

Sentinel Event policy definition update: Fire

This Quick Safety is the first in a series of three highlighting updates to definitions in the Joint Commission's Sentinel Event (SE) policy that became effective Jan. 1, 2020. This information is provided to help accredited and certified organizations improve their surveillance and reporting of these events, and to advance safety.

Issue:

Fires in health care facilities are typically rare and small, thanks in part to fire protection and prevention measures, including sprinkler systems. However, even small fires can be extremely dangerous to the safety and well-being of patients, staff, and visitors, and can inflict costly damage to the building and equipment. Because of the risk of harm related to fires in health care organizations, in 2015 The Joint Commission included fire in its Sentinel Event (SE) policy, defining it as “*fire, flame, or unanticipated smoke, heat or flashes occurring during an episode of patient care.*”

This definition was intended to refer to fires in the OR. The OR environment is particularly at risk due to the equipment, supplies, and use of oxygen during procedures and the inability of an anesthetized patient to communicate the effects of flame or heat or self-rescue, making them particularly vulnerable.

However, upon deployment of this definition, it became apparent that health care organizations were experiencing fires or “unanticipated smoke, heat, or flashes” in other locations and care settings beyond surgical areas. This caused confusion about which of these potentially serious events should be considered “sentinel.” The Joint Commission also was receiving reports of fires in the home care setting as this is becoming a more common treatment modality in an aging population.

Research around home oxygen use and fires has highlighted that health care facilities have strict requirements regulating the use and storage of medical oxygen within these facilities, yet few regulations apply in the home environment. Finding the balance between preserving the patient's privacy and protecting safety is a multidisciplinary challenge.¹

Specifically, two recurring areas have been found to lack clarity regarding what should be reported as a Sentinel Event under the Joint Commission's 2015 definition of fire:

- 1) The former Sentinel Event definition does not include events related to clinical equipment that malfunctions while a caregiver is not present in the room. This may occur in situations where a patient is not able to self-rescue, similar to the OR environment, and the organization is responsible for ensuring the safety of the equipment.
- 2) Also, the former definition does not define the full range of the home care encounter, which is the entire length of services ordered by the physician. This is significant given the safety risks around home oxygen therapy during the length of that encounter. Patients who are on home oxygen may be bedridden or otherwise incapacitated and may not be able to escape in the event of a home fire. Those who do escape are often badly burned. It is important for health care workers to be vigilant about home oxygen safety measures not only for the safety of their patients, but also for their own safety, the safety of the families, and the safety of people in surrounding buildings.²

Prevalence of fires in health care, including home care

According to the National Fire Protection Association (NFPA), during the five-year period of 2011-2015, United States fire departments responded to an estimated average of 5,750 structural fires in health care facilities each year. These fires caused an annual average of two civilian deaths, 157 civilian injuries, and \$50.4 million in property damage. Most of these fires occurred in nursing homes (48%), followed by mental health facilities (22%), hospitals or hospice facilities (20%), and clinics or doctors' offices (11%). Approximately one-half of the fires involved either powered equipment (25%) or operating equipment (24%) as a heat source.³



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Patients who receive medical oxygen in their home also are a high risk for fire due to the acceleration of flame caused by oxygen and the presence of open flames and flammable substances in the home.⁴ Between 2002 and 2005, fire departments were called to an average of 182 home fires related to the use of medical oxygen each year. One quarter of those fires resulted in death.² Between 2003 and 2006, emergency department personnel in the U.S. treated an average of 1,190 burns per year related to the use of medical oxygen.¹ Of those, 73% were caused by smoking materials, 10% by a stove or oven, 9% by candles, 3% by a match or lighter, 2% by lighting a gas grill, 2% by sparks (for example from electric shavers or children's toys), 1% by incense, and in 1% the cause was unknown.¹

Review of data in Sentinel Event database

A review of the Joint Commission Sentinel Event database for reports categorized under the fire definition — *fire, flame, or unanticipated smoke, heat, or flashes occurring during an episode of patient care* — since the specific item of fire was added in January 2015, indicates that 103 reports have been filed encompassing all ages, from neonates to the elderly. Of the 103 self-reports, 20 are specific to home care and all include oxygen in use at the time of the fire.

The location of events reviewed under the SE definition of fire as well as some of the reported heat sources include:

- General hospital
- Operating rooms (ORs) — Lights, electrical equipment malfunction, and drapes close to heat sources.
- Patient rooms — Smoking in bed with oxygen in use and skin burns related to use of heat packs.
- Nursery — Radiant warmer use and skin burns from illuminating source for IV placements.
- Intensive care unit (ICU) — Equipment malfunction.
- Radiology/magnetic resonance imaging (MRI) suite — Unidentified electrodes still in place.
- Behavioral health unit — Arson from contraband not assessed on admission to unit.
- Ambulatory surgery center — Equipment malfunction and supplies close to heat sources.
- Behavioral health hospital — Arson from contraband not assessed on admission.
- Home care and home hospice — Smoking with oxygen in use and space heater with oxygen in use.

Note: The reporting of most sentinel events to The Joint Commission is voluntary and represents only a small proportion of actual events. Therefore, these data are not an epidemiologic data set and no conclusions should be drawn about the actual relative frequency of events or trends in events over time.

Updated Sentinel Event policy definition of fire and examples

There are two updated Sentinel Event definitions of fire; one applies to multiple health care settings, and the other applies specifically to home care settings.

