# Hospital Safety Index

Pan American Health Organization
Regional Office of the World Health Organization

World Health Organization

Washington DC, 2008


A method for qualitative assessment of safety risks in health infrastructure exposed to natural and human-made hazards



## OBSERVATIONS DURING FIELD TRIP TO LAAMU AND THAA ATTOLS

New Regional Hospital at Laamu Atoll – Ground Floor at Road Level

Risk Safety Assessment for Health Infrastructure in the Republic of Maldives, Jaime F. Argudo, Ph.D., P.E. – WHO Consultant

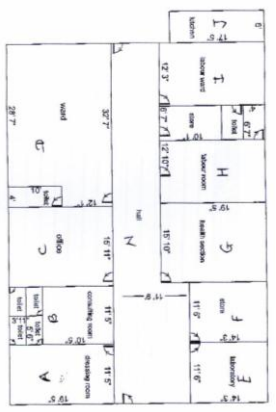
# OBSERVATIONS DURING FIELD TRIP TO LAAMU AND THAA ATTOLS


New Regional Hospital at Laamu Atoll – Fire and Emergency Lighting Systems



## Form 1

### General Information About the Health Facility



The aim is to collect basic information such as:

- Population served
- Services available
- Area of influence
- Personnel available
- Physical distribution of services and buildings
- Key architectural plans, sketches, drawings, etc.

## Form 2

Safe Hospitals Checklist


Elements relating to the geographic location (MNBC–2010 Hazard Maps and Specs) ..... 13

Elements related to the structural safety of the facility (Maintenance Engineer) ..... 16

Elements related to non-structural safety (Maintenance Engineer) ..... 18

Functional capacity of the hospital (Hospital Administrator) ..... 26




## An example of Questionnaire Part 2

## for

## Indira Gandhi Memorial Hospital (IGMH)

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# Observations on Structural Safety at IGMH

IGMH – Strong columns at basement



1. Elements relating to the GEOGRAPHIC LOCATION of the health facility (mark with an X where applicable).

| 1.1 Hazards<br>Refer to hazard maps. Request the Hospital Disaster Committee to provide the map(s) showing safety hazards at the site of the building. | Hazard Level | | | | OBSERVATIONS |
|---|---|---|---|---|---|
| | No hazard | Hazard level | | | |
| | | LOW | AVERAGE | HIGH | |
| **1.1.1 Geological phenomena** | | | | | |
| **Earthquakes**<br>Rate the hazard level of the hospital in terms of geotechnical soil analyses. | ☐ | ☒ | ☐ | ☐ | |
| **Volcanic eruptions**<br>Refer to hazard maps of the region to rate the hospital's exposure to hazard in terms of its proximity to volcanoes, volcanic activity, routes of lava flow, pyroclastic flow, and ash fall. | ☒ | ☐ | ☐ | ☐ | |
| **Landslides**<br>Refer to hazard maps to rate the level of hazard for the hospital in terms of landslides caused by unstable soils (among other causes). | ☒ | ☐ | ☐ | ☐ | Currently not considered as a threat. |
| **Tsunamis**<br>Refer to hazard maps to rate the level of hazard for the hospital in terms of previous tsunami events caused by submarine seismic or volcanic activity. | ☐ | ☒ | ☐ | ☐ | IN 2004, THE TSUNAMI'S DIRECT IMPACT WAS TO EASTERN SIDE OF MALDIVES. THIS IS THE FIRST EVENT OF SUCH NATURE RECORDED IN HISTORY OF MALDIVES. |
| **Others (specify)** .....<br>Refer to hazard maps to identify other geological phenomena not listed above. Specify the hazard and rate the corresponding hazard level for the hospital. | ☒ | ☐ | ☐ | ☐ | |
| **1.1.2 Hydro-meteorological phenomena** | | | | | |
| **Hurricanes**<br>Refer to hazard maps to rate the hazard level of the hospital in terms of hurricanes. It is helpful to take into account the history of such events when rating the hazard level of the facility. | ☐ | ☒ | ☐ | ☐ | |
| **Torrential rains**<br>Rate the hazard level for the hospital in relation to flooding due to intensive rainfall, based on the history of such events. | ☐ | ☐ | ☐ | ☒ | |
| **Storm surge or river flooding**<br>Rate the hospital's level of exposure to storm surge or river flooding hazards based on previous events that did or did not cause flooding in or around the hospital. | ☐ | ☐ | ☒ | ☐ | |
| **Landslides**<br>Refer to geological maps to rate the hospital's level of exposure to landslide hazards caused by saturated soil. | ☒ | ☐ | ☐ | ☐ | |
| **Others (specify)** SEA SWELLING AND SEA LEVEL RISE .....<br>Refer to hazard maps to identify other hydro-meteorological hazards not listed above. Specify the hazard and rate the corresponding hazard level for the hospital. | ☐ | ☐ | ☒ | ☐ | IGMH GROUND FLOOR IS LOCATED AT 2 M ABOVE SEA LEVEL BUT THE BASEMENT IS AT OR BELOW SEA LEVEL. THE NATURAL GLOBAL PHENOMENON OF SEA LEVEL RISE IS CONSIDERED TO AGGRAVATE THE EFFECTS OF SEA SWELLING DURING STORM SURGES CAUSED BY TROPICAL CYCLONES OR LOW PRESSURE SYSTEMS. |

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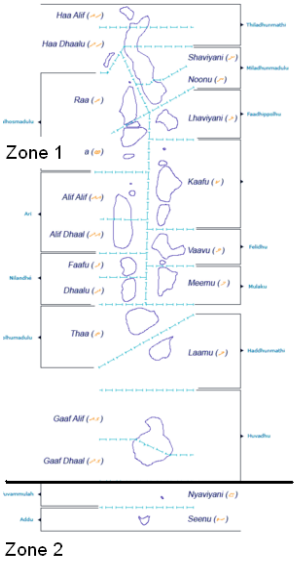



## MNBC–2010 COMPLIANCE DOCUMENTS
## Earthquake Design Parameters and Hazard Chart

**B Stability** **B1 Structure**

**Table I.4.2 Zone Factors (Z) for Building Design in Earthquake Hazard Zones**

| Zone Factors (Z = PGA/g); $g = 9.81\ m/s^2$ *(gravity acceleration)* | | |
|---|---|---|
| **ZONE** | **T = 475 years, for life safety design using IS 1893 (Part I)**** | **T = 50 years, for Property Loss Protection*** |
| 1 | 0.10 | 0.02 |
| 2 | 0.16 | 0.03 |

*Best estimate – not computed

** Revised from values computed in UNDP – RMSI (2006) study for T = 475 years

| EARTHQUAKE HAZARD RISK | |
|---|---|
| HAZARD ZONE | RISK LEVEL |
| 1 | Low |
| 2 | Moderate |



## UNDP – RMSI 2006 ASSESSMENT
## MNBC –2010 REVIEW

**Table A.9 Return Periods for Maximum Tsunami Wave Height (TWH) greater than 0.5 meters in Maldives Islands by UNDP-RMSI (2006)**

| Earthquake Recurrence | Probability of Exceedance in 50 years PE(50) | Annual Probability of Occurrence N(M) | Return Period T (years) | Earthquake Moment Magnitude Mw | Maximum Tsunami Wave Height (m) |
|---|---|---|---|---|---|
| Rare | 10% | 0.00211 | 475 | 8.5 | 0.5 |
| Very Rare | 2% | 0.000404 | 2475 | 9.0 | 4.5 |

*[ LogN(M) = a – bM ], [T(years) =1/N(M)] and [ PE(t years) = 1 - exp[-N(M)*t] ]*

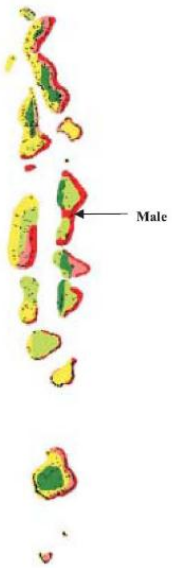


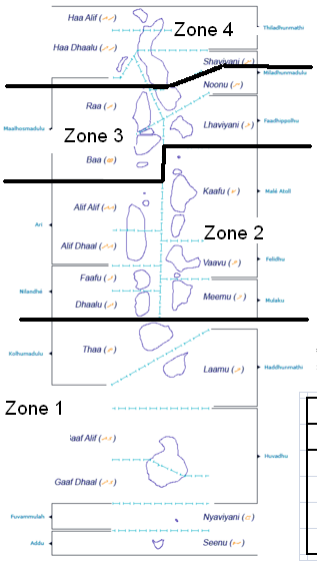

**Figure A.10 The Tsunami Hazard Zones in Maldives by UNDP-RMSI (2006)**

# Site Assessment for Tsunami Hazard

The following conditions shall be considered:

- Tide elevation during previous tsunamis
- Proximity to shore
- Ground floor elevation
- Sacrificial Fences






