

# Patient Safety Alert

Veterans Health Administration Warning System  
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Item: **Fire Response and Planning**

General Information: Saving lives and preventing harm to patients in the event of a fire, is dependent upon comprehensive fire planning, immediate execution of the fire plan, and the proper operation of fire protection detection, suppression, and notification equipment.

Secondary to protecting patients, visitors, and staff from harm is the need to protect the building, equipment, and furnishings from water and smoke damage, to insure that patient care activities can resume as soon as possible after a fire.

Specific Incident: A fire in a VA hospital caused by the improper use of smoking materials, combined with the presence of oxygen completed the fire triangle and resulted in the death of a patient. Quick action by nursing staff in conjunction with the operation of smoke detectors, the facility fire alarm system, and two of the three fire sprinklers in the room of fire origin prevented further injury. A key to preventing further injury was having enough staff to respond to the fire area and assist with patient relocation. After the fire, water damage was excessive due to a delay in shutting off the fire sprinkler valve. In the room of fire origin, the fire sprinkler closest to the fire failed to operate. This was an O-ring type fire sprinkler manufactured by Central Sprinkler Company (Model GB). These O-ring sprinklers, along with other models, were recalled by the manufacturer in 2001 and were scheduled for replacement. Additional information on the sprinkler recall may be found at:  
<http://www.sprinklerreplacement.com/VRP/enterVRP.php3>

Actions:

By February 11, 2005:

1. Facilities Management or Engineering Service personnel will initiate immediate replacement of the recalled Central O-ring sprinklers if any are still present in the facility and complete replacement by March 15, 2005. If this cannot be accomplished the facility director must contact Mr. Ken Faulstich, Chief, Fire Protection Engineering (10NB) (202) 273-5869 to arrive at an acceptable solution.
2. Clinical management staff will ensure that staff understand and enforce the existing program to control smoking materials, especially when 100% oxygen is in use.
3. Occupational Safety and Health or VA Fire Department personnel will review the fire plan to ensure:
  - A) There will be an adequate number of staff, including clinical staff, immediately responding to the fire area regardless of the day of the week or time of day, to assist in patient relocation to the next smoke zone should it become necessary. The number of responders needed is dependent upon the number of patients in the impacted smoke zone and the acuity level of the patients. Based upon past

fire events, the minimum recommended staff response (not counting Fire Department personnel) is:

- 1) For patient care buildings with overnight stay that are not fully sprinkler protected: One responder for every two non-ambulatory patients. If this response ratio cannot be met, consider installing sprinkler protection, modifying the number (mix) of non-ambulatory to ambulatory patients in the smoke zone, reducing the size of the smoke zone(s) or a combination of these actions.
- 2) For fully sprinkler protected patient care buildings with overnight stay: One responder for every four non-ambulatory patients. If this response ratio cannot be met conduct a risk assessment to determine if an appropriate level of safety is being provided. Refer to Attachment 1.

***For the purposes of this Alert non-ambulatory patients shall include individuals with cognitive or behavioral impairments that need assistance when relocating to an adjacent smoke zone.***

