

WHAT'S NEW IN NFPA 99-2012

**North Carolina Hospital
Engineers Association**

Fall Conference

Grove Park Inn

Asheville, NC



Presented August 24, 2017
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Who Regulates Hospitals?

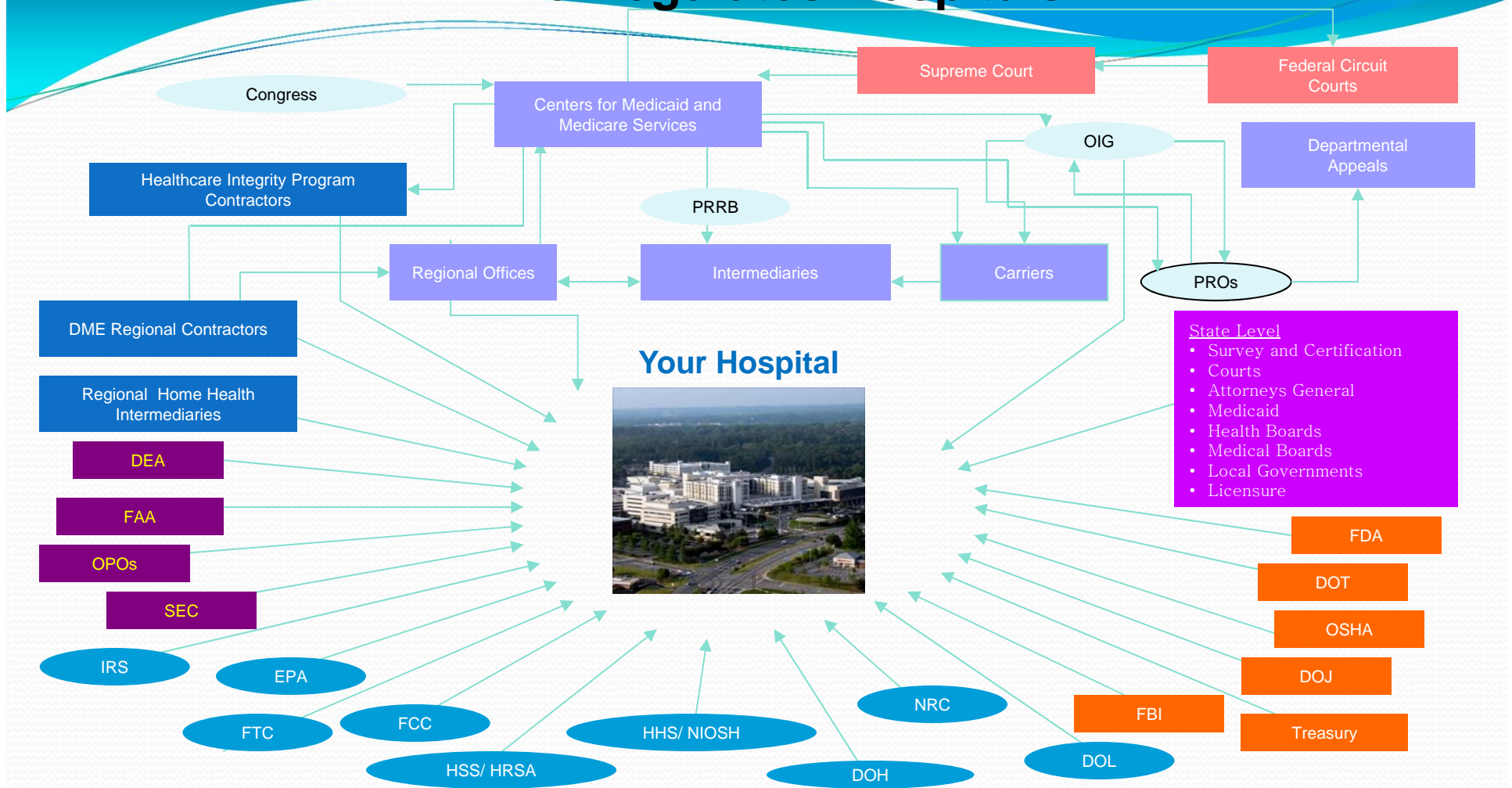


Chart Legend

DEA:	Drug Enforcement Administration	TJC:	Joint Commission on Accreditation of Healthcare Organizations
FAA:	Federal Aviation Administration	NRC:	Nuclear Regulatory Commission
OPO:	Organ Procurement Organizations	DOL:	Department of Labor
SEC:	Securities and Exchange Commission	FBI:	Federal bureau of Investigation
IRS:	Internal Revenue Service	DOJ:	Department of Justice
EPA:	Environmental Protection Agency	OSHA:	Occupational Safety and Health Admin
FTC:	Federal Trade Commission	DOT:	Department of Transportation
FCC:	Federal Commerce Commission	FDA:	Food and Drug Administration