## MNBC–2010 COMPLIANCE DOCUMENTS
## Wind Design Parameters and Hazard Chart

### B Stability B1 Structure

**Table I.4.1 Sustained Wind Speeds for Building Design in Wind Hazard Zones**

| SUSTAINED WIND SPEEDS | | | | |
|---|---|---|---|---|
| ZONE | T = 50 years, Vb ** for life safety design using BS 6399-2 | | T = 25 years, for Property Loss Protection* | |
| | KM/H | m/s | KM/H | m/s |
| 4 | 140 | 39 | 80 | 22 |
| 3 | 120 | 33 | 70 | 19 |
| 2 | 100 | 28 | 60 | 17 |
| 1 | 80 | 22 | 50 | 14 |

*Best estimate – not computed
** Adapted from values computed in UNDP – RMSI (2006) study for gusty winds with T = 500years

| WIND HAZARD RISK | |
|---|---|
| HAZARD ZONE | RISK LEVEL |
| 1 | Very Low |
| 2 | Low |
| 3 | Moderate |
| 4 | High |

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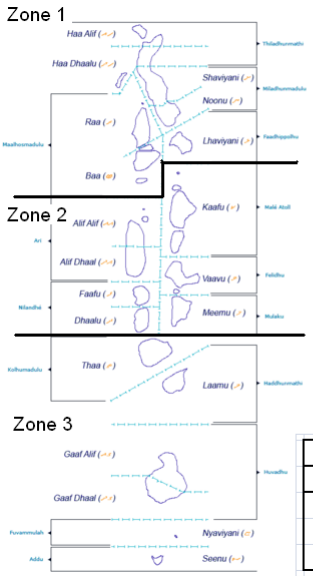


## MNBC–2010 COMPLIANCE DOCUMENTS
## Rain Design Parameters and Hazard Chart

### B Stability B1 Structure

**Table I.4.3 Rain Precipitation Values for Building Design in Rain Hazard Zones**

| Rain Hazard Zone | Maximum Rain Precipitation (mm) | | |
|---|---|---|---|
| | T = 10 years, for Section E1.3.1 in MBC* | T = 50 years, for Section E1.3.2 in MBC Property Loss Protection** | T = 500 years, for Chapter B in MBC Life Safety** |
| 1 | 130 | 140 | 180 |
| 2 | 180 | 190 | 240 |
| 3 | 210 | 220 | 280 |

*Best estimate – not computed by the UNDP – RMSI (2006) study
** Computed by the UNDP – RMSI (2006) study

| RAIN HAZARD RISK | |
|---|---|
| HAZARD ZONE | RISK LEVEL |
| 1 | Moderate |
| 2 | High |
| 3 | Very High |



| | | | | | |
|---|---|---|---|---|---|
| **1.1.3 Social phenomena** | | | | | |
| **Population gatherings** Rate the hospital's exposure to hazard in relation to the type of population it serves, its proximity to population gatherings and prior events that have affected the hospital. | ☐ | ☒ | ☐ | ☐ | |
| **Displaced populations** Rate the hospital's exposure to hazard in terms of people who have been displaced as a result of war, socio-political circumstances, or due to immigration and emigration. | ☐ | ☒ | ☐ | ☐ | |
| **Others (specify)** SEA LEVEL RISE MIGRATION If other social phenomena affect the safety of the hospital, specify them and rate the level of hazard for the hospital accordingly. | ☐ | ☐ | ☐ | ☒ | AN EXPECTED TREND DUE TO 80% LAND IN MALDIVES BELOW 1 M. CONSIDERING MALE ELEVATION BETWEEN 1.5 M AND 2 M IS WELL ABOVE AVERAGE |
| **1.1.4 Environmental phenomena** | | | | | |
| **Epidemics** With reference to any past incidents at the hospital and specific pathogens, rate the hospital's exposure to hazards related to epidemics. | ☐ | ☐ | ☐ | ☒ | EXPOSURE TO EPIDEMICS IS EQUAL OR HIGHER THAN TO NATURAL HAZARDS DUE TO LACK OF SAFE WASTE MANAGEMENT SYSTEMS |
| **Contamination (systems)** With reference to any past incidents involving contamination, rate the hospital's exposure to hazards from contamination of its systems. | ☐ | ☐ | ☐ | ☒ | WATER SANITATION AND WASTE DISPOSAL DOES NOT MEET MINIMUM SAFETY STANDARDS |
| **Infestations** With reference to the location and past incidents at the hospital, rate the hospital's exposure to hazards from infestations (flies, fleas, rodents, etc.). | ☐ | ☐ | ☒ | ☐ | WATER SANITATION AND WASTE DISPOSAL DOES NOT MEET MINIMUM SAFETY STANDARDS AND ALSO FACILITY IS TOO CLOSE TO MALE UNTREATED LIQUID DISCHARGE TO OCEAN AND SOLID WASTE TRANSIT AND CABOTAGE AT VILLINGILI FERRI PORT |
| **Others (specify)** With reference to any past incidents at the hospital, specify any other environmental phenomena not included above that might compromise the level of safety of the hospital. | ☐ | ☐ | ☐ | ☐ | |
| **1.1.5 Chemical and/or technological phenomena** | | | | | |
| **Explosions** With reference to the hospital's surroundings, rate the hospital's exposure to explosion hazards. | ☐ | ☐ | ☒ | ☐ | Island has the storage of Patrol and Diesel located from 300 to 400 metres South, If an explosion occurs, it might bring an indirect impact to IGMH. A Gas Station is located 10 meters South |
| **Fires** With reference to the exterior of the hospital building, rate the hospital's exposure to external fires. | ☐ | ☐ | ☐ | ☒ | Gas station 10 metres away might out the hospital in jeopardy in case of a fire incident. |
| **Hazardous material spills** With reference to the hospital's surroundings, rate the hospital's exposure to hazardous material spills. | ☐ | ☒ | ☐ | ☐ | |
| **Others (specify)** INTERNAL FIRE Specify and rate other chemical or technological hazards in the area where the hospital is located. | ☐ | ☐ | ☐ | ☒ | A 4,000 liter diesel tank is stored between Ground Floor and Basement and the hospital's Fire Water System is not operational. Basement also hosts a significant amount of flammable and combustible materials and poor electrical wiring mixed with water piping. |

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| 1.2 Geotechnical properties of soils | | | | | |
|---|---|---|---|---|---|
| **Liquefaction**<br>With reference to the geotechnical soil analysis at the hospital site, rate the level of the facility's exposure to hazards from saturated and loose subsoil. | ☒ | ☐ | ☐ | ☐ | |
| **Clay soils**<br>With reference to soil maps, rate the hospital's exposure to hazards from clay soil. | ☒ | ☐ | ☐ | ☐ | |
| **Unstable slopes**<br>Refer to geological maps and specify the hospital's exposure to hazards from the presence of slopes. | ☒ | ☐ | ☐ | ☐ | |

Comments on the results of Form 2, Module 1. The evaluator should use the space below to comment on the results of this module (1), and provide his/her name and signature.

Hospital Liquid Waste System – No treatment is provided and waste is discharged to Island Sewage System, which discharge to Sea close to hospital premises (< 300 m distance)

Hospital uses Potable Water from Male Desalination Water Plant – Desalinated water is collected through a bore hole 40 metres deep.
Water from a well is used for toilets and non-potable usage.



**2. Elements related to the structural safety of the building**

Columns, beams, walls, floor slabs, etc., are structural elements that form part of the load-bearing system of the building. These elements should be evaluated by structural engineers.

