leadership and coordination.				
1.2 Committee member responsibilities and training *Low = Committee does not exist /does not include staff/person with disability, and or members are untrained and responsibilities not assigned/ no responsibilities for staff/person with disability* *Average = Members (include staff/person with disability) have received training, and/or not officially assigned* *High = All members (include staff/person with disability) are trained and are actively fulfilling their roles and responsibilities*	☐	☐	☐	
2. Hospital emergency and disaster response, and recovery planning	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
2.1 Hospital Disaster Preparedness and Response Plan (HDPRP): *Safety ratings: Low = Plan is not documented and not disability inclusive; Average = Documented plan is complete and disability-inclusive, but is not easily accessible, not up to date (more than 12 months since the last update); High = Plan is disability-inclusive and complete, easily accessible, reviewed/updated at least annually, and resources are available to implement the plan.*	☐	☐	☐	

Evaluators should verify that the 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. Evaluators should review the plan and confirm ifthe hospital has the necessary resources to implement it.
Disability-inclusive means, "the needs of people with disabilities (in the committee) are taken into account and addressed in the plan"
Evaluators should 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.
Response and recovery plans should also be reviewed after exercises (see Item 123) and after a major incident. Evaluators should verify if an AAR is conducted after a major incident affecting the hospital, including identification of lessons for planning corrective action. This should be a major part of the response plan and should be included as one of the major tasks for the Hospital Emergency/Disaster Committee and staff who coordinate emergency management activities in the hospital. It may take the form of a de- briefing of the hospital personnel who were involved in the incident response. The results are collated and presented to the committee for further actions, including improvement and updating of plans.

3. Communication and information management	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
3.1 Emergency internal and external communication *Safety ratings: Low = Central internal and external communication system (does not include flashing light, sign language interpretation) functions inconsistently or incompletely; operators are not trained in emergency communication; Average = System (includes flashing light, sign language interpretation) functions appropriately, operators have received some training in emergency communication, tests are not conducted at least annually; High = System (includes flashing light, sign language interpretation) functions completely and operators are fully trained in emergency use, and tests of the system are conducted at least annually.*	☐	☐	☐	

4. Human resources	**Safety level**			**Observations (evaluators'comments)**
	Low	**Average**	**High**	
4.1 Mobilization and recruitment of personnel during an emergency or disaster during an emergency or disaster *Low = Procedures do not exist or exist (includes persons with disabilities) only in a document* *Average = Procedures exist and personnel (including persons with disabilities) have been trained, but the human resources for an emergency situation are not available* *High = Procedures exist, personnel have been trained, and the human resources (link person/liaison for person with disabilities) are available to meet anticipated needs in an emergency.*	☐	☐	☐	

Recommended evaluation methods: interview and review of documentation (including procedures).
Evaluators should verify that procedures are in place for the mobilization of existing on-duty and off-duty staff and recruitment (of a person with disability who will be the link person/liaison between person with disabilities and the hospital staff during acute response) and training of employable personnel and volunteers to meet surge capacity needs of high-demand clinical and support services {e.g. emergency department, surgery, intensive care units, security, managerial and administrative support). Evaluators should verify if staff emergency rosters exist and are maintained. These 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. Strategies to address evening, weekend and holiday coverage, as well as necessary incentives (e.g. overtime pay), should be considered.

5. Logistics and finance	Safety level			Observations (evaluators' comments)
	Low	Average	High	
5.1 Transportation during an emergency *Safety ratings: Low = Ambulances and other vehicles and modes of transportation are not available; Average = Some vehicles are available, but not in sufficient numbers and not accessible for people with disabilities for a major emergency or disaster; High = Appropriate vehicles in sufficient numbers are available and accessible for people with disabilities during emergencies/disasters.*	☐	☐	☐	
Recommended evaluation methods: observation, review of documentation (including procedures), discussions on their experience and inspection. Evaluators should verify that procedures are in place to ensure availability and access to functional ambulances and other vehicles and necessary modes of transportation for the movement of patients, staff, equipment and supplies during an emergency or disaster. Procedures should address the communications between hospitals, vehicles and personnel at the scene of the emergency, as well as coordination of patient distribution and referral. Safety and security procedures should apply to the use, storage and maintenance of vehicles. Evaluators should note that transportation may be provided via land, water and air.				
5.2 Financial resources for emergencies and disasters *Safety ratings: Low = Emergency budget or mechanism (inclusive of disability-inclusive measures and mechanisms) to access emergency funds is not in place; Average = Funds are budgeted and mechanisms (inclusive of disability-inclusive measures and mechanisms) are available but cover less than 72 hours; High = Sufficient funds (inclusive of disability-inclusive measures and mechanisms) are guaranteed for 72 hours or more.*	☐	☐	☐	
Recommended evaluation methods: interview and review of documentation. Evaluators should verify that 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. Evaluators should confirm that: • the budget is sufficient to implement measures outlined in the plan • cash is available for immediate purchases, and there is a list of suppliers that will extend credit to the hospital • the quantity and availability of medical equipment and supplies are known. Disability-inclusive measures and mechanisms include recruitment of persons with disability during disaster, purchase of assistive devices, essential changes for accessible features in the ambulances and hospitals and emergency rehabilitation services Hospitals should also have additional financial resources calculated annually for the overall emer- gency and disaster risk management programme, including preparedness measures.				
6. Patient care and support services	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
6.1 Expansion of usable space for mass casualty incidents *Safety ratings: Low = Space for expansion has not been identified (including additional accessible space, beds, WASH & step-down care facilities); Average = Space has been identified; equipment, supplies and procedures are available to carry out the expansion (including additional accessible space, beds, WASH & step-down care facilities) and staff have been trained, but testing has not been conducted; High = Procedures exist and have been tested, personnel have been trained, and equipment, supplies and other resources are available to carry out the expansion of space (including additional accessible space, beds, WASH & step-down care facilities)*	☐	☐	☐	

