



<b>Department:</b>	Facility Management and Safety (FMS)		
<b>Document:</b>	Administrative Policy and Procedure		
<b>Title:</b>	Code Brown (Utility Management Failure Plan)		
<b>Applies To:</b>	All MCH Staff		
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## 1. PURPOSE:

- 1.1 To safely manage patient care through effective and efficient hospital operations during the loss of a major utility within the hospital.

## 2. DEFINITIONS:

- 2.1 **Emergency Utility Outage** – an interruption in utility services that cannot be foreseen. Emergency outages are required when repairs must be accomplished immediately to safeguard property, research and occupant health.
- 2.8 **Facility Tour** – is hospital wide tour inspection for the potential life safety hazards and the physical presentation of the service delivered to the end user.

## 3. POLICY:

- 3.1 Identify extent of outage and consider evacuation.
- 3.2 Maintain patient care capabilities.
- 3.3 Minimize impact on hospital operations and clinical services.

## 4. PROCEDURE:

### Type Of Utility Failure:

#### 4.1 Normal Power Failure:

- 4.1.1 Description of Failure: Lighting and other electrical systems fail, or blink for several seconds Medical Equipment Alarms activate (Multiple).
- 4.1.2 Rectify of Failure: In this case, the responsibility is for maintenance unit (Some elements are implemented automatically).
- 4.1.3 Alternative Sources: Emergency Power System (UPS & generators), emergency Lighting.
- 4.1.4 Preparation: Maintenance and testing of Emergency Power System.
- 4.1.5 Responses:
  - 4.1.5.1 Nursing Supervisor:
    - 4.1.5.1.1 Immediately check all patient life support or monitoring equipment, to assure equipment operational and all equipment is working with emergency power supply.
    - 4.1.5.1.2 As necessary, use supplemental lighting (such as flashlights) for supplemental task lighting.
    - 4.1.5.1.3 If emergency power and lighting does not come on within 15 seconds, check with Maintenance unit.
  - 4.1.5.2 Maintenance Department:
    - 4.1.5.2.1 Verify operation of generators, automatic transfer switches and UPSs.

- 4.1.5.2.2 Respond to requests for assistance as practical. If outage is not widespread, respond to area to identify problems, and restore power.
- 4.1.5.2.3 Check elevators for operation. Check other utility systems for operation.
- 4.1.5.3 Information Services:
  - 4.1.5.3.1 Verify operation of systems.
  - 4.1.5.3.2 Assure UPS or other power sources operational.
- 4.1.5.4 All Departments:
  - 4.1.5.4.1 Check equipment operations.
  - 4.1.5.4.2 Shut off unnecessary electrically operated equipment.
- 4.2 **Emergency Electrical Power Failure:**
  - 4.2.1 Description of Failure:
    - 4.2.1.1 Lighting failures (including EXIT signs, and Stair lighting).
    - 4.2.1.2 Failures of medical equipment.
    - 4.2.1.3 Activation of alarms on medical equipment equipped with batteries.
    - 4.2.1.4 All (or most) electrical equipment ceases operation.
  - 4.2.2 Rectify of Failure:
    - 4.2.2.1 Senior Management Staff on site during emergency. Some elements are implemented automatically.
  - 4.2.3 Mitigation: Portable Lighting, Flashlights Evacuation Plans.
  - 4.2.4 Preparation: Have flashlights and other portable lighting items- Maintain batteries
  - 4.2.5 Responses:
    - 4.2.5.1 Nursing Supervisor:
      - 4.2.5.1.1 Hand ventilate patients as necessary. Monitor equipment operating on internal batteries.
      - 4.2.5.1.2 Provide battery operated monitoring for critical patients, prepare to transport to alternate sites.
      - 4.2.5.1.3 Manually regulate IV's, remove from IV pumps.
      - 4.2.5.1.4 Check all patients for safety, and reassure them.
      - 4.2.5.1.5 Use flashlights and battery lighting.
      - 4.2.5.1.6 Complete all procedures ASAP, Do not begin any elective procedures.
      - 4.2.5.1.7 If failure is localized, notify Administration, maintenance of problem.
      - 4.2.5.1.8 As directed, prepare to move patients to alternate locations.
    - 4.2.5.2 Maintenance Department:
      - 4.2.5.2.1 Check and attempt to restart generators, or manually transfer ATS.
      - 4.2.5.2.2 Obtain assistance from contractors to correct problems.
      - 4.2.5.2.3 Evaluate situation and notify Administration of finding.
      - 4.2.5.2.4 Obtain portable generators from HHC or Contractors as appropriate.
    - 4.2.5.3 All Departments:
      - 4.2.5.3.1 Shut off all equipment (so it will be off when power resumes).
      - 4.2.5.3.2 Send staff to Labor Pool area, to assist in patient movement.
- 4.3 **Elevator Failure / Entrapment:**
  - 4.3.1 Description of Failure:
    - 4.3.1.2 Receive report from inside car, via phone or intercom.
    - 4.3.1.3 Receive report of hearing voices from elevator shaft.
    - 4.3.1.4 Alarms are activated.
  - 4.3.2 Rectify of Failure: Maintenance department (Some elements are implemented automatically).
  - 4.3.3 Mitigation: Elevator Maintenance contracts, Maintenance of emergency alarms
  - 4.3.4 Preparation: PPM For handling an entrapment
  - 4.3.5 Responses:
    - 4.3.5.1 Maintenance Department:
      - 4.3.5.1.1 Upon notification, proceed to location of entrapment, and attempt to open doors
      - 4.3.5.1.2 Verify entrapment, and status of persons on elevator
      - 4.3.5.1.3 Notify elevator repair company of emergency