| 2.1 Prior events affecting hospital safety | Safety level LOW | Safety level AVERAGE | Safety level HIGH | OBSERVATIONS |
|---|---|---|---|---|
| **1. Has there been prior structural damage to the hospital as a result of natural phenomena?**<br>Determine whether structural reports indicate that the level of safety has been compromised. IF SUCH AN EVENT HAS NOT OCCURRED IN THE VICINITY OF THE HOSPITAL, LEAVE BOXES BLANK.<br>*Low = Major damage; Average = Moderate damage; High =Minor damage.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK (REMOVE MARK FROM BOX) |
| **2. Was the hospital built and/or repaired using current safety standards?**<br>Verify whether the building has been repaired, the date of repairs, and whether repairs were carried out using standards for safe buildings.<br>*Low = Current safety standards not applied; Average = Current safety standards partially applied; High = Current safety standards fully applied.* | ☒ | ☐ | ☐ | Currently working on a programme to determine the risk of a fire event within the hospital, and taking measures to reduce this. |
| **3. Has remodelling or modification affected structural behavior of the facility?**<br>Verify whether modifications were carried out using standards for safe buildings.<br>*Low = Major remodelling or modifications have been carried out; Average = Moderate remodelling and/or modifications; High = Minor remodelling and/or modifications or no modifications were carried out.* | ☐ | ☐ | ☒ | MODIFICATIONS HAVE NOT SIGNIFICANTLY AFFECTED STRUCTURAL SAFETY |
| **2.2 Safety of the structural system and type of materials used in the building** | **Safety level LOW** | **Safety level AVERAGE** | **Safety level HIGH** | **OBSERVATIONS** |
| **4. Condition of the building**<br>*Low = Deterioration caused by weathering; cracks on the first floor and irregular height of buildings; Average = Deterioration caused only by weathering; High = Good; no deterioration or cracks observed.* | ☐ | ☒ | ☐ | |
| **5. Construction materials used**<br>*Low = Rust with flaking; cracks larger than 3mm; Average = Cracks between 1 and 3 mm or rust powder present; High = Cracks less than 1 mm; no rust.* | ☐ | ☒ | ☐ | |
| **6. Interaction of non-structural elements with the structure**<br>*Low = Separation of less than 0.5% of the height of the partition/joint; Average = Separation between 0.5 and 1.5% of the height of the partition/joint; High = Separation above 1.5% of the partition/joint.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **7. Proximity of buildings (hazards of pounding, wind tunnel effects, fires, etc.)**<br>*Low = Separation is less than 0.5% of the height of the shorter of two adjacent buildings; Average = Separation is between 0.5% and 1.5% of the height of the shorter of two adjacent buildings; High = Separation is more than 1.5% of the height of the shorter of two adjacent buildings.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **8. Structural redundancy**<br>*Low = Fewer than three lines of resistance in each direction; Average = Three lines of resistance in each direction or lines without orthogonal orientation; High = More than three lines of resistance in each orthogonal direction of the building.* | ☐ | ☐ | ☐ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |

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| | | | | |
|---|---|---|---|---|
| **9. Structural detailing, including connections**<br>*Low = Built before 1970; Average = Built between 1970 and 1990; High = Built after 1990 and according to standards.* | ☐ | ☐ | ☒ | |
| **10. Safety of foundations**<br>*Low = Information is lacking or foundation depth is less than 1.5 m; Average = Plans and soil studies are lacking but foundation depth is more than 1.5 m; High = Plans, soil studies are available and foundation depth is more than 1.5 m.* | ☐ | ☐ | ☒ | SOIL CONDITIONS ARE KNOWN FOR MALE ISLAND |
| **11. Irregularities in the plan (rigidity, mass, and resistance)**<br>*Low = Shapes are irregular and structure is not uniform; Average = Shapes are irregular but structure is uniform; High = Shapes are regular, structure has uniform plan, and there are no elements that would cause torsion.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **12. Irregularities in height (rigidity, mass, and resistance)**<br>*Low = Height of storeys differs by more than 20% and there are significant discontinuous or irregular elements; Average = Storeys have similar heights (they differ by less than 20% but more than 5%) and there are few discontinuous or irregular elements; High = Storeys of similar height (they differ by less than 5%); there are no discontinuous or irregular elements.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **13. Structural resilience to various phenomena (meteorological, geological, among others)**<br>Estimate structural behavior in response to different hazards or dangers, other than earthquakes.<br>*Low = Low structural resilience to natural hazards present at the site of the hospital; Average = Satisfactory structural resilience; High = Excellent structural resilience.* | ☐ | ☐ | ☒ | A CONCERN COULD BE RAISED ON THE DURABILITY OF REINFORCEMENT DUE TO CORROSION ACTIVITY. NOT YET SIGNIFICANT CORROSION ACTIVITY IS OBSERVED AFTER 15 YEARS OF SERVICE |

Comments on the results of Form 2, Module 2:

MANY QUESTIONS MAY BE ANSWERED AS FOLLOWS:
"LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE"

THE STRUCTURE IS EXPOSED TO THE EFFECTS OF SERVICE GRAVITY LOADS, FLOODS AND FIRES, THUS SOME OF THE QUESTIONS COULD BE ANSWERED ACCORDINGLY (LOW, MODERATE OR HIGH) DEPENDING ON

HOW THE VULNERABILITY FACTOR UNDER CONSIDERATION COULD AFFECTED STRUCTURE STABILITY AND DURABILITY TO SERVICE GRAVITY LOADS AND THE PREVAILING NATURAL AND MAN-MADE HAZARDS.

EXCEPTIONS: HOSPITALS IN THE UPMOST NORTH ATOLLS ARE EXPOSED TO HIGH WIND HAZARD AND IN THE UPMOST SOUTH ARE EXPOSED TO MODERATE SEISMIC EVENTS. SEE HAZARD MAPS FROM THE MALDIVIAN BUILDING CODE REVIEW PROJECT 2010 (UNDP-MHTE PROJECT).



## Observations on Non-Structural Safety at IGMH

IGMH – Narrow Corridors, Fire System need rehab and Inadequate Means of Egress (No signs and open doors)

### 3. Elements related to non-structural safety

Non-structural elements do not form part of the load-bearing system of the building. They include architectural components, equipment, and systems that are necessary for the operation of the building.

| 3.1 Critical systems | Safety level LOW | AVERAGE | HIGH | OBSERVATIONS |
|---|---|---|---|---|
| **3.1.1 Electrical system** | | | | |
| **14. Generator has capacity to meet 100% of demand**<br>Verify that the generator begins to operate within seconds of the hospital losing power, covering power demands for the entire hospital, particularly in the emergency department, intensive care unit, sterilization unit, operating theatres, etc.<br>*Low = Generator can only be started manually or covers 0–30% of demand; Average = Generator starts automatically in more than 10 seconds or covers 31%–70% of demand; High = Generator starts automatically in less than 10 seconds and covers 71%–100% of demand.* | ☒ | ☐ | ☐ | Generator capacity is of 1MegaKV, which can provide 5% of the requirement of the hospital. |
| **15. Regular tests of generator performance are carried out in critical areas**<br>Determine the frequency of generator performance tests that have satisfactory results.<br>*Low = Tested every 3 months or more; Average = Tested every 1 to 3 months; High = Tested at least monthly.* | ☒ | ☐ | ☐ | Tested every week. |
| **16. Generator protected from damage due to natural phenomena**<br>*Low = No; Average = Partially; High = Yes.* | ☒ | ☐ | ☐ | 3 GENERATORS - 2 GENERATORS NOT OPERATIONAL (leaking from the diesel connections) |
| **17. Safety of electrical equipment, cables, and cable ducts**<br>*Low = No; Average = Partially; High = Yes.* | ☒ | ☐ | ☐ | electrical wiring and water piping at basement are running together and the fire water system is broken |
| **18. Redundant system for local electric power supply**<br>*Low = No; Average = Partially; High = Yes.* | ☐ | ☒ | ☐ | |
| **19. Protection for control panel, overload breaker switch, and cables**<br>Check the accessibility as well as condition and operation of the central electrical control panel.<br>*Low = No; Average = Partially; High = Yes.* | ☐ | ☒ | ☐ | |
| **20. Lighting system for critical areas of the hospital**<br>Review lighting for emergency unit, intensive care unit, operating theatres, etc., testing the level of lighting in rooms and function of lighting fixtures.<br>*Low = No; Average = Partially; High = Yes.* | ☐ | ☒ | ☐ | Checked only when a problem is encountered. |
| **21. External electrical systems installed on hospital grounds**<br>Verify the existence and capacity of external substations that provide power to the hospital.<br>*Low = No electrical substations installed on hospital's grounds; Average = Substations installed but do not provide enough power to hospital; High = Electrical substations installed and provide enough power to the hospital.* | ☐ | ☒ | ☐ | Provided by Electrical Company of Male' (STELCO)<br>Not a reliable supply |



