

What's New in the Patient Safety World

April 2013

Reminder: Hand Sanitizers Are Flammable

In our January 29, 2008 Patient Safety Tip of the Week "[Thoughts on the Recent Neonatal Nursery Fire](#)" we noted that during our research on operating room fires we wondered aloud "why don't we see more fires elsewhere in hospitals?". Given that the 3 key elements of the fire "triangle" (oxygen, a heat source, and flammable fuel) are present in many parts of the hospital it is surprising we don't see more fires elsewhere.

Recently there was a very unusual hospital fire injuring a young girl in Oregon ([Budnick 2013](#)). It was suspected that an alcohol-based hand sanitizer from a wall-mounted dispenser was the key fuel in this fire. The fire began on the shirt of an 11 y.o. girl, who suffered third degree burns over multiple parts of her body.

The [report of the fire marshal](#) who investigated the fire determined through discovery and analysis of circumstantial evidence and elimination of other ignition sources that static electricity had likely been the ignition source. The girl had apparently been scuffing her feet and rubbing her bed linens in attempt to create sparks on her sheets. The fuel source was determined to be an alcohol-based hand sanitizer, which the girl had apparently spread on her bedside table and shirt. The alcohol content of the hand sanitizer was 50-70%. In addition, there was olive oil on the girl's shirt and hair. This apparently had been used to remove glue from EEG electrodes that had been used for monitoring. It was noted that some olive oil dripped on her shirt while it was combed through her hair and that the girl also wiped her hands on her shirt after touching her hair. The fire marshal tested the hypothesis regarding the oil and hand sanitizer on her shirt and the ignition source and confirmed burn patterns that matched those in the actual case. Notably, he determined that ignition source would not have been adequate to ignite just the olive oil without the presence of the hand sanitizer.

Those who are familiar with surgical fires know that the alcohol-based skin preps used in the OR are commonly identified as the fuel in surgical fires. But this is the first time we've heard of the hand sanitizers found in most hospital rooms as a potential fuel. But they certainly have the same types of volatile alcohols in high concentrations that we see in the surgical skin preps that have been associated with surgical fires. This fire did not even require an oxygen-rich environment. But static electricity is ubiquitous and the fumes from the alcohol-based hand sanitizer obviously were enough to generate this fire.

It's not clear what role the olive oil actually played here. Perhaps the hand sanitizer was only being used because of the presence of the olive oil. However, in addition to making your nursing and other staff aware of this unusual case you probably want your EEG technicians to also be aware of it.

Our prior columns on surgical fires:

Patient Safety Tips of the Week:

- December 4, 2007 “[Surgical Fires](#)”
- April 29, 2008 “[ASA Practice Advisory on Operating Room Fires](#)”
- December 13, 2011 “[Surgical Fires Again](#)”
- April 24, 2012 “[Fire Hazard of Skin Preps Oxygen](#)”

What's New in the Patient Safety World columns:

- November 2009 “[ECRI: Update to Surgical Fire Prevention](#)”
- January 2011 “[Surgical Fires Not Just in High-Risk Cases](#)”
- March 2011 “[APSF Fire Safety Video](#)”
- November 2011 “[FDA Initiative on Preventing Surgical Fires](#)”

References:

Budnick N. Portland hospital fire investigated; hand sanitizer link suspected in girl's injuries. The Oregonian February 18, 2013

http://www.oregonlive.com/health/index.ssf/2013/02/portland_hospital_fire_investi.html

State of Oregon. Office of the Fire Marshal. Fire and Life Safety Supplemental Investigation Report. February 5, 2013

http://media.oregonlive.com/health_impact/other/OHSU%20Feb%2002%20Report%20Final.pdf



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