- Definition for ambulatory health care, behavioral health care, critical access hospitals, hospitals, laboratories, nursing care centers, and office-based surgeries: *Fire, flame, or unanticipated smoke, heat, or flashes occurring during direct patient care caused by equipment operated and used by the [organization]. To be considered a sentinel event, equipment must be in use at the time of the event; staff do not need to be present.*
 - Note: NFPA defines fire as a rapid oxidation process, which is a chemical reaction resulting in the evolution of light and heat in varying intensities.⁵
- Definition for home care: *Fire, flame, or unanticipated smoke, heat, or flashes occurring during an episode of patient care. This includes any fire in the patient's home that is related to care or treatment ordered by a provider, including home oxygen administration, as part of the home care services, regardless of whether a home care staff member was present.*

The following list provides some examples of events that **would** be considered a sentinel event:

- A patient, on oxygen, catches fire while smoking on premises of a health care organization.
- A cooking-related fire while the patient is wearing physician-ordered oxygen therapy at home. (Patient education on safe use of oxygen should include warnings that oxygen should not be worn around an open flame.)
- A fire in the home caused by a lit candle while oxygen is in use. (Patient education on safe use of oxygen should include warnings to avoid candle use.)
- Smoking in bed while oxygen is in use resulting in fire.



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The following list provides examples of events that **would not** be considered a sentinel event. (Even though the safety event is not sentinel, it still should be reviewed internally for improvement opportunities.):

- Spark, smoke, or flame from an electronic device that is brought to the facility by the patient for his or her own use such as a tablet, phone, or game system.
- Smoke, fire, or flame at the nursing station due to burnt popcorn or malfunction of the microwave. This would not be an SE because microwave equipment is not required for patient care.
- A socket spark resulting from equipment plugged into an outlet. If there was no harm to a patient, staff should report the sparking socket internally; if the socket spark resulted in harm to a patient, it **would be** a sentinel event.
- A fire in the home while cooking or caused by malfunctioning personal equipment, home appliances, audio/visual equipment, or home ventilation systems while the patient is under home care services.

Safety actions to consider:

The Life Safety (LS) and Environment of Care (EC) chapters of the Joint Commission's accreditation manuals provides guidance to leaders and staff at health care organizations on fire-related topics. The LS chapter covers general life safety design and building construction; means of egress; fire alarm notification; and suppression of fires. The EC chapter addresses the responsibilities of managing a safe environment, such as identifying fire risks, conducting fire drills, and maintaining fire protection equipment by those who work in the health care organization.

The following specific actions can help protect patients, families, staff and visitors from the dangers of fire that could result in a safety or sentinel event related to the use of medical oxygen.

In health care facilities:

- For patients who are on physician-ordered oxygen therapy in a health care facility (i.e., not in a home care setting), educate the patient and family on the safe use of oxygen. This education should include warnings that oxygen should not be worn while smoking — including e-cigarettes.

In home care settings:

- Educate patients and families on the risks of open flames with home oxygen use as part of ongoing risk assessments. Candles and smoking — including e-cigarettes — pose a high risk to patients. There should be 10 feet of clearance from the oxygen concentrator and any flame.⁶
- When possible, implement a no-smoking policy for the home with no-smoking signs posted inside and outside the entrance to the home. Whether or not signs are posted, visitors should be educated about the risk of smoking and open flames with home oxygen use.⁶
- Consider the use of fire breaks (thermal fuses) for home oxygen therapy. While fire breaks do not prevent fires from starting, they do prevent fires from spreading. Fire breaks have been found to significantly decrease the mortality of patients using home oxygen therapy.⁷
- Conduct an initial evaluation and monthly testing of smoke detectors.⁶
- Regularly and frequently assess home oxygen equipment, paying specific attention to tubing and valves.⁶
- Store oxygen tanks upright in a rack in a dry location; do not expose the tanks to sunlight or snow and ice.⁶
- Implement a fire escape plan with the collaboration of the patient and family.⁶
- Instruct patients to:⁶
 - Keep pathways clear and not allow items to pile up near the bed or chair. These items can provide a fuel source for potential fires and hinder mobility.
 - Avoid using oil-based lotions and creams, such as petroleum jelly. These products could easily ignite and should not be used near home oxygen.
 - Allow 6 inches of clearance around the oxygen concentrator at all times.
 - Plug the oxygen concentrator directly into a wall outlet; avoid using extension cords.
 - Ground electrical equipment near the oxygen concentrator.
 - Avoid using space heaters near oxygen concentrators or flammable materials, such as bedding or papers.



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Resources:

1. Cooper BG. [Home oxygen and domestic fires](#). *Breathe (Sheff)*. 2015;11(1):4-12.
2. The Joint Commission. Home Oxygen Therapy: Complying with NPSG 15.02.01. *The Joint Commission Perspectives on Patient Safety*, 2010;10(10).
3. National Fire Protection Association. Structure Fires in Health Care Facilities. October 2017. Quincy, MA: NFPA.
4. National Fire Protection Association. [Medical Oxygen](#) webpage. 2008.
5. National Fire Protection Association. NFPA 901: *Standard Classifications for Incident Reporting and Fire Protection Data*. Quincy, MA: NFPA, 2016.
6. The Joint Commission. Guest Blogger George Mills: [10 Ways to Prevent Home Care Fires](#). *@ Home with The Joint Commission*. 2013.
7. BPR Medical Gas Control. White Paper: [Home Oxygen Fire Prevalence in England \(2013-2017\)](#). 2018.

Other resources:

The Joint Commission. Guest Bloggers Brigitte DeMarzo and Brette Tschurtz; [Heads Up: Identifying the Risks with Home Oxygen Therapy](#). *@ Home with The Joint Commission*. 2019.
Note: This is not an all-inclusive list.



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