| | | | | |
|---|---|---|---|---|
| **3.1.2 Telecommunications system** | | | | |
| **22. Condition of antennas and antenna bracing**<br>Verify the condition of antennas and their bracing/supports.<br>*Low = Poor or does not exist; Average = Satisfactory; High = Good.* | ☐ | ☐ | ☒ | |
| **23. Condition of low-voltage systems (Internet and telephone connections/cables)**<br>Verify that cables are properly connected in strategic areas to avoid system overload.<br>*Low = Poor or does not exist; Average = Satisfactory; High = Good.* | ☐ | ☐ | ☒ | |
| **24. Condition of alternative communications systems**<br>Verify the condition of other communications systems: radio communications, satellite telephone, Internet, etc.<br>*Low = Poor or does not exist; Average = Satisfactory; High = Good.* | ☐ | ☐ | ☒ | |
| **25. Condition of anchors and braces for telecommunications equipment and cables**<br>Verify that telecommunications equipment (radios, satellite telephone, video conferencing system, etc.) is anchored for increased security.<br>IF THE SYSTEM DOES NOT NEED ANCHORS OR BRACING, LEAVE BOXES BLANK.<br>*Low = Poor; Average = Satisfactory; High = Good.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **26. Condition of external telecommunications systems installed on hospital grounds**<br>Verify that external telecommunications systems do not interfere with communications of the hospital.<br>*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.* | ☐ | ☐ | ☒ | |
| **27. Site has adequate conditions for telecommunications systems**<br>*Low = Poor or does not exist; Average = Satisfactory; High = Good.* | ☐ | ☐ | ☒ | BUT IN CASE OF A SYSTEM FAILURE: NO OTHER METHOD OF COMMUNICATION. |
| **28. Safety of internal communications systems**<br>Verify the condition of loudspeakers, public address system, speaker systems, etc.<br>*Low = Poor or does not exist; Average = Satisfactory; High = Good.* | ☐ | ☐ | ☒ | |
| **3.1.3 Water supply system** | | | | |
| **29. Water tank has permanent reserve that is sufficient to provide at least 300 liters daily, per bed, for 72 hours**<br>Verify that water storage is sufficient to satisfy user demand for three days.<br>*Low = Sufficient for 24 hours or less; Average = Sufficient for more than 24 hours but less than 72 hours; High = Guaranteed to cover at least 72 hours.* | ☒ | ☐ | ☐ | WATER TANK<br>*1 SALT WATER / 1 FRESH WATER (USED FOR TOILET FLUSHING)<br>*4 TANKS - 650 M³ (65,000LITRES) - RAIN WATER (ONLY FOR WASHING PUPOSES)<br>* DAILY REQUIRED - 130000 LITRES.<br>Currently no water reserve. |
| **30. Water storage tanks are protected and in secure locations**<br>Visit the water tanks to determine the safety of the installations and of the site.<br>*Low = The site is susceptible to structural or non-structural failure; Average = Failure would not cause collapse of tank; High = Low possibility of functional failure.* | ☒ | ☐ | ☐ | LEAKING IN 1 TANK.<br>MAITAINANCE FOR THE OTHER THREE TANKS TO WORK. |

Risk Safety Assessment for Health Infrastructure in the Republic of Maldives,
Jaime F. Argudo, Ph.D., P.E. – WHO Consultant

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| **31. Alternative water supply to major distribution network**<br>Identify the agency or mechanism to supply or restore water service to the hospital should the public water system fail.<br>*Low = Provides less than 30% of demand; Average = Provides 30% to 80% of demand; High = Provides more than 80% of daily demand.* | ☒ | ☐ | ☐ | Water supply is through the State Water Supply Company. No other alternative at present. |
| **32. Condition of water distribution system**<br>Verify condition and proper performance of water distribution system, including storage tanks, valves, pipes, and connections.<br>*Low = Less than 60% are in good operational condition; Average = Between 60% and 80% are in good condition; High = Above 80% are in good condition.* | ☐ | ☒ | ☐ | 90% of pipes renovated recently. |
| **33. Supplementary pumping system**<br>Identify the existence and operation of the supplementary pumping system in case water supply is interrupted.<br>*Low = There is no back-up pump and operational capacity does not meet daily demand; Average = All pumps are in satisfactory condition; High = All pumps and back-up systems are operational.* | ☒ | ☐ | ☐ | 2 pumps, not in good condition. |
| **3.1.4 Fuel storage (gas, gasoline, diesel)** | | | | |
| **34. Fuel tanks have at least 5-day capacity**<br>Verify that the hospital has fuel storage tanks of adequate size and safety.<br>*Low = Fuel storage is not secured and has less than 3-day fuel capacity; Average =Fuel storage has some security and has 3-5 days fuel capacity; High = Fuel storage is secure and has capacity for 5 or more days.* | ☒ | ☐ | ☐ | 1 FUEL TANK 4000 LITRES - DIESEL - Gives for 7 days approximately. NOT LOCATED IS A SAFE PLACE |
| **35. Fuel tanks and/or cylinders are anchored and in a secure location**<br>*Low = There are no anchors and the tank enclosure is unsafe; Average = Anchors are inadequate; High = Anchors are in good condition and the tank enclosure is adequate.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **36. Safe location of fuel storage**<br>Verify that the tanks containing combustible liquids are accessible but at a safe distance from the hospital.<br>*Low = There is risk of failure and that tanks are not accessible; Average = One of the two conditions have been met; High = The fuel storage tanks are accessible and they are located in a secure site.* | ☒ | ☐ | ☐ | 4-6 FEET FROM NICU.<br>NOT EASY to access by fire fighting means |
| **37. Safety of the fuel distribution system (valves, hoses, and connections)**<br>*Low = Less than 60% of system is in good operational condition; Average = between 60% and 80% of system is in good operational condition; High = More than 80% of system is in good operational condition.* | ☒ | ☐ | ☐ | Leaking from tanks, malfunctioning valves. |
| **3.1.5 Medical gases (oxygen, nitrogen, etc.)** | | | | |
| **38. Sufficient medical gas storage for minimum of 15-day supply**<br>*Low = Less than 10-day supply; Average = Supply for between 10 and 15 days; High = Supply for at least 15 days.* | ☒ | ☐ | ☐ | *DAILY Requirement - 15-18 CYLINDERS.<br>Delivery is every other day 25 cylinders.<br>*Currently with no back-up. |
| **39. Anchors for medical gas tanks, cylinders, and related equipment**<br>*Low = Anchors are lacking; Average = Quality of anchors is inadequate; High = Anchors are of good quality.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **40. Availability of alternative sources of medical gases**<br>*Low = Alternative sources are lacking or are below standard; Average = Alternative sources exist and are in satisfactory condition; High = Alternative sources exist and are in good condition.* | ☒ | ☐ | ☐ | Currently working on a plan to verify this problem. |
| **41. Appropriate location for storage of medical gases**<br>*Low = Storage is not accessible; Average = Storage is accessible but hazards exist; High = Storage is accessible and there are no hazards.* | ☒ | ☐ | ☐ | NOT EASY to access by fire fighting means<br>No reliable system for medical gases |

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| **42. Safety of medical gas distribution system (valves, pipes, connections)**<br>*Low = Less than 60% of system is in good working condition; Average = Between 60% and 80% of system is in good working condition; High = More than 80% of system is in good working condition.* | ☐ | ☐ | ☒ | |
| **43. Protection of medical gas tanks and/or cylinders and related equipment**<br>*Low = No areas are used exclusively for this equipment and there are no qualified personnel to operate it; Average = Areas are used exclusively for this equipment but personnel are not trained to operate it; High = There are areas used exclusively for this equipment and it is operated by qualified personnel.* | ☐ | ☒ | ☐ | |
| **44. Adequate safety in storage areas**<br>*Low = No areas are reserved for storage of medical gases; Average = Areas are reserved for storage of medical gases but safety measures are inadequate; High = There are areas reserved for storage of medical gases and the site does not present risks.* | ☐ | ☒ | ☐ | |
| **3.2 Heating, ventilation, and air-conditioning (HVAC) systems in critical areas** | Safety level LOW | AVERAGE | HIGH | OBSERVATIONS |
| **45. Adequate supports for ducts and review of flexibility of ducts and piping that cross expansion joints**<br>*Low = Supports are lacking and connections are rigid; Average = Supports are present or connections are flexible; High = Supports are present and connections are flexible.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **46. Condition of pipes, connections, and valves**<br>*Low = Poor; Average = Satisfactory; High = Good.* | ☒ | ☐ | ☐ | Hospital central AC system is not working. |
| **47. Condition of anchors for heating and/or hot water equipment**<br>*Low = Poor; Average = Satisfactory; High = Good.* | ☐ | ☐ | ☐ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **48. Condition of anchors for air-conditioning equipment**<br>*Low = Poor; Average = Satisfactory; High = Good.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **49. Location of enclosures for HVAC equipment**<br>*Low = Poor; Average = Satisfactory; High = Good.* | ☐ | ☒ | ☐ | BASEMENT ACs - OUTLINE IS TOWARDS INSIDE THE HOSPITAL. |
| **50. Safety of enclosures for HVAC equipment**<br>*Low = Poor; Average = Satisfactory; High = Good.* | ☐ | ☒ | ☐ | |
| **51. Operating condition of HVAC equipment (boiler, air-conditioning systems, exhaust, etc.)**<br>*Low = Poor; Average = Satisfactory; High = Good.* | ☒ | ☐ | ☐ | 4 EXHAUST - NOT WORKING. |
| **3.3 Office and storeroom furnishings and equipment (fixed and movable) including computers, printers, etc.** | Safety level LOW | AVERAGE | HIGH | OBSERVATIONS |
| **52. Anchors for shelving and safety of shelf contents**<br>Verify that shelves are anchored to the walls and/or are braced and that contents are secured.<br>*Low = Shelving is not attached to walls; Average = Shelving is attached but contents are not secured; High = Shelving is attached and contents are secured.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **53. Safety of computers and printers**<br>Verify that computer tables are anchored and table wheels are locked.<br>*Low = Poor; Average = Satisfactory; High = Good or does not require anchor.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |

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| **54. Condition of office furnishings and other equipment**<br>Check anchors and/or bracing on furnishings in offices.<br>*Low = Poor; Average = Satisfactory; High = Good or does not require anchor.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **3.4 Medical and laboratory equipment and supplies used for diagnosis and treatment** | Safety level | | | OBSERVATIONS |
| | LOW | AVERAGE | HIGH | |
| **55. Medical equipment in operating theaters and recovery rooms**<br>Verify that lamps, equipment for anaesthesia, and surgical tables are operational and that table or cart wheels are locked.<br>*Low = The equipment is in poor condition or it is not secured; Average = The equipment is in fair condition or not properly secured; High = Equipment is in good condition and is secured.* | ☐ | ☒ | ☐ | answer in context of stability to impact by people |
| **56. Condition and safety of radiology and imaging equipment**<br>Verify that the X-ray and imaging equipment is in good condition and is secured.<br>*Low = The equipment is in poor condition or it is not secured; Average = The equipment is in fair condition or not properly secured; High = Equipment is in good condition and is secured.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **57. Condition and safety of laboratory equipment**<br>*Low = The equipment is in poor condition or it is not secured; Average = The equipment is in fair condition or not properly secured; High = Equipment is in good condition and is secured.* | ☐ | ☒ | ☐ | answer in context of stability to impact by people |
| **58. Condition and safety of medical equipment in emergency services unit**<br>*Low = The equipment is in poor condition or it is not secured; Average = The equipment is in fair condition or not properly secured; High = Equipment is in good condition and is secured.* | ☐ | ☒ | ☐ | answer in context of stability to impact by people |
| **59. Condition and safety of medical equipment in intensive or intermediate care unit**<br>*Low = The equipment is in poor condition or it is not secured; Average = The equipment is in fair condition or not properly secured; High = Equipment is in good condition and is secured.* | ☐ | ☒ | ☐ | answer in context of stability to impact by people |
| **60. Condition and safety of equipment and furnishings in the pharmacy**<br>*Low = The equipment is in poor condition or it is not secured; Average = The equipment is in fair condition or not properly secured; High = Equipment is in good condition and is secured.* | ☐ | ☒ | ☐ | answer in context of fire |
| **61. Condition and safety of equipment in the sterilization unit**<br>*Low = The equipment is in poor condition or it is not secured; Average = The equipment is in fair condition or not properly secured; High = Equipment is in good condition and is secured.* | ☐ | ☒ | ☐ | answer in context of fire |
| **62. Condition and safety of medical equipment for neonatal care**<br>*Low = The equipment is lacking, is in poor condition, or is not secured; Average = The equipment is in fair condition or not properly secured; High = Equipment is in good condition and is secured.* | ☐ | ☒ | ☐ | answer in context of stability to impact by people |
| **63. Condition and safety of medical equipment and supplies for burn management**<br>*Low = The equipment is lacking, is in poor condition, or it is not secured; Average = The equipment is in fair condition or not properly secured; High = Equipment is in good condition and is secured.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **64. Condition and safety of medical equipment for nuclear medicine and radiation therapy**<br>IF THE HOSPITAL DOES NOT HAVE THESE SERVICES, LEAVE BOXES BLANK.<br>*Low = The equipment is lacking, is in poor condition, or it is not secured; Average = The equipment is in fair condition or not properly secured; High = Equipment is in good condition and is secured.* | ☐ | ☐ | ☒ | answer in context of stability to impact by people |
| **65. Condition and safety of medical equipment in other services**<br>*Low = More than 30% of equipment is at risk of material or functional failure and/or equipment puts the entire service's operation at direct or indirect risk; Average = Between 10% and 30% of equipment is at risk of loss; High = Less than 10% of equipment is at risk of loss.* | ☐ | ☒ | ☐ | answer in context of fire<br>answer in context of stability to impact by people |

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| **66. Anchors for shelving and safety of medical contents**<br>*Low = Shelves are anchored or shelf contents are secured in less than 20% of cases; Average = Shelves are anchored or shelf contents are secured in 20% to 80% of cases; High = More than 80% of shelves are anchored and the contents of shelves are secured (or shelving and contents do not require anchors).* | ☐ | ☒ | ☐ | answer in context of stability to impact by people |
| **3.5 Architectural elements** | Safety level | | | OBSERVATIONS |
| | LOW | AVERAGE | HIGH | |
| **67. Condition and safety of doors and entrances**<br>*Low =Subject to damage and damage to element(s) would impede the performance of this and other components, systems, or operations; Average = Subject to damage but damage to element(s) would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☒ | ☐ | ☐ | 60% - SOME AREAS OF DAMAGE - answer in context of fire |
| **68. Condition and safety of windows and shutters**<br>*Low =Subject to damage and damage to element(s) would impede the performance of this and other components, systems, or operations; Average = Subject to damage but damage to element(s) would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☒ | ☐ | ☐ | 60% - SOME AREAS OF DAMAGE - answer in context of fire |
| **69. Condition and safety of other elements of the building envelope (outside walls, facings, etc.)**<br>*Low =Subject to damage and damage to element(s) would impede the performance of this and other components, systems, or operations; Average = Subject to damage but damage to element(s) would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **70. Condition and safety of roofing**<br>*Low =Subject to damage and damage to element(s) would impede the performance of this and other components, systems, or operations; Average = Subject to damage but damage to element(s) would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☐ | ☒ | ☐ | answer in context of fire |
| **71. Condition and safety of parapets (wall or railing placed to prevent falls on roofs, bridges, stairs, etc.)**<br>*Low =Subject to damage and damage to element(s) would impede the performance of this and other components, systems, or operations; Average = Subject to damage but damage to element(s) would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **72. Condition and safety of perimeter walls and fencing**<br>*Low =Subject to damage and damage to element(s) would impede the performance of this and other components, systems, or operations; Average = Subject to damage but damage to element(s) would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☐ | ☐ | ☒ | LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE |
| **73. Condition and safety of other outside elements (cornices, ornaments, etc.)**<br>*Low = Element(s) subject to damage and damage would impede the performance of this and other components, systems, or operations; Average = Element(s) subject to damage but damage would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☐ | ☐ | ☐ | NON EXISTANT. |

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| **74. Safe conditions for movement outside of building**<br>*Low = Damage to structure or road and walkways will impede access to buildings or endanger pedestrians; Average = Damage to structure or road and walkways will not impede pedestrian access, but will impede vehicle access; High = No or minor potential for slight damage which will impede pedestrian or vehicle access.* | ☒ | ☐ | ☐ | AMBULANCE HAS THE SAME ROUTE AS THE OTHER VEHICLES - ENTRANCE SAME TO STAFF AND OTHERS. Answer in context of fire |
| **75. Safe conditions for movement inside the building (corridors, stairs, elevators, exit doors, etc.)**<br>*Low = Subject to damage and damage to element(s) will impede movement inside building and endanger occupants; Average = Damage to elements will not impede movement of people but will impede movement of stretchers, wheeled equipment; High = No or minor potentional for slight damage which will not impede movement of people or wheeled equipment.* | ☒ | ☐ | ☐ | * 2 ELEVATORS - PATIENTS + STAFF USE<br>* 2 ELEVATORS - VISITORS ELEVATORS - ON AND OFF - PROBLEM<br>*EMERGENCY EXIT - LOCKED AND KEYS KEPT WITH SECURITY. |
| **76. Condition and safety of internal walls and partitions**<br>*Low = Element(s) subject to damage and damage would impede the performance of this and other components, systems, or operations; Average = Element(s) subject to damage but damage would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☐ | ☒ | ☐ | answer in context of fire |
| **77. Condition and safety of false or suspended ceilings**<br>IF THE HOSPITAL DOES NOT HAVE FALSE OR SUSPENDED CEILINGS, LEAVE BOXES BLANK.<br>*Low = Element(s) subject to damage and damage would impede the performance of this and other components, systems, or operations; Average = Element(s) subject to damage but damage would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☒ | ☐ | ☐ | answer in context of fire |
| **78. Condition and safety of internal and external lighting systems**<br>*Low = Element(s) subject to damage and damage would impede the performance of this and other components, systems, or operations; Average = Element(s) subject to damage but damage would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☐ | ☒ | ☐ | answer in context of fire |
| **79. Condition and safety of fire protection system**<br>*Low = Element(s) subject to damage and damage would impede the performance of this and other components, systems, or operations; Average = Element(s) subject to damage but damage would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☒ | ☐ | ☐ | fire system is not operational |
| **80. Condition and safety of elevator system**<br>IF THERE ARE NO ELEVATORS, LEAVE BOXES BLANK.<br>*Low = Element(s) subject to damage and damage would impede the performance of this and other components, systems, or operations; Average = Element(s) subject to damage but damage would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☐ | ☒ | ☐ | answer in context of fire |
| **81. Condition and safety of stairways**<br>*Low = Element(s) subject to damage and damage would impede the performance of this and other components, systems, or operations; Average = Element(s) subject to damage but damage would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☒ | ☐ | ☐ | STAIRWAYS ARE USUALLY LOCKED. |
| **82. Condition and safety of floor coverings**<br>*Low = Element(s) subject to damage and damage would impede the performance of this and other components, systems, or operations; Average = Element(s) subject to damage but damage would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☐ | ☐ | ☒ | answer in context of fire |