- 4.3.5.1.4 If entrapment includes patient, notify Nursing, and Administration.
- 4.3.5.2 Nursing Department / Administration:
  - 4.3.5.2.1 Verify status of patients entrapped, as practical
  - 4.3.5.2.2 Consult on need to do emergency removal of patients from elevator.
  - 4.3.5.2.3 If patients entrapped, maintain liaison with Security and Engineering
  - 4.3.5.2.4 Arrange for use of alternate elevators for patient movement
- 4.3.5.3 Hospital Security Department:
  - 4.3.5.3.1 Proceed to the scene, to determine the number of entrapped persons, and their status.
  - 4.3.5.3.2 Establish Communications with entrapped persons, as practical.
  - 4.3.5.3.3 Notify maintenance department, and maintain liaison. If patients involved, notify Nursing or Administration
- 4.4 **Medical Gas System Failure:**
  - 4.4.1 Description of Failure:
    - 4.4.1.1 Medical Gas Alarms activate.
    - 4.4.1.2 Alarms of equipment attached to Medical Gas Systems activate.
    - 4.4.1.3 Equipment does not function.
    - 4.4.1.4 Leakage of gas.
  - 4.4.2 Rectify of Failure: Maintenance department (Some elements are implemented automatically)
    - 4.4.2.1 Mitigation: Installation and maintenance of backup systems, availability of some tanked compressed gases.
  - 4.4.3 Preparation: Availability of tanked gases and regulators, availability of Breathing Treatment staff.
  - 4.4.4 Responses:
    - 4.4.4.1 Nursing Supervisor:
      - 4.4.4.1.1 Hand ventilate patients or transfer to tanked gases.
      - 4.4.4.1.2 Notify Maintenance.
      - 4.4.4.1.3 Transfer patients to portable compressed gas cylinder.
      - 4.4.4.1.4 Prepare to move medical-gas-system-dependent-patients to alternate areas.
    - 4.4.4.2 Maintenance Department:
      - 4.4.4.2.1 Check Medical Gas Systems, including supply.
      - 4.4.4.2.2 Attempt to localize problem, and isolate via zone valves.
      - 4.4.4.2.3 Determine if the problem will solve by maintenance or need outside contractor.
      - 4.4.4.2.4 Give approximate time for solving the issue.
- 4.5 **Boiler Failure:**
  - 4.5.1 Description of Failure:
    - 4.5.1.1 Steam operated, or utilizing equipment fails, or stops operation.
    - 4.5.1.2 Alarms on steam using equipment operate.
    - 4.5.1.3 Steam pressure falls below required levels.
  - 4.5.2 Rectify of Failure: Maintenance department (Some elements are implemented automatically)
  - 4.5.3 Mitigation: Steam loops to minimize impact of single pipe failure; Maintenance of system (PPM).
  - 4.5.4 Preparation: Maintenance of tools, and emergency supplies.
  - 4.5.5 Responses:
    - 4.5.5.1 Maintenance Department:
      - 4.5.5.1.1 Verify steam operations, and identify failed areas .
      - 4.5.5.1.2 Cross connect from other sources, as practical.
      - 4.5.5.1.3 Report serious loss or problems to Administration and Nursing.
      - 4.5.5.1.4 As needed, contact contractors to assist in correction and repair.
    - 4.5.5.2 Central Sterile Department:
      - 4.5.5.2.1 Check all sterilizers, and assure all goods meet sterility requirements.
      - 4.5.5.2.2 Conserve sterile goods, as practical.
      - 4.5.5.2.3 Notify users of potential problems.
      - 4.5.5.2.4 Utilize alternate systems, or outside sources as practical.