- B) The fire plan clearly identifies the individual in the unit/area responsible for turning off the room or zone oxygen shut off control valve should it be necessary. This is especially important in surgery and ICU areas. (Note: Preventing fires in surgical areas is a JCAHO 2005 Patient Safety goal for AHC. See Goal #11; "Reduce the risk of surgical fires." Additional information on this goal may be found at: [http://www.icafo.org/accredited+organizations/patient+safety/05+npsq/05\\_npsq\\_a mb.htm](http://www.icafo.org/accredited+organizations/patient+safety/05+npsq/05_npsq_a mb.htm))
- C) A requirement to telephone the fire department is part of the written fire plan as newly required in NFPA 101, 19.7.2.2.
- D) Qualified staff are identified who are provided with special keys and/or tools when needed (e.g. to open doors and windows, turn off/on utilities), that are knowledgeable in the operation of: the electrical system; heating, ventilating, and air conditioning (HVAC) equipment; and fire protection systems (sprinkler shut off and drain valves) and are available to consult with fire department personnel.
4. Occupational Safety and Health or Facilities Management /Engineering personnel shall verify that personnel and equipment are available to limit damage to the building immediately after fire department personnel declare the fire is extinguished. This may be accomplished by evacuating smoke, shutting off sprinkler control valves and containment of sprinkler and fire hose discharge water. Water damage may be limited through the use of plugs specifically designed to seal open fire sprinklers and absorbent "pigs" to dike water on the floor to keep it from spreading. Smoke spread may be limited by opening windows, stopping the HVAC environmental air re-circulation and by using dedicated portable exhaust fans.
5. Occupational Safety and Health or Police and Security Service personnel shall develop a policy or SOP that addresses when the fire scene is to be secured after the event and before clean up, to permit an investigation to be conducted by qualified individuals. The purpose of this investigation is to determine fire cause and assess the effectiveness of both active (e.g. suppression and detection) and passive (e.g. smoke and fire barriers) fire protection systems.
6. Occupational Safety and Health or VA Fire Department personnel shall report all fires in accordance with VHA Directive 2003-051, Fire Incident Reporting, dated 09-16-03, using the on-line fire incident form. This form may be found at: <http://vaww.ceosh.med.va.gov/Forms/FireProtection/FireIncident.htm>

Contact:

Ken Faulstich, Chief, Fire Protection Engineering (10NB) (202) 273-5869  
Joe DeRosier, Program Manager, NCPS (10X) (734) 930-5890

## Fire Evacuation/Relocation Response Sprinkler Protected Smoke Zone Risk Assessment

This Risk Assessment is NOT to be used to reduce the number of responders if the 1:4 ratio is being met.

Consider the following factors when assessing the adequacy of the facility fire response for sprinkler protected smoke zones.

*Note: A responder may be any individual who: can respond within 8 minutes; is trained in the fire plan; participates in the fire drills (fire department personnel may not be counted since their primary efforts may be in suppression activities).*

For the purposes of this risk assessment the number of non-ambulatory patients present in a smoke zone shall be the “most likely worst case” scenario. Base this upon the greatest number of non-ambulatory patients simultaneously present in the smoke zone over the past 36 months.

Factors:

1. Private Rooms – if the smoke zone is comprised of private rooms there is a greater likelihood that a fire and its products of combustion (smoke) will be contained to the room of fire origin as staff will not need to re-enter the room to rescue additional patients. **(Award 1 Point)**
2. Room Separation – if the walls between the patient sleeping room and adjacent rooms, as well as the corridor, extend from floor slab to floor slab and are without penetrations, there is a greater likelihood that patients in rooms adjacent to the room of fire origin will not have to be relocated. **(Award 2 Points)**
3. Quick Response Sprinklers – a faster sprinkler response will significantly reduce the heat and products of combustion generated by the fire. Quick Response sprinklers will activate faster than Standard Response sprinklers. **(Award 3 Points)**
4. Smoke Detection – properly installed and maintained smoke detectors will provide early detection of a fire and will give additional time for staff response. **(Maximum of 2 Points permitted)**
  - a. System smoke detectors throughout all areas of the smoke zone **(Award 2 Points)**
  - b. System smoke detectors in patient sleeping rooms and throughout the corridor **(Award 1.5 Points)**
  - c. Single station smoke alarms in all patient sleeping rooms **(Award 1 Point)**
  - d. System smoke detectors provided only throughout the corridors **(Award 0.5 Points)**
5. Heating, Ventilation, and Air Conditioning (HVAC) Systems – an environmental air system that is fully ducted will aid in containing the products of combustion from a fire. **(Award 1 Point)**
6. Oxygen not present –The presence of oxygen in the patient sleeping rooms (piped, cylinder, or concentrator) can increase how rapidly a fire will spread. **(Award 1 Point)**

Number of Points	Minimum Number of Responders to Non-ambulatory Patients
<3	1:4
3 to 8	1:5
≥8.5	1:6