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| **83. Hospital access routes**<br>*Low = Element(s) subject to damage and damage would impede the performance of this and other components, systems, or operations; Average = Element(s) subject to damage but damage would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☒ | ☐ | ☐ | 7 DOORS<br>*3 CLOSED<br>answer in context of fire |
| **84. Other architectural elements, including emergency signs**<br>*Low = Element(s) subject to damage and damage would impede the performance of this and other components, systems, or operations; Average = Element(s) subject to damage but damage would not impede function; High = No or minor potential for damage that would impede the performance of this and other components, systems, or operations.* | ☒ | ☐ | ☐ | answer in context of fire |

Comments on the results of Form 2, Module 3:

MANY QUESTIONS MAY BE ANSWERED AS FOLLOWS:
"LEAVE THIS BOX BLANK NO CONCERN ON MODERATE TO HIGH EARTHQUAKE OR WIND LOADS, THEREFORE THIS VULNERABILITY FACTOR IS NOT AN ISSUE"

THE STRUCTURE IS EXPOSED TO THE EFFECTS OF SERVICE GRAVITY LOADS, FLOODS AND FIRES, THUS SOME OF THE QUESTIONS COULD BE ANSWERED ACCORDINGLY (LOW, MODERATE OR HIGH) DEPENDING ON

HOW THE VULNERABILITY FACTOR UNDER CONSIDERATION COULD AFFECTED STRUCTURE STABILITY AND DURABILITY TO SERVICE GRAVITY LOADS AND THE PREVAILING NATURAL AND MAN-MADE HAZARDS.

EXCEPTIONS: HOSPITALS IN THE UPMOST NORTH ATOLLS ARE EXPOSED TO HIGH WIND HAZARD AND IN THE UPMOST SOUTH ARE EXPOSED TO MODERATE SEISMIC EVENTS. SEE HAZARD MAPS FROM THE MALDIVIAN BUILDING CODE REVIEW PROJECT 2010 (UNDP-MHTE PROJECT).

# OBSERVATIONS DURING SITE VISIT TO INDIRA GANDHI MEMORIAL HOSPITAL AT MALE

IGMH – Fire system inoperative and Storage Areas at Basement

**Risk Safety Assessment for Health Infrastructure in the Republic of Maldives, Jaime F. Argudo, Ph.D., P.E. – WHO Consultant**

**4. Safety based on functional capacity of hospital**

The level of preparedness of hospital staff for major emergencies and disasters as well as the level of implementation of the hospital disaster plan.

| 4.1 Organization of the Hospital Disaster Committee and the Emergency Operations Center. Assess the level of organization achieved by the Hospital Disaster Committee. | Level of organization | | | OBSERVATIONS |
|---|---|---|---|---|
| | LOW | AVERAGE | HIGH | |
| **85. Committee has been formally established to respond to major emergencies or disasters**<br>Obtain a copy of the Committee's terms of reference and verify that the list of members corresponds to current personnel.<br>*Low = Committee does not exist; Average = Committee exists but is not functioning; High = Committee exists and is functioning.* | ☒ | ☐ | ☐ | |
| **86. Committee membership is multi-disciplinary**<br>Verify that the positions on the Committee are occupied by personnel from diverse disciplines (for example, hospital director, chief of nursing, maintenance engineer, head of emergency services, medical director, chief of surgery, chief of laboratory and support services, among others).<br>*Low = 0–3 disciplines represented; Average = 4–5 disciplines represented; High = 6 or more disciplines represented.* | ☒ | ☐ | ☐ | |
| **87. Each member is aware of his/her specific responsibilities**<br>Verify that members' assigned responsibilities are in writing, describing their specific roles.<br>*Low = Responsibilities not assigned; Average = Responsibilities have been officially assigned; High = All members know and comply with their responsibilities.* | ☒ | ☐ | ☐ | |
| **88. Space is designated for the hospital Emergency Operations Centre (EOC)**<br>Verify that a room has been designated for operational command and that all means of communication are present (telephone, fax, Internet, etc.).<br>*Low = Nonexistent; Average = Space has been officially assigned; High = EOC exists and is functional.* | ☐ | ☒ | ☐ | |
| **89. The EOC is in a protected and safe location**<br>Take into account accessibility, safety, and protection when checking the room used for the EOC.<br>*Low = The room for the EOC is not in a safe location; Average = The EOC is in a safe location but it is not easily accessible; High = The EOC is in a safe, protected, and easily accessible location.* | ☐ | ☒ | ☐ | |
| **90. The EOC has a computer system and computers**<br>Verify that the EOC has Internet and Intranet connections.<br>*Low = No; Average = Incomplete; High = The EOC has all computer system requirements* | ☐ | ☒ | ☐ | No Committee See Question 85 |
| **91. Both internal and external communications systems in the EOC function properly**<br>Determine whether the switchboard (telephone central for re-routing calls) has a paging or a public address system and the operators know the emergency codes and how to use them.<br>*Low = Does not function or is nonexistent; Average = Partly functional; High = Complete and functional.* | ☐ | ☒ | ☐ | |
| **92. The EOC has an alternative communications system**<br>Determine whether, besides the switchboard, there is an alternative communications system (e.g. cellular, two-way radio, etc.).<br>*Low = Nonexistent; Average = Incomplete; High = Yes.* | ☐ | ☒ | ☐ | |
| **93. The EOC has adequate equipment and furnishings**<br>Verify that there are desks, chairs, power outlets, lighting, water supply, and drainage.<br>*Low = No; Average = Incomplete; High = Yes.* | ☐ | ☒ | ☐ | No Committee See Question 85 |

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| **94. An up-to-date telephone directory is available in the EOC**<br>Confirm that the directory includes all support services needed in an emergency (randomly check telephone numbers).<br>*Low = No; Average = Directory exists but is not up-to-date; High = Available and current.* | ☒ | ☐ | ☐ | |
| **95. "Action Cards" available for all personnel**<br>Verify that action cards describe the assigned duties of each hospital staff member in case of an internal or external disaster.<br>*Low = No; Average = Insufficient (numbers and quality); High = All staff members have cards.* | ☒ | ☐ | ☐ | |
| **4.2 Operational plan for internal or external disasters** | Level of Implementation | | | OBSERVATIONS |
| | LOW | AVERAGE | HIGH | |
| **96. Strengthen essential hospital services**<br>The plan specifies actions to be taken before, during, and after a disaster in the hospital's essential services (emergency room, intensive care unit, sterilization unit, operating theatre, among others).<br>*Low = Plan does not exist or exists only as a document; Average = Plan exists and personnel have been trained; High = Plan exists, personnel have been trained, and resources are in place to carry out the plan.* | ☐ | ☒ | ☐ | PEOPLE TRAINED - PARTICIPATED IN WORKSHOP STAFF YEARLY WITH HIGH TURN OVER. |
| **97. Procedures to activate and deactivate the plan**<br>Verify that there are procedures for how, when, and by whom the plan is activated/deactivated.<br>*Low = Plan does not exist or exists only as a document; Average = Plan exists and personnel have been trained; High = Plan exists, personnel have been trained, and resources are in place to carry out the procedures.* | ☐ | ☒ | ☐ | PLAN EXISTS<br>RESOURCE : POOR |
| **98. Special administrative procedures for disasters**<br>Verify that the plan includes procedures for contracting personnel and for procurements in case of disaster.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Plan exists, personnel have been trained, and resources are in place to carry out the procedures.* | ☐ | ☒ | ☐ | RESOURCES ARE NOT ENOUGH.<br>AVAILIBILITY OF PERSONEL MIGHT TAKE SOME TIME DURING UNOFFICIAL HOURS. |
| **99. Financial resources for emergencies are budgeted and guaranteed**<br>Verify that the hospital has a specific budget for use in disaster situations.<br>*Low = Not budgeted; Average = Funds will cover less than 72 hours; High = Funds are guaranteed for 72 hours or more.* | ☐ | ☒ | ☐ | FUND OF 90,000 RUFIYAA - FOR EMERGENCY SITUATIONS. (NOT SPECIFIC TO DESASTERS) |
| **100. Procedures for expanding usable space, including the availability of extra beds**<br>The plan identifies physical spaces that can be equipped to treat mass casualties.<br>*Low = Space for expansion has not been identified; Average = Space has been identified and personnel have been trained to carry out the expansion; High = Procedures exist, personnel have been trained, and resources are in place to carry out expansion of space.* | ☐ | ☒ | ☐ | DURING TSUNAMI - THAJUDHEEN SCHOOL HALL WAS USED AS AN INPATIENTCARE AREA BUT AS FOR A PROTOCOL:THIS DOES NOT EXIST. |
| **101. Procedures for admission to the emergency department**<br>The plan specifies the places and personnel responsible for carrying out triage.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☐ | ☒ | ☐ | EMERGENCY STOCK OF MEDICATIONS- NON EXISTANT. |