- 4.5.5.3 Nursing Supervisor:
  - 4.5.5.3.1 Contact Engineering about heating problems.
  - 4.5.5.3.2 Report the problem.
  - 4.5.5.3.3 As necessary, provide additional blankets or other heating processes to patients.
  - 4.5.5.3.4 As necessary prepare to move patients from colder areas to warmer areas.
- 4.6 **Water Supply Failure:**
  - 4.6.1 Description of failure:
    - 4.6.1.1 Water to several outlets fails.
    - 4.6.1.2 Water operated or cooled equipment alarms.
    - 4.6.1.3 Notification by Water Supply Company .
    - 4.6.1.4 Failure of water pumps.
  - 4.6.2 Rectify of Failure: Maintenance department (Some elements are implemented automatically).
  - 4.6.3 Mitigation: Valving on some tanks to contain some backup water.
  - 4.6.4 Preparation: Arrangements with suppliers for water in bottles, and in tankers for process water.
    - 4.6.4.1 Maintenance Department:
      - 4.6.4.1.1 Check equipment and pumps to assure internal integrity.
      - 4.6.4.1.2 Check with Water Supply Company to notify, and verify failure information, probable duration.
      - 4.6.4.1.3 Notify Administration, others of probable duration.
      - 4.6.4.1.4 Contact defined suppliers to obtain bottled water delivery, supplies of waterless cleaners and hand cleaning supplies.
      - 4.6.4.1.5 Distribute existing supplies as per plan.
      - 4.6.5.1.6 Conserve water. Shut down water using equipment.
      - 4.6.5.1.7 Contact tanker truck sources / Fire Department to supply necessary cooling/heating process water.
    - 4.6.4.2 Nursing Supervisor:
      - 4.6.4.2.1 Conserve water. Label sinks, drinking fountains, and toilets to alert all to lack of water.
      - 4.6.4.2.2 Use bottled water for drinking.
      - 4.6.4.2.3 Use alternate methods for cleaning, bathing (Antiseptic foam soap , alcohol hand sanitizers) .
      - 4.6.4.2.4 Use plastic bags for collection of human wastes.
    - 4.6.4.3 Other Departments:
      - 4.6.4.3.1 Label sinks toilets and drinking fountains "No Water: Do Not Use".
      - 4.6.4.3.2 Conserve water.
      - 4.6.4.3.3 Use alternate methods for cleaning.
      - 4.6.4.3.4 Discontinue use of water cooled, or water dependent equipment.
- 4.7 **Reverse Osmosis Plant (RO) Failure:**
  - 4.7.1 Description of Failure:
    - 4.7.1.1 Strange color or taste to water.
    - 4.7.1.2 Notification by Water Supply Company.
    - 4.7.1.3 (Notification would be audibly paged throughout Hospital, and patient care departments would be called).
  - 4.7.2 Rectify of Failure: Maintenance department (Some elements are implemented automatically).
  - 4.7.3 Mitigation: Valving on some tanks to contain some backup water.
  - 4.7.4 Preparation: Arrangements with suppliers for water in bottles, and in tankers for process water.
  - 4.7.5 Responses:
    - 4.7.5.1 Maintenance Department:
      - 4.7.5.1.1 Notify Administration, others of probable duration.
    - 4.7.5.2 Nursing Supervisor:
      - 4.7.5.2.1 Use bottled water or beverages for drinking hand cleaning.
    - 4.7.5.3 Other Departments:
      - 4.7.5.3.1 Label sinks and drinking fountains "Contaminated Water Do Not Use".

4.7.5.3.2 Conserve bottled water.

4.8 **Air condition fan coil unit (FCU) at patient room failure**

4.8.1 Description of Failure:

4.8.1.1 Areas temperatures in several areas rise above comfort.

4.8.1.2 Alarms on HVAC or Coolers, Building Maintenance System

4.8.1.3 Levels of complaints rise.

4.8.2 Rectify of Failure: Maintenance department (Some elements are implemented automatically).

4.8.3 Mitigation: Maintenance of multiple chillers, so load may be taken up by other units.

4.8.4 Preparation: Diagrams and charts, and computer management system graphics showing the HVAC System, and tie-ins to share available chilled water or air .

4.8.5 Responses:

4.8.5.1 Maintenance Department:

4.8.5.1.1 Check the chillers, and chilled water recirculation systems.

4.8.5.1.2 Notify Administration of findings.

4.8.5.1.3 Use alternative cooling source like split unit if available.

4.8.5.2 Nursing Supervisor:

4.8.5.2.1 Notify maintenance of problems.

4.8.5.2.2 Check patients comfort.

4.8.5.2.3 Provide water or alcohol baths, as appropriate.

4.8.5.2.4 Prepare to move patients to alternate locations.

4.9 **Air Condition Handling Unit (AHU) at Operation Room Failure:**

4.9.1 Description of Failure:

4.9.1.1 Areas temperatures in several areas rise above comfort.

4.9.1.2 Alarms on HVAC or Coolers, Building Maintenance System.

4.9.1.3 Levels of complaints rise.

4.9.3 Rectify of failure:- Maintenance department (Some elements are implemented automatically).

4.9.4 Mitigation: Maintenance of multiple chillers, so load may be taken up by other units.

4.9.5 Preparation:Diagrams and charts, and computer management system graphics showing the HVAC System, and tie-ins to share available chilled water or air

4.9.6 Responses:

4.9.6.1 Maintenance Department:

4.9.6.1.1 Check the chillers, and chilled water recirculation systems.

4.9.6.1.2 Notify Administration of findings.

4.9.6.1.3 Use alternative cooling source like another AHU if available .

4.9.6.2 Nursing Supervisor:

4.9.6.2.1 Notify maintenance for any problems.

4.9.6.2.2 Reschedule non-emergency operations.

4.10 **Intercom, Nurse Call and Overhead Paging Systems Failure:**

4.10.1 Description of Failure:

4.10.1.1 Nurse Call System does not operate, or is intermittent.

4.10.1.2 Nurse Call System is difficult to use, or hear, or has other limits.

4.10.1.3 Levels of complaints rise.

4.10.2 Rectify of failure: Maintenance department (Some elements are implemented automatically).

4.10.3 Mitigation: Preventive Maintenance of systems.

4.10.4 Preparation: always testing and monitoring all systems.

4.10.5 Responses:

4.10.5.1 Maintenance Department:

4.10.5.1.1 Check the affected areas, and trouble shoot system(s).

4.10.5.1.2 Check drop cords, and other activating units.

4.10.5.1.3 Notify Administration of findings.

4.10.5.2 Nursing Supervisor:

4.10.5.2.1 Check patients more frequently.

4.10.5.2.2 Use other alternate systems, ( such as phones) as practical.

#### 4.11 Sewer System Failure:

##### 4.11.1 Description of failure:

4.11.1.1 Several areas have sewage stoppages or backups.

4.11.1.2 Sewage backs up in sumps or lowest areas.

4.11.1.3 Levels of complaints rise..

4.11.2 Rectify of Failure:- Maintenance department (Some elements are implemented automatically).

4.11.3 Mitigation: Regular cleanout of sewer systems and drops.

4.11.4 Preparation: Maintenance of sumps and pits for sewage and discharge pumps.

##### 4.11.5 Responses:

##### 4.11.5.1 Maintenance Department:

4.11.5.1.1 Check the sewage system, including sumps and pumps.

4.11.5.1.2 Notify Sewer Department, and report problem.

4.11.5.1.3 Notify Administration of findings.

4.11.5.1.4 Contact Sewage Removal companies if needed.

##### 4.11.5.2 Nursing Supervisor:

4.11.5.2.1 Check patients.

4.11.5.2.2 Provide water sponge or alcohol baths, as appropriate, do not use showers or tubs. Water and waste may be collected in buckets, not put into sinks.

4.11.5.2.3 Provide alternate methods for patient toilet use.

4.11.5.2.4 Prepare to move patients to alternate locations.

#### 4.12 Telephone System Failure:

##### 4.12.1 Description of Failure:

4.12.1.1 Telephones fail to operate (multiple phones).

4.12.2 Rectify of failure: Maintenance department (Some elements are implemented automatically).

4.12.3 Mitigation: Provide backup lines and alternate trunks for single phones failure.

4.12.4 Preparation: Use alternate lines, such as fax and computer lines, email.

##### 4.12.5 Responses:

##### 4.12.5.1 Nursing Supervisor:

4.12.5.1.1 Use Pay Phones, fax, and cell phones as emergency backup. (NOTE: Use Cell Phones with care, only during phone emergency period. Avoid use near patient monitoring, diagnostic or therapy equipment.)

4.12.5.1.2 Contact maintenance department (0581053092)

##### 4.12.5.2 Maintenance Department:

4.12.5.2.1 Trouble shoot problem and attempt to identify cause

4.12.5.2.2 Notify Administration / Nursing of findings, and maintain liaison. It may be necessary to go to, or have someone come from the switchboard.

4.12.5.2.3 Contact Telecom contracted maintenance organization for immediate assistance.

4.12.5.2.4 Use Audible Page for emergencies in place of beepers.

##### 4.12.5.3 Hospital Security:

4.12.5.3.1 Station personnel with radios at critical areas to facilitate communications, and provide immediate response to emergencies.

#### 4.13 Fire Alarm Systems Failure:

##### 4.13.1 Description of Failure:

4.13.1.1 Fire Alarm System does not operate.

4.13.1.2 Levels of complaints rise.

4.13.2 Rectify of Failure: Maintenance department (Some elements are implemented automatically).

4.13.3 Mitigation: Preventive Maintenance of Systems.

4.13.4 Preparation: Always testing and monitoring all systems, All zones drawing are available.

##### 4.13.5 Responses:

##### 4.13.5.1 Maintenance Department:

4.13.5.1.1 Check the affected areas, and trouble shoot system(s).

4.13.5.1.2 Check drop zones, and other detectors.

4.13.5.1.3 Notify Administration of findings.

**5. MATERIALS AND EQUIPMENT:**

N/A

**6. RESPONSIBILITIES:**

6.1 All MCH Staff

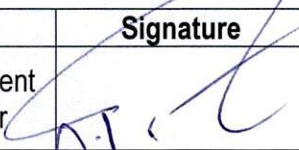
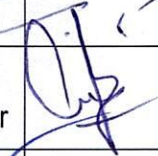
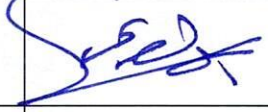

**7. APPENDICES:**

N/A

**8. REFERENCES:**

8.1 MOH and civil rules and regulations

**9. APPROVALS:**

	<b>Name</b>	<b>Title</b>	<b>Signature</b>	<b>Date</b>
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<b>Reviewed by:</b>	Mr. Abdulelah Ayed Al Mutairi	QM&PS Director		January 15, 2025
<b>Approved by:</b>	Mr. Fahad Hezam AlShammari	Hospital Director		January 22, 2025