Recommended evaluation methods: interview, review of documentation (including procedures) and inspection.
Evaluators should verify that procedures are in place to expand space and provide access to extra beds for mass casualty incidents - i.e. when the number of patients exceeds normal capacity. This also includes additional, accessible space for people with disabilities, at least 10% of beds and accessible water and sanitation facilities. Expansion areas should be identified before the event and these areas should be clearly signed. Evaluators should verify that staff have been trained, the procedures for expanding space have been tested and that adequate resources are available for implementation. Procedures for expansion of capacity should be part of hospital exercises.
Step-down care facility is a rehabilitation facility for patients who do not require acute care but require rehabilitation services to improve their functioning and health outcomes. This is normally provided by the existing rehabilitation staff, and in case of temporary hospital setting, step-down care should be available in a pre-identified space (of 12 square metres)

6.2 System for referral, transfer and reception of patients *Safety ratings: Low = Procedures and referral mechanisms – assisted discharge & referral to step-down facilities (including CBR/ID linkages) do not exist or exist only as a document. Average = Procedures and referral mechanisms – assisted discharge & referral to step-down facilities (including CBR linkages) exist and personnel have been trained, but procedures have not been tested for emergency or disaster situations;High = Procedures and referral mechanisms – assisted discharge & referral to step-down facilities (including CBR/ID linkages) exist and have been tested, personnel have been trained, and resources are available to implement measures at maximum hospital capacity in emergency or disaster situations.*	☐	☐	☐	

Recommended evaluation methods: interview and review of documentation (including procedures and reports).
Evaluators should verify that the hospital has documented criteria for receiving and referring patients during an emergency or disaster (using standardized referral forms). 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.
Assisted discharge & referral: Patients with rehabilitation needs who are medically stable but would require short to long term care are assisted in discharge and referred to pre-identified step-down care facilities within or outside the hospital by the physiotherapy/rehabilitation staff. Further they are assisted in accessing social protection services (education, livelihood) through community based rehabilitation (CBR)/inclusive development linkages with Municipalities, provinces and other I/NGOs.

7. Evacuation, decontamination and security	**Safety level**			**Observations (evaluators' comments)**
	Low	**Average**	**High**	
7.1 Evacuation plan *Safety ratings: Low = Plan (including disability-inclusive evacuation) does not exist or exists only as a document; Average = Plan (including disability-inclusive evacuation) exists and personnel have been trained in procedures, but tests (including persons with disability) are not conducted regularly; High = Plan (including disability-inclusive evacuation) exists, personnel have been trained, and evacuation drills (including persons with disability) are held at least annually.*	☐	☐	☐	

Recommended evaluation methods: interview, review of documentation (plan) and inspection.
Evaluators should verify criteria and procedures for vertical, horizontal and partial evacuation of patients, visitors and staff to a safe location with the necessary medical, logistical and administrative sup- port. The criteria should enable triage for evacuation of patients. Training of staff and the regularity of evacuation drills should be evaluated.
Disability-inclusive evacuation means there should be a separate exit point for all kinds of persons with disabilities (for deaf – sign, symbol, lighting with direction; for blind – tactile floors; for physical/wheelchair users – wider path; low vision – information in bold and big letter) and the entrance should have no obstruction). For testing of the evacuation plan, persons with disabilities should be included.