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| **102. Procedures to expand emergency department and other critical services**<br>The plan should indicate actions needed to expand hospital services (for example, drinking water supply, power, wastewater).<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☒ | ☐ | ☐ | |
| **103. Procedures to protect patients' medical records**<br>The plan indicates how medical and other critical patient records can be safely moved.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☒ | ☐ | ☐ | INPATIENT AND OUT PATIENT RECORDS CANNOT BE EASILY TRACED. |
| **104. Regular safety inspections are conducted by the appropriate authority**<br>Note the expiration and/or refill dates of fire extinguishers and of flow tests for fire hydrants. Examine logbooks that record equipment tests and dates of inspections by civil defence personnel.<br>*Low = Inspections do not occur; Average = Incomplete or outdated inspection; High = Inspections are complete and up-to-date.* | ☒ | ☐ | ☐ | |
| **105. Procedures for hospital epidemiological surveillance**<br>Verify that the hospital's Epidemiological Surveillance Committee has specific procedures for disaster incidents or treatment of mass casualties.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☐ | ☐ | ☒ | COMITTEE EPIDEODEMIC SURVEILLANCE - EOC - IS INITIATED ONLY IN CASE OF DISASTER (ACTIVATED) |
| **106. Procedures for preparing sites for temporary placement of dead bodies and for forensic medicine**<br>Verify that the plan includes specific arrangements for pathology and a site for the placement of multiple cadavers.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☒ | ☐ | ☐ | |
| **107. Procedures for triage, resuscitation, stabilization, and treatment**<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☐ | ☒ | ☐ | |
| **108. Transport and logistics support**<br>Confirm that the hospital has ambulances and other official vehicles.<br>*Low = Ambulances and vehicles for logistic support are not available; Average = There are insufficient vehicles; High = Appropriate vehicles in sufficient numbers are available.* | ☐ | ☒ | ☐ | VEHICLES ARE INSUFFICIENT,<br>MNDF / POLICE SERVICES / PUBLIC VEHICLES CAN BE USED BE USED OR MADE AVAILABLE. |
| **109. Food rations for hospital staff during the emergency**<br>The plan specifies actions for supplying food during the emergency and funds for these supplies are included in the budget.<br>*Low = Nonexistent; Average = Covers less than 72 hours; High = Guaranteed for at least 72 hours.* | ☒ | ☐ | ☐ | NO PLAN SPECIFIED |
| **110. Duties assigned for additional personnel mobilized during the emergency**<br>*Low = Assignments do not exist or exist only in a document; Average = Duties are assigned and personnel have been trained; High = Duties are assigned, personnel have been trained, and resources are in place to mobilize the personnel.* | ☐ | ☒ | ☐ | |

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| **111. Measures to ensure the well-being of additional personnel mobilized during the emergency**<br>The plan identifies where emergency personnel can rest, drink, and eat.<br>*Low = Nonexistent; Average = Measures cover less than 72 hours; High = Measures are ensured for at least 72 hours.* | ☒ | ☐ | ☐ | |
| **112. Cooperative arrangements with local emergency plan**<br>There are written arrangements regarding cooperation between the hospital and community authorities.<br>*Low = No arrangements exist; Average = Arrangements exist but are not operational; High = Arrangements exist and are operational.* | ☐ | ☐ | ☒ | COOPERATION WITH THE FOLLOWING DEPARTMENTS :<br>* PORT HEALTH MEDICAL SERVICES<br>* MALDIVES NATIONAL DEFENCE FORCE<br>* CONCERNED AIRLINE (ISLAND AVIATION) |
| **113. Mechanism to prepare a census of admitted patients and those referred to other hospitals**<br>The plan has specific forms that facilitate the listing of patients during emergencies.<br>*Low = Mechanism does not exist or exists only as a document; Average = Mechanism exists and personnel have been trained; High = Mechanism exists, personnel have been trained, and resources are in place to carry out the census.* | ☐ | ☒ | ☐ | |
| **114. System for referral and counter-referral of patients**<br>*Low = System does not exist or exists only as a document; Average = System exists and personnel have been trained; High = System exists, personnel have been trained, and resources are in place to carry out the plan.* | ☐ | ☒ | ☐ | |
| **115. Procedures for communicating with the public and media**<br>The hospital disaster plan specifies who is responsible for communicating with the public and media in case of disaster (generally the highest person in the chain of command at the time of the event).<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☐ | ☒ | ☐ | TRAININGS ARE CARRIED OUT THROUGH YEARLY DRILLS. |
| **116. Procedures for response during evening, weekend, and holiday shifts**<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☐ | ☒ | ☐ | |
| **117. Procedures for the evacuation of the facility**<br>Verify procedures to evacuate patients, visitors, and staff.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☒ | ☐ | ☐ | EVACUATION OF PATIENTS FROM HOSPITAL WAS PRACTICED ONCE. ONLY AS A FIREDRILL. PROTOCOL FOR COMPLETE EVACUATION OF THE HOSPITAL - NOT WRITTEN. |
| **118. Emergency and other exit routes are accessible**<br>Verify that exit routes are clearly marked and free of obstacles.<br>*Low = Exit routes are not clearly marked and many are blocked; Average = Some exit routes are marked and most are clear of obstacles; High = All exit routes are clearly marked and free of obstacles.* | ☒ | ☐ | ☐ | 7 EXIT GATES - 3 OF THEM CLOSED AND LOCKED. |
| **119. Simulation exercises and drills**<br>The plan is tested regularly through simulations and drills, which are evaluated and modified as appropriate.<br>*Low = Plans are not tested; Average = Plans are tested, but not each year; High = Plans are tested annually and updated according to the results of the exercises.* | ☐ | ☒ | ☐ | AS SUCH ONLY PROTOCOL FOR AN AIRPORT EMERGENCY HAS BEEN WRITTEN DOWN. |

| **4.3 Contingency plans for medical treatment in disasters** | **Level of implementation** | | | **OBSERVATIONS** |
|---|---|---|---|---|
| | LOW | AVERAGE | HIGH | |
| **120. Earthquakes, tsunamis, volcanoes, and landslides**<br>IF THESE HAZARDS DO NOT EXIST WHERE THE HOSPITAL IS LOCATED, LEAVE THE BOXES BLANK.<br>*Low = Plan does not exist or exists only as a document; Average = Plan exists and personnel have been trained; High = Plan exists, personnel have been trained, and resources are in place to carry out the plan.* | ☒ | ☐ | ☐ | * EXTRA-ORDINARY INCIDENTS - TSUNAMI 2004<br>* EARTHQUAKES - LOW INTENSITY MMI = V-VI<br>* FOR MAJOR FIRE AND TSUNAMI- NOT PREPARED. |
| **121. Social conflict and terrorism**<br>*B= Low = Plan does not exist or exists only as a document; Average = Plan exists and personnel have been trained; High = Plan exists, personnel have been trained, and resources are in place to carry out the plan.* | ☒ | ☐ | ☐ | |
| **122. Floods and hurricanes**<br>IF THESE HAZARDS DO NOT EXIST WHERE THE HOSPITAL IS LOCATED, LEAVE THE BOXES BLANK.<br>*Low = Plan does not exist or exists only as a document; Average = Plan exists and personnel have been trained; High = Plan exists, personnel have been trained, and resources are in place to carry out the plan.* | ☒ | ☐ | ☐ | FLOODS<br>* DUE TO RAIN / TIDAL WAVE.<br>* BARRIER PROTECTION FOR TIDAL WAVES SINCE 2008.<br>HOSPITAL IS 2M HEIGHT FROM SEA LEVEL.<br>PLAN OF ACTION FOR SUCH AN INCIDENT DOES NOT EXIST. |
| **123. Fires and explosions.**<br>*Low = Plan does not exist or exists only as a document; Average = Plan exists and personnel have been trained; High = Plan exists, personnel have been trained, and resources are in place to carry out the plan.* | ☒ | ☐ | ☐ | Lack of preparedness for fires within premises or fire events elsewhere requiring emergency response from hospital |
| **124. Chemical accidents OR exposure to ionizing radiation**<br>*Low = Plan does not exist or exists only as a document; Average = Plan exists and personnel have been trained; High = Plan exists, personnel have been trained, and resources are in place to carry out the plan.* | ☒ | ☐ | ☐ | |
| **125. Pathogens with epidemic potential**<br>*Low = Plan does not exist or exists only as a document; Average = Plan exists and personnel have been trained; High = Plan exists, personnel have been trained, and resources are in place to carry out the plan.* | ☒ | ☐ | ☐ | |
| **126. Psycho-social treatment for patients, families, and health workers**<br>*Low = Plan does not exist or exists only as a document; Average = Plan exists and personnel have been trained; High = Plan exists, personnel have been trained, and resources are in place to carry out the plan.* | ☒ | ☐ | ☐ | AS PER PERSON - PLAN DOES NOT EXIST<br>BUT EXPERIENCE SHOWS THAT, PSYCHO-SOCIAL FACTORS ARE TAKEN CARE OF, BY VARIOUS GROUPS IN THE TSUNAMI INCIDENT. |
| **127. Control of hospital-acquired infections**<br>Request the corresponding hospital manual and verify whether control procedures are in force.<br>*Low = Manual does not exist or exists only as a document; Average = Manual exists and personnel have been trained; High = Manual exists, personnel have been trained, and resources are available to implement measures.* | ☐ | ☒ | ☐ | See responses to questions in Section 1 in regard to Epidemics and Infections |