HHS:	Health and Human Services	OIG:	Office of Inspector General
HRSA:	Health Resources and Services Admin	PRO:	Peer Review Organization
NIOSH:	National Institution for Occupational Safety & Health	PRRB:	Provider Reimbursement Review Board



What is the NFPA?

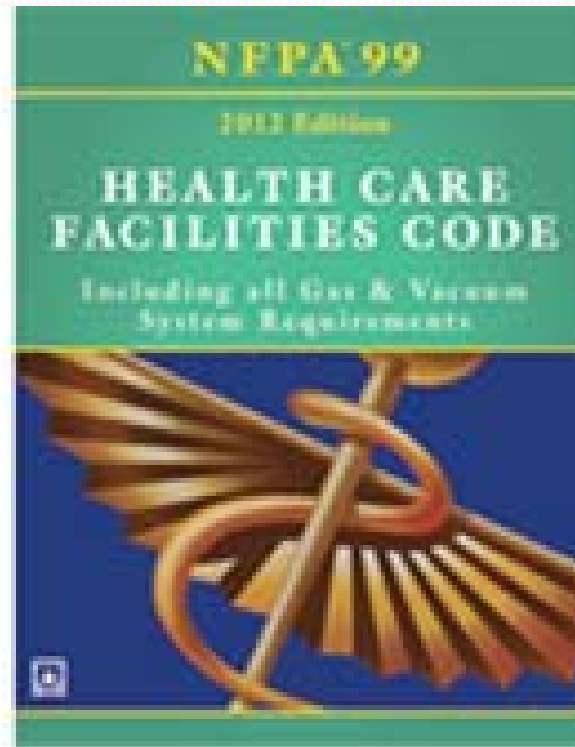
National Fire Protection Association

NFPA develops, publishes, and disseminates more than **300 codes and standards** intended to minimize the possibility and effects of fire and other risks. Virtually every building, process, service, design, and installation in society today is affected by NFPA documents.

These codes and standards are administered by more than 250 **Technical Committees** comprising approximately 8,000 volunteers, and are adopted and used throughout the world.

NFPA 99-2012 “Healthcare Facilities Code”

Still has the stylish **GREEN** Cover!!