8. Emergency rehabilitation services	Safety level			Observations (evaluators' comments)
	Low	Average	High	
8.1 Needs Assessment: *Safety ratings: Low = Persons with disabilities are not included in the needs assessment* *Average = Persons with disability are identified based on impairment/census data* *High = Persons with disabilities are identified based on Functioning questionnaire (Washington Disability Group) questionnaire*	☐	☐	☐	
Evaluator should verify if needs assessment is in the preparedness plan and check if it is being practiced during any disaster. It will assess the Information on how many persons with disabilities who are in the hospital (admitted) and how many patients with rehabilitation needs during the disaster. It will enable us to plan (including the evacuation plan), the emergency rehab services required including assistive devices and rehab personnel needed. This information should be collected by the physiotherapist/in-charge/rehab staff / trained persons with disabilities during response (at triage, emergency rehab and referral) and recovery phase. Functioning questionnaire is found in guidance document/annex.				
8.2 Capacity of Health Care Staff *Safety ratings: Low = less than 25% of the staff have undergone trainings in any trauma management* *Average = 25 to 50% of health care staff – Doctors, PT, Nurses, Paramedical, ambulance drivers etc. have undergone trauma management trainings.* *High = More than 50% of health care staff – Doctors, PT, Nurses, Paramedical, ambulance drivers - have undergone relevant trainings in trauma management. In addition, the staff are aware of disability inclusion*	☐	☐	☐	
Evaluators should verify what proportion of the staff has received hands-on trainings on trauma management. For example, Primary Trauma Care (PTC), Emergency Trauma Management (ETM), Community Emergency Medical Technician (CEMT) for ambulance drivers etc. or any updated training on trauma management In addition, the evaluators should verify whether the staff have got basic knowledge, skills and attitude towards persons with disabilities. This will help the staff to understand the needs of persons with disabilities, how to communicate and provide appropriate care according to the disabilities.				
8.3 ACCESS: Reach, Enter, Circulate/internal Movement within the hospital & key service areas and basic amenities: *Safety ratings: Low = Reach, Enter, Circulate/Internal movement within the hospital, key service areas and basic amenities are less than 25% accessible to wheelchair users and persons with visual impairments/disabilities* *Average = Reach, Enter, Circulate/Internal movement within the hospital, key service areas and basic amenities are 25-50% accessible to wheelchair users and persons with visual impairments/disabilities* *High= Reach, Enter, Circulate/Internal movement within the hospital, key service areas and basic amenities are more than 50% accessible to wheelchair users and persons with visual impairment/disabilities*	☐	☐	☐	
This assessment should be carried out by a team of persons with disabilities (wheelchair user, visual impairment/blind, hearing impairment/deaf and low vision) and the physiotherapist/rehab professional. Evaluators should verify whether persons with disabilities / rehabilitation needs can reach, enter, and move inside/around the key services areas and basic amenities. Key services include social security unit, emergency, OPD, X-ray, laboratory pharmacy, trauma wards, and physiotherapy. Basic amenities include disabled-friendly toilet, drinking water, and canteen A checklist for access audit and mapping of hospital and service areas are found in guidance document/annex. This will enable us to identify barriers and suggest recommendations.				

8.4 Disability-inclusive services: *Safety ratings: Low = very limited or no inclusion and no emergency rehabilitation services available* *Average = some services are disability-inclusive and emergency rehabilitation services* *High = All hospital services are disability-inclusive and emergency rehabilitation services are available*	☐	☐	☐	
This question should be evaluated by a team of persons with disabilities (wheelchair user, visual impairment/blind, hearing impairment/deaf and low vision) and the physio/rehab professional. Evaluators should verify if persons with disabilities can access the health services they need. For example, sexual & reproductive health, psycho social services and general health conditions (communicable & non-communicable diseases). In addition, availability and of emergency rehabilitation services in terms of at least one PT/rehab staff, basic equipment and supplies.				
8.5 Information & communication *Safety ratings: Low = No accessible information available;* *Average = Some information is accessible* *High = All information is given in accessible format (or) vulnerable focal point/interpreter for deaf person is available*	☐	☐	☐	
Evaluators should verify if there is a communication plan and procedures for persons with disabilities as part of hospital disaster preparedness plan, and check if the hospital has information board, signages, patient education sheets, Information, Education and Communication/IEC materials that are accessible to persons with disabilities/rehabilitation needs. Accessible materials include, for hearing impairment/deaf – sign language interpreter; visual impairment/blind – Braille format; low vision – bold letters).				
8.6 Assistive devices* during emergencies: *Safety ratings: Low = No assistive devices are planned, procured and stockpiled for emergency* *Average = Some assistive devices are planned and procured for emergency* *High = Assistive devices are planned, procured and stockpiled. It may include customized wheelchairs and stretchers for decontamination during chemical and biological and radiological incidents.*	☐	☐	☐	
*Any device designed, made or adapted to help a person perform a particular task, such as wheelchairs, prostheses, mobility aides, hearing aids or visual aids. Products may be specially produced or generally available for people with a disability (WHO, 2016) **Evaluators should verify if the hospital disaster preparedness plan includes assistive devices for managing emergencies as per the checklist of priority assistive devices to be stockpiled found in** guidance document/**annex. The evaluator should give a high score if at least 16 assistive devices as part of 'Priority Assistive Products list of Nepal' are available and stockpiled.**				

Other comments:

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Name of facility and address (RM/UM, District, Province:.....

Source of information (person who provided info, his designation and mobile no.)

……

Name/signature of evaluator(s) & mobile no.: .....

Date: .....

Supported by: