

SYNOPSIS REPORT
ON
'FIRE SERVICES IN HOSPITAL'
BACHLERS OF ARCHITECTURE
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FIRE SERVICES IN HOSPITAL

1.1 INTRODUCTION

Fire can be devastating, especially in a hospital where a large number of people who need to be evacuated may be vulnerable – immune compromised, on life support, and incapable of moving on their own. So, Patient safety and recovery must be the top priority of every hospital. There are special requirements that must be met with while evacuating such people in case of fire emergencies. But before that – “fire must be prevented”.

1.2 AIM

To provide easy evacuation in case of fire.

1.3 OBJECTIVE

- Prevent the occurrence of fire and explosion;
- Reduce the risk to life caused by fire.
- Reduce the risk of damage caused by fire in the environment.
- Contain, control and suppress fire and explosion in the compartment of origin.
- Provide adequate and readily accessible means of escape for passengers and crew.

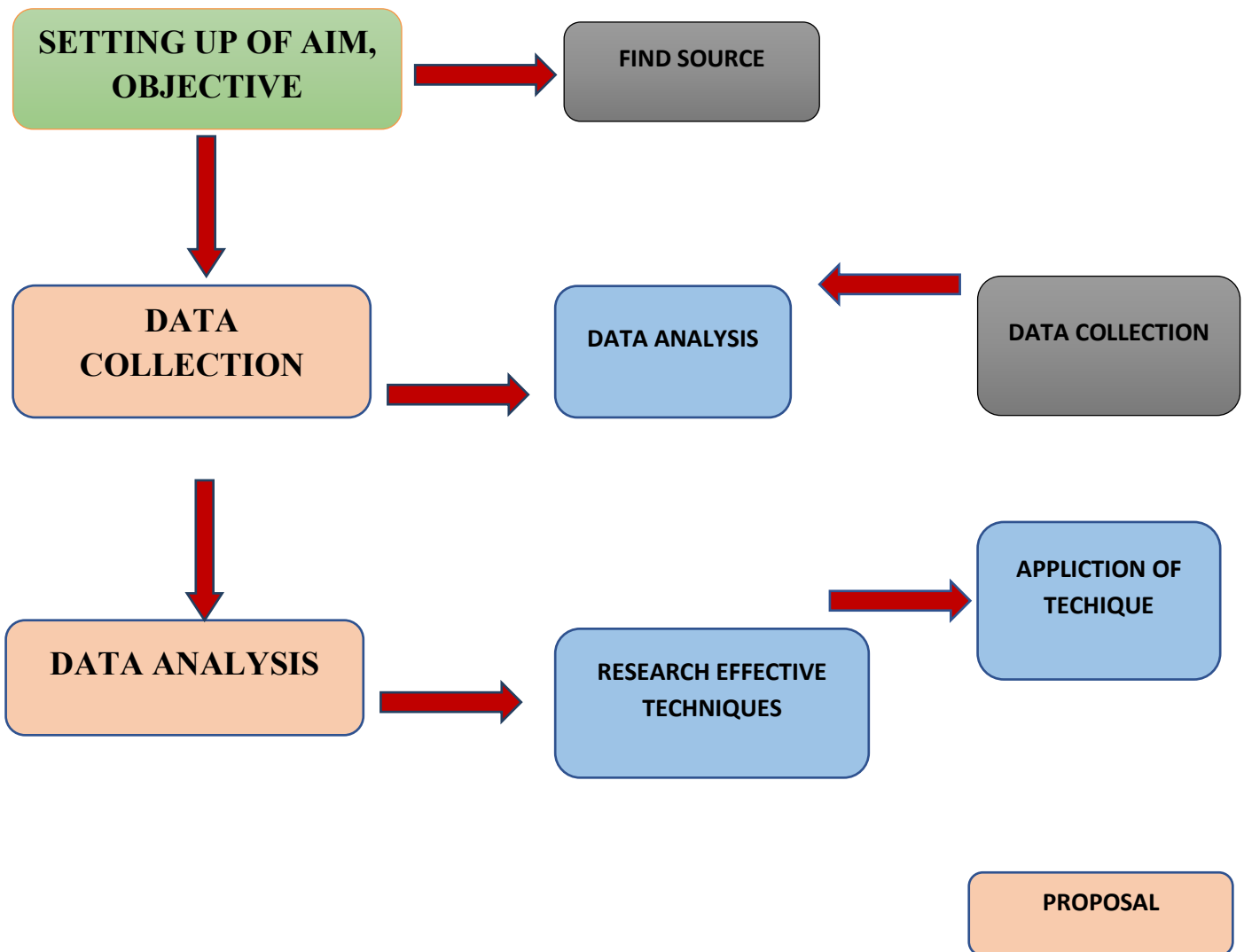
1.4 NEED AND SCOPE

The lives of the patients should be the first priority in case of fire in any corner of the health care facility. IN case of fire the evacuation process of the patent should as fast as possible and the emergency should be designed in accordance.

The no. Of accidents are increasing day by day due to the carelessness of people regarding fire safety.

1.5 LIMITATION

1.5 METHODOLOGY



2.1 DATA COLLECTION

1. Firefighting equipment like wet riser, hydrants, auto sprinkler, fire alarm system, fire extinguishers of all types and sizes should be available as per table below (adapted from NBC 2016).
2. Operational and maintenance plan for firefighting equipment including refilling of extinguishers.
3. Up to date fire drawings to be available. Where applicable, the fire drawings should also specify the location of fire dampers.
4. Fire detection and smoke detectors exist across all floors. The detectors shall be tested for functionality at regular intervals, and records maintained.
5. Central fire alarm system is installed at a location which is staffed 24/7.
6. Fire exit plan for each floor. Exit door should be openable and free from any materials which will obstruct way.
7. Fire Exit signage on all floors well illuminated/ self-glowing, as per NBC guidelines.
8. Emergency illumination system in case power goes.
9. Designated place for assembly of patients and staff in case of fire.
10. Mock fire drill records and schedule of conduct of drills.

Minimum Requirements for Fire Fighting Installations

Type of Hospital	Wet Riser	Automatic Sprinkler	Manually operated electric fire alarm	Auto detection and fire alarm system
Hospitals less than 15 meters in height, with plot area upto 1000 square metres and upto G + 1 floor	NR	R	R	NR
Hospitals less than 15 meters in height, with plot area upto 1000 square metres and G + 2 floors	R	R	R	R

Hospitals less than 15 meters in height with plot area more 1000 square metres	R	R	R	R
Hospitals 15 meters and above but not exceeding 24 meters in height	R	R	R	R
Hospitals above 24 meters but not exceeding 45 meters in height	R	R	R	R
R=Required NR= Required				
Sufficient water storage (underground and/or terrace) should be provided to ensure fire-fighting				

2.2 EXIT FACILITIES

- In buildings or sections occupied by bed-ridden patients where the floor area is over 280 m², facilities shall be provided to move patients in hospital beds to the other side of a smoke barrier from any part of such building or section not directly served by approved horizontal exits or exits from the first floor (floor 2) of a building to the outside.
- Not less than two exits of one or more of the following types shall be provided for every floor, including basement, of every building or section:
 - a) Doors leading directly outside the building;
 - b) Stairways;
 - c) Ramps;
 - d) Horizontal exits; and
 - e) Fire tower.
- All required exits that serve as egress from hospital or infirmary sections shall be not less than 2 m in clear width including patient bedroom doors to permit transportation of patients on beds, litters, or mattresses. The minimum width of corridors serving patients bedrooms in buildings shall be 2400 mm. For detailed information on recommendations for buildings and facilities for the physically handicapped, reference may be made to good practice .
- Elevators constitute a desirable supplementary facility, but are not counted as required exits. Patient lifts shall also be provided with enough room for transporting a stretcher trolley.
- Any area exceeding 500 m² shall be divided into compartments by fire resistant walls. Doors in fire resistant walls shall be so installed that these may normally be kept in open position, but will

close automatically. Corridor door openings in smoke barriers shall be not less than 2000 mm in width. Provision shall also be made for double swing single/double leaf type door.

2.3 ADDITIONAL PRECAUTIONS

- No combustible material of any kind shall be stored or used in any building or section thereof used for institutional occupancy, except as necessary to normal occupancy and use of the building.
- Bare minimum quantities of flammable material such as chloroform, ethyl alcohol, spirit, etc shall be allowed to be stored and handled. The handling of such liquids shall not be permitted by un-authorized persons. Bulk storage of these items, will be governed by relevant rules and safe practices.

2.4 EXCEPTIONS AND DEVIATIONS

It is recognized that in institutions or part of buildings housing various types of psychiatric patients, or used as penal and mental institutions, it is necessary to maintain locked doors and barred windows; and to such extent the necessary provision in other sections of the Code requiring the keeping of exits unlocked may be waived. It is also recognized that certain type of psychiatric patients are not capable of seeking safety without adequate guidance. In buildings where this situation prevails, reliable means for the rapid release of occupants shall be provided, such as remote control of locks, or by keying all locks to keys commonly used by attendants

2.5 NABH Survey

During its survey process the NABH auditors look into the following to ensure that the organization is compliant with Fire Safety Regulations:

Fire Prevention and Control Infrastructure:

1. The organization has updated NOC from state Fire Department.
2. The organization has a multi disciplinary safety committee with a senior person as the chairman of the safety committee. The safety committee meetings are held at least once in 3 months. The minutes of the meeting are recorded and put up to the senior management.
3. The organization has a formally appointed Fire Safety Officer in-charge of all concerns related to Fire Prevention & Safety. The Fire Safety Officer should be preferably from Security Staff and should be aware of all fire safety protocols.
4. The organization has a written plan for Fire Prevention and Safety and has a Fire Safety Manual approved by the safety committee.

5. The organization has an Emergency Command Centre that becomes functional immediately whenever there is an emergency. There is a written protocol and written constitution of the committee and the Fire Command Centre is update with the name of the members. A designated person has the responsibility of informing all the Emergency Command members.

6. The Fire Safety Manual has the following components:

- Plan for fire prevention & control.
- Systems for fire prevention & control.
- Maintenance Schedules / SOPs for systems related to fire prevention & control
- Inspection protocols for fire safety installations.
- Codes for announcement of fire related emergency, procedures and communication protocols for the same.
- Responsibilities of different departments in case of fire.
- Procedures, frequency & protocols for mock drills.
- Constitution of Fire Fighting & Evacuation Teams.
- Evacuation Plan.
- Electrical Safety & System.

7. A multi disciplinary committee, which has Fire Safety Officer as a member, holds facility rounds at least once a year for non-clinical areas & twice a year for clinical areas. Fire Safety requirements are on the checklist of the said committee and the reports are submitted in writing to the safety committee.

8. The safety committee has a system whereby all fire safety concerns are addressed.

9. The mock drills are conducted and the reports submitted to the safety committee. Necessary action is taken to address any issues that crop up during mock drills.

10. The fire exits are well defined and end on the ground floor or refuge area or any safe place decided by the management.

11. The Fire Sign ages are appropriate and placed at the right locations.

12. Emergency fire sign ages are glow in dark sign ages.

13. The Fire Sign ages are visible and are bilingual, with one local language.

14. The egress routes are free from any materials that would cause hindrance in evacuation.
15. The Fire Doors have a proper fire rating and open outside.
16. The Fire Doors preferably have panic bars.
17. The Fire Doors remain open at all times.
18. The Fire cabinets are open all the time.
19. The Manual Call Points have means to break the glass.
20. The Fire Alarm systems are properly tested and maintained and a record is kept for the same.
21. The Emergency Exit signs should be displayed prominently.
22. The stairwells used for evacuation are pressurized in case of fire emergency.
23. The lifts are not used in case of fire.
24. The HVAC system has appropriate fire dampers to prevent spread of fire that function properly in case of fire. The dampers are tested and have a regular preventive maintenance schedule.
25. All the equipments have an organized preventive maintenance schedule that is recorded and stickers put on the equipments showing the date of preventive maintenance check and the next date for maintenance.
26. Appropriate type & number of fire extinguishers have been installed according to the type of fire that could take place.
27. The Fire Extinguishers have a regular preventive maintenance schedule and stickers are put showing the date of checking and the next scheduled date for checking.
28. 10% of Fire Extinguishers are used every year for checking the same.
29. The building has an approachable peripheral road around it for access by fire brigade.
30. The Fire Pump House is maintained properly and the pumps have pressure gauges that have been calibrated and appropriate pressures are maintained in the fire hydrant & sprinkler lines.
31. There is a proper training program for handling fire emergencies and training records are maintained. The entire staff is imparted fire safety training.
32. The staff is aware of the fire fighting systems, responsibilities during fire emergencies, evacuation routes & techniques, conversant with the type of fire extinguishers and their area of

use, trained to operate fire extinguishers, code announcements and assembly points in case of fire.

33. The organization has policies & protocols for storing, dispensing & use of flammable materials. Appropriate warning signs for flammables are displayed.

34. Electrical safeties are in place. Preventive maintenance & testing is done at regular pre decided intervals and are recorded and stickers affixed.

35. All electrical panels have a rubber mat in front of them.

36. The earthing system is tested regularly.

37. The UPS batteries are checked regularly by loading the same periodically to check any heating up etc.

38. There is proper ventilation in panel, UPS & equipment rooms to avoid overheating.

39. There is an approval from the Indian Explosives Department for bulk storage of Diesel & any other flammable material as per Indian Explosives Act, in case stored in bulk.

40. The pumps used for pumping fuel are of flame proof construction.

41. The Provisions are there to take care of fuel overflow.

42. Flues are properly insulated.