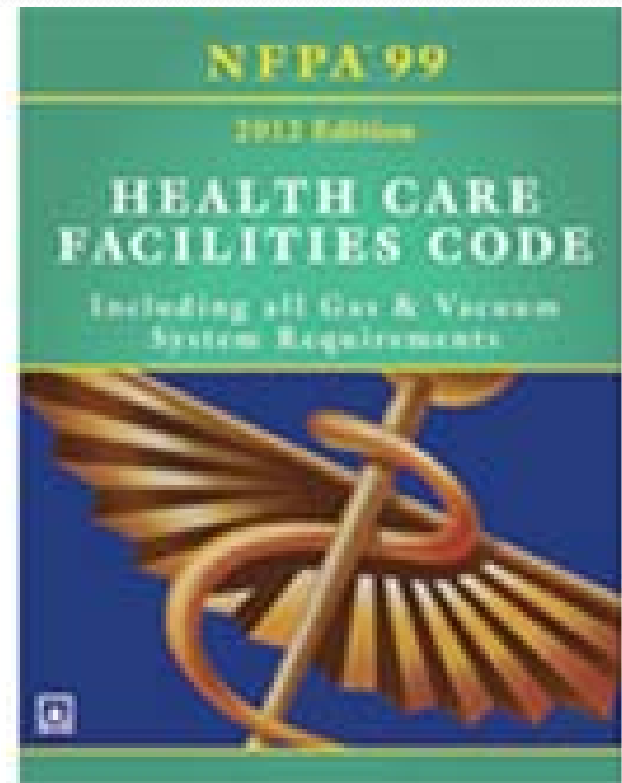
Disclaimer

The speaker is a Principal member of the Correlating Committee for NFPA 99 – Health Care Facilities Code, which is responsible for NFPA 99 and NFPA 99B (Hypobaric Facilities) documents and its contents, the views and opinions expressed in this presentation are purely those of the speaker and shall not be considered the official position of NFPA or any of its technical committees and are not considered to be, nor be relied upon as, Formal Interpretation.

What is NFPA 99?

NFPA 99 is the “Healthcare Facilities Code”

It provides specific codes related to healthcare facilities of all kind. Not just hospitals.



Learning Objectives

- Review the layout of NFPA 99-2012
- Understand the application of NFPA 99 for “Existing” facilities
- Identify specific provisions that apply to “Existing” facilities

NFPA 99 – 1999 to 2012 Layout

Chapter 1 – Introductions
Chapter 2 – Definitions
Chapter 3 – Electrical System
Chapter 4 – Gas & Vacuum Systems
Chapter 5 – Environmental Systems
Chapter 6 - Materials
Chapter 7 – Electrical Equip.
Chapter 8 – Gas Equip.
Chapter 9 – Manufacture Requirements
Chapter 10 – Laboratories
Chapter 11- Emergency Preparedness
Chapter 12 – Hospital requirements

Chapter 1 – Administration
Chapter 2 – Referenced Publ.
Chapter 3 – Definitions
Chapter 4 - Fundamentals
Chapter 5 - Gas & Vacuum Systems
Chapter 6 - Electrical Systems
Chapter 7 - IT & Comm. Systems
Chapter 8 – Plumbing
Chapter 9 – HVAC
Chapter 10 – Electrical Equip.
Chapter 11- Gas Equip.
Chapter 12 – Emergency Mgmt.
Chapter 13 – Security Mgmt.
Chapter 14 Hyperbaric Facilities
Chapter 15 – Features of Fire Prot.



CMS Adoptions

- All chapters EXCEPT:
 - Chapter 7 - IT & Comm. Systems
 - Chapter 8 – Plumbing
 - Chapter 12 – Emergency Management
 - Chapter 13 – Security Management

HOWEVER DNV-GL has adopted:

- Chapter 12 – Emergency Management
- Chapter 13 – Security Management

Applicability

- Applies to all Health Care Facilities (excludes home and veterinary)

3.3.71* Health Care Facilities. Buildings, portions of buildings, or mobile enclosures in which medical, dental, psychiatric, nursing, obstetrical, or surgical care is provided.

- Construction and equipment requirements shall be applied to **NEW** construction and **NEW** equipment, except as modified in individual chapters

Applicability

Cont.

- **ONLY** the altered, renovated, or modernized portion of an existing system, or individual component, shall be required to meet the installation and equipment requirements stated in this code.
- If this adversely impacts the existing performance requirements of a system or components, additional upgrading shall be required.

Applicability

Cont.

- An existing system that is not in strict compliance with the provisions of this code shall be permitted to be continued in use.
- Unless the authority having jurisdiction has determined that such use constitutes a distinct hazard to life.



Referenced Publications

Documents referenced are considered part of the requirements of NFPA 99

- Only applicable to the extent called for by NFPA 99
- Where requirements differ, NFPA 99 takes precedence
- Existing buildings or installations not in compliance can remain where not a serious hazard to occupants

Definitions

- The definitions have been enhanced tremendously.
- They have more links to Annex A for more explanations of the intent of the standard and visual aids.

Fundamentals

- Contains Risk Categories
 - All activities, systems, and/or equipment shall be designed to meet Category 1 through Category 4 requirements, as detailed in this code
 - These are not specifically required for existing facilities, systems, or equipment.



Fundamentals

Risk Category

Category 1

Category 2

Category 3

Category 4

Likely Result of Failure

Major injury or death

Minor injury

Patient Discomfort

No impact

Gas & vacuum systems

5.1.3.1 Central Supply System ID and Labeling

- Cylinder labels
- Liquid container identification
- Gas-specific outlet connections
- Verify contents
- Storage room door labeling

Gas & vacuum systems

5.1.3.2 Central Supply System Operations

- Prohibits adapters/conversion fittings
- Cylinder and container handling
- Limits items that can be stored in room
- Prohibits flammables
- Provides handling precautions
- Limits temperature ranges

Gas & vacuum systems

5.1.3.3.2 Storage (supply system storage)

- Full, or empty when not connected, cylinders can be stored
- Must meet locations construction requirements of 5.1.3.3.2
- Must be ventilated per 5.1.3.3.3
- Prohibits motor driven equipment, with the exception of instrument air headers.



5.1.3.3.2 Storage (supply system storage)

- Locations for central supply systems and the storage of positive-pressure gases shall meet the following requirements:
 - They shall be constructed with access to move cylinders, equipment, and so forth, in and out of the location on hand trucks complying with 11.4.3.1.1.
 - They shall be secured with lockable doors or gates or otherwise secured.
 - If outdoors, they shall be provided with an enclosure (wall or fencing) constructed of noncombustible materials with a minimum of **two** entry/exits.
 - If indoors, they shall be constructed and use interior finishes of noncombustible or limited-combustible materials such that all walls, floors, ceilings, and doors are of a minimum 1-hour fire resistance rating.
 - They shall be heated by indirect means (e.g., steam, hot water) if heat is required.
 - They shall be provided with racks, chains, or other fastenings to secure all cylinders from falling, whether connected, unconnected, full, or empty.
 - They shall have racks, shelves, and supports, where provided, constructed of noncombustible materials or limited-combustible materials.
 - They shall protect electrical devices from physical damage.

Gas & vacuum systems

5.1.14 – Operations and Management

- Requires inventories be kept
- Inspection schedules
- Inspection procedures
- Maintenance schedules
- Qualifications of who can maintain and inspect
- Guidelines for inspection of labeling
- Requirements for record keeping



Gas & vacuum systems

Valves

- All valves, except valves in zone valve box assemblies, shall be located in secured areas such as locked piped chases, or be locked or latched in their operating position, and be labeled as to gas supplied and the area(s) controlled
- Shutoff valves accessible to other than authorized personnel shall be installed in valve boxes with frangible or removable windows large enough to allow manual operation of valves.
- Shutoff valves for use in certain areas, such as psychiatric or pediatric areas, shall be permitted to be secured with the approval of the authority having jurisdiction to prevent inappropriate access.
- Valves for nonflammable medical gases shall not be installed in the same zone valve box assembly with flammable gases.

Gas & vacuum systems

Zone Valves

- All station outlets/inlets shall be supplied through a zone valve as follows:
 - The zone valve shall be placed such that a wall intervenes between the valve and outlets/inlets that it controls.
 - The zone valve shall serve only outlets/inlets located on that same story.
 - The zone valve shall not be located in a room with station outlets/inlets that it controls
- Zone valves shall be readily operable from a standing position in the corridor on the same floor they serve.



Gas & vacuum systems

Zone Valves

- Zone valve boxes shall be installed where they are visible and accessible at all times.
- Zone valve boxes shall not be installed behind normally open or normally closed doors or otherwise hidden from plain view.
- Zone valve boxes shall not be located in closed or locked rooms, areas, or closets
- A zone valve shall be located immediately outside each vital life-support area, critical care area, and anesthetizing location of moderate sedation, deep sedation, or general anesthesia, in each medical gas or vacuum line, or both, and located so as to be readily accessible in an emergency



Gas & vacuum systems

Master Alarms

- The master alarm system shall consist of two or more alarm panels located in at least two separate locations, as follows:
 - One master alarm panel shall be located in the office or work space of the on-site individual responsible for the maintenance of the medical gas and vacuum piping systems.
 - In order to ensure continuous surveillance of the medical gas and vacuum systems while the facility is in operation, the second master alarm panel shall be located in an area of continuous observation (e.g., the telephone switchboard, security office, or other continuously staffed location)



Gas & vacuum systems

Maintenance and Inspection

- Scheduled inspections and maintenance for equipment and procedures shall be established through the risk assessment of the facility and developed with consideration of the original equipment manufacturer recommendations and other recommendations as required by the authority having jurisdiction
- Audible and visual alarm indicators shall meet the following requirements:
 - They shall be periodically tested to determine that they are functioning properly.
 - Records of the test shall be maintained until the next test is performed

Electrical systems

Applicability

- **6.1.1** This chapter shall apply to new health care facilities as specified in Section 1.3.
- **6.1.2** The following paragraphs of this chapter shall apply to new and **existing health** care facilities:
 - 6.3.2.2.4.2
 - 6.3.2.2.6.1
 - 6.3.2.2.6.2(F)
 - 6.3.2.2.8.5(B)(2), (3), and (4)
 - 6.3.2.2.8.7
 - 6.3.4
 - 6.4.1.1.17.5
 - 6.4.2.2.6.2(C)
 - 6.4.2.2.6.3
 - 6.4.4
 - 6.5.4
 - 6.6.2.2.3.2
 - 6.6.3.1
 - 6.6.4

Electrical systems

6.3.2.2.6.2(f) – Mandates pediatric safety receptacles in pediatric locations

6.3.2.2.8.5 Wet procedure locations

- Allows exemption to providing special protection against electrical shock in wet procedure locations where certain procedures are followed
 - (B) Fixed receptacles, equipment connected by cord and plug, and fixed electrical equipment shall be tested as follows:
 - (2) Where there is evidence of damage
 - (3) After any repairs

Electrical systems

6.3.2.2.8.7 – Operating room defined as wet locations shall be protected by either isolated power or ground-fault circuit interrupters

6.4.1.1.18.7 – Centralized computer system is NOT permitted to be substituted for alarm annunciator but can be supplemented



Electrical systems

Essential Electrical System (EES)

- Critical care rooms (Category 1 Room) shall be served only by a Type I EES (see 6.4 for Type I EES requirements).
- General care rooms (Category 2 Room) shall be served by a Type I or Type II EES.
- A Type I EES serving a critical care room (Category 1 Room) shall be permitted to serve general care rooms (Category 2 Room) in the same facility.
- Basic care rooms shall not be required to be served by an EES.
- Rooms other than patient care rooms shall not be required to be served by an EES



Electrical systems

6.4.4 – Maintenance and testing of the EES

- Maintained to be restore service in 10 seconds
- Load testing 12 times per year (>20 but <40 days)
- Test conditions require cold start and all switches transferred
- Must have competent personnel
- Requires written record of inspection, performance, exercising period, and repairs.

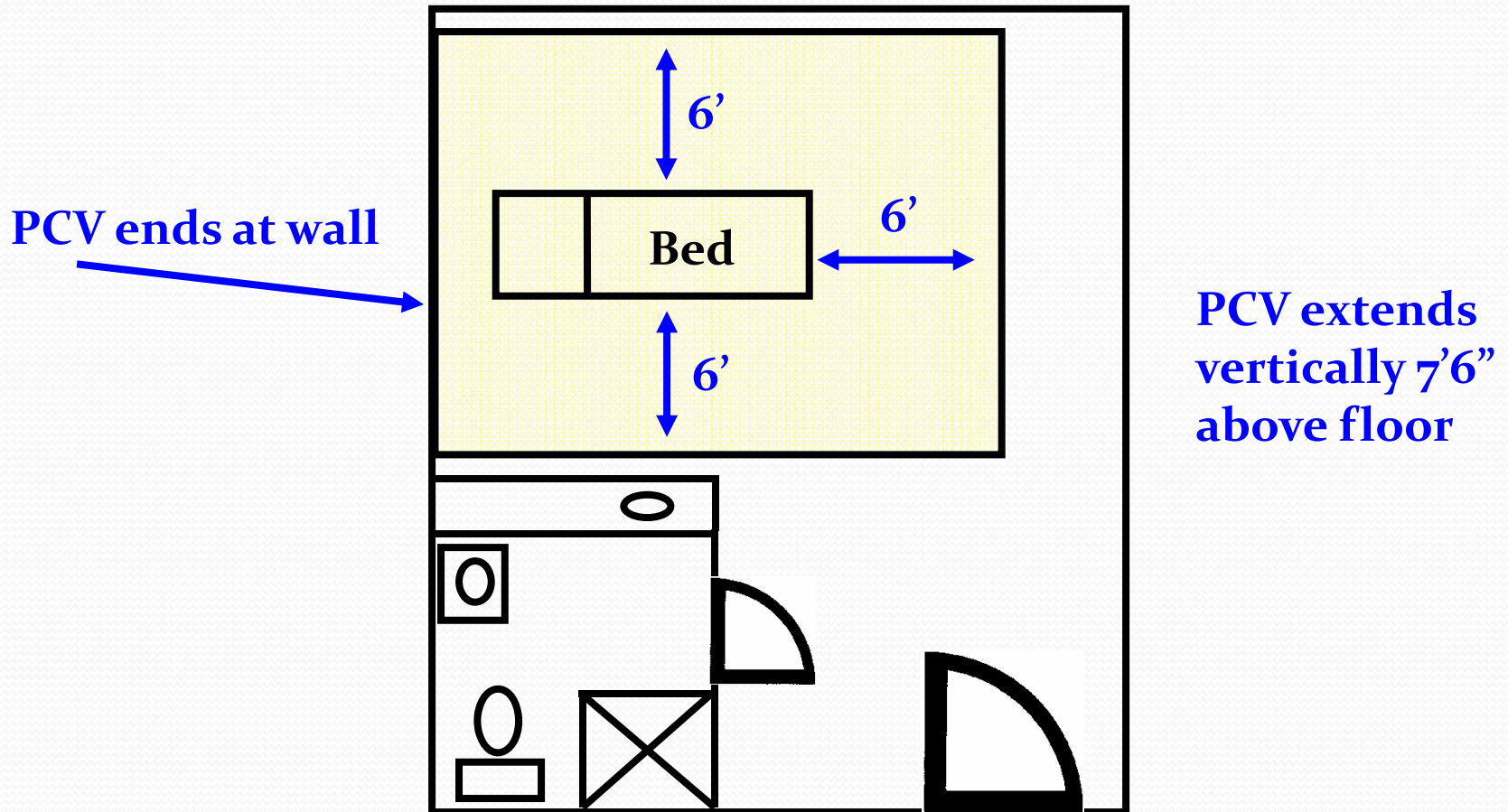


Electrical systems

Battery Operated Lights

- One or more battery-powered lighting units shall be provided within locations where deep sedation and general anesthesia is administered.
- The lighting level of each unit shall be sufficient to terminate procedures intended to be performed within the operating room.
- The sensor for units shall be wired to the branch circuit(s) serving general lighting within the room.
- Units shall be capable of providing lighting for 1½ hours.
- Units shall be tested monthly for 30 seconds, and annually for 90 minutes

Patient Care Vicinity





IT & Communications Systems

No specific requirements for existing facilities



HVAC

No specific requirements for existing facilities



Electrical Equipment

Are power strips in the patient care vicinity now OK? – Yes.
(Sorta)

- Permanently attached to equipment assembly
- Sum of the ampacity $\leq 75\%$ ampacity of the flexible cord connecting the outlets
- Means of preventing overloading $\leq 75\%$
- Electrical and mechanical integrity of assembly is regularly verified and documented
- Means of protecting from use not counted for above shall be employed. **(This was REMOVED via TIA99 12-5)**
- And much more.....



Electrical Equipment

Adapters and Extension Cords

- Three-prong to two-prong adapters shall not be permitted.
- Adapters and extension cords meeting the requirements of 10.2.4.2.1 through 10.2.4.2.3 shall be permitted.
 - **10.2.4.2.1** All adapters shall be listed for the purpose.
 - **10.2.4.2.2** Attachment plugs and fittings shall be listed for the purpose.
 - **10.2.4.2.3** The cabling shall comply with 10.2.3



Electrical Equipment

Adapters and Extension Cords

- Nonpatient care–related electrical equipment, including facility- or patient-owned appliances that are used in the patient care vicinity and will, in normal use, contact patients, shall be visually inspected by the patient’s care staff or other personnel.
- Any equipment that appears not to be in proper working order or in a worn condition shall be removed from service or reported to the appropriate maintenance staff.
- Household or office appliances not commonly equipped with grounding conductors in their power cords shall be permitted, provided that they are not located within the patient care vicinity. Double-insulated appliances shall be permitted in the patient care vicinity



Gas Equipment

No specific requirements for existing facilities

This is where you will find the information for storage of portable high pressure cylinders

- 0-300 cu ft may be stored in the open per smoke compartment
- 300-3000 cu ft shall be stored Storage locations shall be outdoors in an enclosure or within an enclosed interior space of noncombustible or limited combustibile construction, with doors (or gates outdoors) that can be secured against unauthorized entry
- >3000 cu ft will be stored per 5.1.3.3.2 and 5.1.3.3.3
- Not stored within 6' of combustibles



Emergency Management

Misc. Requirements

- Closely follows NFPA 1600 for Emergency Management
- CMS, TJC, and HFPA are not adopting this chapter, however DNV will require compliance with it



Security Management

General

- CMS, TJC, and HFPA are not adopting this chapter, however DNV will require compliance with it
- A health care facility shall have a security management plan.
- The health care facility shall conduct a security vulnerability assessment (SVA)
- Employers shall ensure a high level of integrity in the workplace by using the following practices:
 - Background checks of employees with access to critical assets
 - Background checks of outside contractors' employees
 - Drug testing program for employees



Hyperbaric Facilities

- Applies only to NEW facilities
- Classification of Chambers.
 - General. Chambers shall be classified according to occupancy in order to establish appropriate minimum essentials in construction and operation.
- Occupancy. Hyperbaric chambers shall be classified according to the following criteria:
 - Class A— Human, multiple occupancy
 - Class B — Human, single occupancy
 - Class C —Animal, no human occupancy



Features of Fire Protection

Applies to new and existing facilities

Existing systems not in strict compliance shall be permitted to be continued in use unless the AHJ determines a distinct hazard to life

Primarily mimicks other fire codes



Features of Fire Protection

Fire Loss in Operating Rooms

- Assess hazards in the OR
- Establish fire prevention procedures
- Has requirements for the use of flammable germicides and antiseptics
- Must develop emergency procedures
- Must orient and train ALL Operating Room staff on procedures

Questions





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