| 4.4 Plans for the operation, preventive maintenance, and restoration of critical services<br>Measure the level of availability, accessibility, and relevance of documents that are essential when responding to an emergency. | Level of availability | | | OBSERVATIONS |
|---|---|---|---|---|
| | LOW | AVERAGE | HIGH | |
| **128. Electric power supply and back-up generators**<br>The maintenance division should provide the operations manual for the back-up electric generator as well as preventive maintenance records.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☒ | ☐ | ☐ | |
| **129. Drinking water supply**<br>The maintenance division should provide the operations manual for the water supply system as well as records on preventive maintenance and water quality control.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☒ | ☐ | ☐ | |
| **130. Fuel reserves**<br>The maintenance division should provide the operations manual for fuel supplies, as well as preventive maintenance records.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☒ | ☐ | ☐ | |
| **131. Medical gases**<br>The maintenance division should provide the operations manual for medical gases supply, as well as preventive maintenance records.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☒ | ☐ | ☐ | |
| **132. Standard and back-up communications systems**<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☐ | ☒ | ☐ | |
| **133. Wastewater systems**<br>The maintenance division should ensure that hospital wastewater drains into the public sewage system and does not contaminate drinking water.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☐ | ☒ | ☐ | See responses to questions in Section 1 related to wastewater management system |
| **134. Solid waste management**<br>The maintenance division should provide the operations manual for solid waste management, as well as records showing waste collection and subsequent disposal.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☐ | ☒ | ☐ | See responses to questions in Section 1 related to solid waste management system |



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| **135. Maintenance of the fire protection system**<br>The maintenance division should provide the operations manual for the fire protection systems, as well as records showing preventive maintenance on fire extinguishers and fire hydrants.<br>*Low = Procedures do not exist or exist only in a document; Average = Procedures exist and personnel have been trained; High = Procedures exist, personnel have been trained, and resources are in place to implement them.* | ☒ | ☐ | ☐ | CURRENTLY BEING EVALUATED, AND IN FUTURE PROTOCOL AND RESOURCES WILL BE PUT IN. FIRE HAZARD IS THE NUMBER ONE RISK IN HOSPITAL |
| **4.5 Availability of medicines, supplies, instruments, and other equipment for use in emergency**<br>Verify the availability of essential supplies in the event of an emergency. | Level of availability | | | OBSERVATIONS |
| | LOW | AVERAGE | HIGH | |
| **136. Medicines**<br>Check the availability of emergency medicines. The WHO list of essential drugs can be used as a reference.<br>*Low = Nonexistent; Average = Supply covers less than 72 hours; High = Supply is guaranteed for at least 72 hours.* | ☐ | ☐ | ☒ | EXISTING STOCK OF THE HOSPITAL - PROVIDES MEDICATIONS FOR 4 MONTHS APROXIMATELY. AND CAN BE MADE AVAILABLE IN LESS THAN 24 HOURS. |
| **137. Items for treatment and other supplies**<br>Check that the sterilization unit has a supply of sterilized materials for use in an emergency (check the supply prepared for the following day).<br>*Low = Nonexistent; Average = Supply covers less than 72 hours; High = Supply guaranteed for at least 72 hours.* | ☐ | ☒ | ☐ | |
| **138. Instruments**<br>Verify the existence and maintenance of specific instruments used in emergencies.<br>*Low = Nonexistent; Average = Supply covers less than 72 hours; High = Supply guaranteed for at least 72 hours.* | ☐ | ☒ | ☐ | |
| **139. Medical gases**<br>Verify the phone numbers and addresses of medical gas supplier and ensure availability in an emergency from the supplier.<br>*Low = Nonexistent; Average = Supply covers less than 72 hours; High = Supply guaranteed for at least 72 hours.* | ☐ | ☒ | ☐ | AT PRESENT OUR SUPPLIES HAVE RUN DOWN - LAST 15 DAYS DUE TO FIANACIAL ISSUES. CURRENTLY ON A PROSPECT TO PROVIDE O2 OF OWN ( 5 DAYS STOCK - 150 LARGE CYLINDERS.) |
| **140. Mechanical volume ventilators**<br>The Hospital Disaster Committee should provide documentation on quantity and conditions of use of this equipment.<br>*Low = Nonexistent; Average = Supply covers less than 72 hours; High = Supply guaranteed for at least 72 hours.* | ☒ | ☐ | ☐ | * 9 VENTILATORES<br>* 2 PORTABLE VENTILATORS<br>ALMOST ALWAYS IN USE.<br>HULHUMALE' HOPSITAL - 6 VENTILATORS (CAN BE MADE AVAILABLE) |
| **141. Electro-medical equipment**<br>The Hospital Disaster Committee should provide documentation on quantity and conditions of use of this equipment.<br>*Low = Nonexistent; Average = Supply covers less than 72 hours; High = Supply guaranteed for at least 72 hours.* | ☐ | ☒ | ☐ | |
| **142. Life-support equipment**<br>*Low = Nonexistent; Average = Supply covers less than 72 hours; High = Supply guaranteed for at least 72 hours.* | ☒ | ☐ | ☐ | |
| **143. Personal protection equipment for epidemics (disposable)**<br>Verify the hospital's stocks of personal protection equipment for staff working in areas of initial contact and treatment.<br>*Low = Nonexistent; Average = Supply covers less than 72 hours; High = Supply guaranteed for at least 72 hours.* | ☐ | ☒ | ☐ | GLOVES AND MASK - 5 MONTHS<br>DISSPOSABLE GOWNS - AND EYE WEAR - <72 HOURS |

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| **144. Crash cart for cardiopulmonary arrest**<br>The Hospital Disaster Committee should provide documentation on quantity, conditions of use, and locations of crash carts for treatment of cardiopulmonary arrest.<br>*Low = Nonexistent; Average = Supply covers less than 72 hours; High = Supply guaranteed for at least 72 hours.* | ☐ | ☐ | ☒ | CRASH CART FOR CARDIO PULMANORY ARREST EXISTS IN ALL WARDS.<br>MEDICATIONS AND INSTRUMENTS CHECKED SYSTEMETICALLY. |
| **145. Triage tags and other supplies for managing mass casualties**<br>The emergency department distributes and uses triage tags in case of mass casualties. Evaluate the supply in terms of the maximum capacity of the hospital.<br>*Low = Nonexistent; Average = Supply covers less than 72 hours; High = Supply guaranteed for at least 72 hours.* | ☐ | ☒ | ☐ | ONLY A FEW TRIAGE TAGS AVAILBLE.<br>CURRENTLY UNDER LOCK AND KEY. |

Comments on the results of Form 2, Module 4:

BLOOOD BANK - 84 PNTS AVAILABLE (OF DIFFERENT BOOLD GROUPS)
PROTOCOL FOR MAINTAINING BLOOD SUPPLY - NON EXISTING.
INSTRUMENTS FOR STORAGE - NOT AVAILABLE.

FOR AN EMERGENCY - 3 PNTS AVAILABLE - LIST IN LAB - TO CALL DONERS.

EXISTING PROTOCOL IS TO CALL THE LIST OF DONORS FOR BLOOD DONATION. BLOOD CAN BE MADE AVAILABLE IN 2 HOURS TIME.

Name/signature of evaluator .....



## The Safe Index Assessment will provide the technical background to:

- Identify prevailing safety risks on the built infrastructure, environment, personnel and general public
- Identify actions to reduce risks against natural and human-made hazards
- Develop guidelines and tools for Sustainable Development Planning of Health Infrastructure and Services
- Develop Health Care Infrastructure and Service Standards for the Republic of Maldives
- Prioritize future investments on Health Infrastructure and Services in the Republic of Maldives

Risk Safety Assessment for Health Infrastructure in the Republic of Maldives,
Jaime F. Argudo, Ph.D., P.E. – WHO Consultant