

# What's New in the Patient Safety World

July 2018

## FDA on Surgical Fires

The FDA has just released a safety communication regarding surgical fires ([FDA 2018](#)). Though it does not contain any new revelations, it provides good recommendations to reduce surgical fires in a concise, practical manner.

It begins with a discussion of the fire triad and appropriately emphasizes the role of supplemental oxygen. As we have emphasized in so many of our own columns on surgical fires, it stresses that an open oxygen delivery system (eg. nasal cannula or mask) presents a greater risk of fire than a closed delivery system (laryngeal mask or endotracheal tube). It also notes the importance of draping techniques that avoid accumulation of oxygen in the surgical field.

We've discussed that surgical fires have in recent years been occurring more often in relatively "minor" procedures (eg. temporal artery biopsies, plastic procedures or removal of skin lesions on the head/neck). In such cases there may be no need for supplemental oxygen, yet supplemental oxygen is sometimes routinely provided. In others, use of supplemental oxygen is not anticipated but something occurs during the procedure that leads to its use. In both cases, it is critical that there be clear communication and coordination between the anesthesiologist and surgeon regarding cessation of oxygen administration when a heat source is about to be used.

The FDA recommends that health care professionals and staff who perform surgical procedures be trained in practices to reduce surgical fires. That training should include factors that increase the risk of surgical fires, how to manage fires that do occur, periodic fire drills, how to use carbon dioxide (CO<sub>2</sub>) fire extinguishers near or on patients, and evacuation procedures.

The FDA recommends a fire risk assessment at the beginning of each surgical procedure. We recommend that a fire risk assessment be done both during the presurgical "huddle" and as part of the surgical "timeout". We continue to promote use of the [SF VAMC Surgical Fire Risk Assessment Protocol](#), which can be embedded into your safe surgery checklist.

The FDA emphasizes the importance of communication, not only between the anesthesia professional delivering medical gases and the surgeon controlling the ignition source, but also amongst the operating room staff applying skin preparation agents and drapes.

The advisory has good recommendations regarding surgical suite items that may serve as fuel sources. It emphasizes the need to allow adequate drying time and prevent alcohol-based antiseptics from pooling during skin preparation and assess for pooling or other moisture to ensure dry conditions prior to draping. We're glad to see they included one of our favorites to avoid in head/neck cases, **the 26 ml applicator**, in their recommendations (see our January 10, 2017 Patient Safety Tip of the Week "[The 26-ml Applicator Strikes Again!](#)"). But the FDA also cautions us to be aware of other surgical suite items that may serve as a fuel source, including products that may trap oxygen, such as surgical drapes, towels, sponges, and gauze – even those which claim to be "flame-resistant." They also mention patient-related sources such as hair and gastrointestinal gases. We've deferred including an article about a surgical fire related to flatus but, since the FDA mentions it, you can read it for yourselves ([The Asahi Shimbun 2016](#))!

The section about devices that may serve as an ignition source is particularly good. First, it advises that alternatives be considered to using an ignition source for surgery of the head, neck, and upper chest if high concentrations of supplemental oxygen (greater than 30 percent) are being delivered. As above, if an ignition source must be used, be aware that it is safer to do so after allowing time for the oxygen concentration in the room to decrease. It may take several minutes for a reduction of oxygen concentration in the area even after stopping the gas or lowering its concentration.

It reminds us to inspect all instruments for evidence of insulation failure (device, wires, and connections) prior to use (and do not use if any defects are found). And it reminds us that, in addition to serving as an ignition source, monopolar energy use can directly result in unintended patient burns from capacitive coupling and intra-operative insulation failure. It recommends the following if a monopolar electrosurgical unit (ESU) is used:

- Do not activate when near or in contact with other instruments.
- Use a return electrode monitoring system.
- Tips of cautery instruments should be kept clean and free of char and tissue.

When not in use, ignition sources, such as ESUs, electrocautery devices, fiber-optic illumination light sources and lasers should be placed in a designated area away from the patient (e.g., in a holster or a safety cover) and **not** directly on the patient or surgical drapes. It also reminds us about other less common potential ignition sources, such as drills and burrs, argon beam coagulators, and fiber-optic illuminators.

Lastly, it describes what to do if a fire occurs:

- Stop the main source of ignition. Turn off the flow of flammable gas; unplug electrical devices that may be involved.
- Extinguish the fire – use fire blankets, water or saline, and a CO2 extinguisher if the fire persists.
- Remove all drapes and burning materials and assess for evidence of smoldering materials.
- For airway fires, disconnect the patient from the breathing circuit, and remove the tracheal tube.
- Move the patient to a safe environment. Reestablish the airway to resume respiratory care.

- Review the fire scene and remove all possible sources of flammable materials.

Surgical fires are devastating and should never occur. Using the precautions noted above and in our multiple columns on surgical fires listed below, you should be able to prevent them. But you must ensure that all staff are educated about surgical fires and do appropriate drills so that everyone knows their role in the unfortunate event that one should occur.

### **Our prior columns on surgical fires:**

- December 4, 2007 “[Surgical Fires](#)”
- April 29, 2008 “[ASA Practice Advisory on Operating Room Fires](#)”
- 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](#)”
- December 13, 2011 “[Surgical Fires Again](#)”
- April 24, 2012 “[Fire Hazard of Skin Preps Oxygen](#)”
- April 2013 “[Reminder: Hand Sanitizers Are Flammable](#)”
- June 25, 2013 “[Update on Surgical Fires](#)”
- October 1, 2013 “[Fuels and Oxygen in OR Fires](#)”
- August 12, 2014 “[Surgical Fires Back in the News](#)”
- December 16, 2014 “[More on Each Element of the Surgical Fire Triad](#)”
- December 2015 “[Unique Ignition Sources in Surgical/OR Fires](#)”
- January 10, 2017 “[The 26-ml Applicator Strikes Again!](#)”
- January 9, 2018 “[More on Fire Risk from Surgical Preps](#)”
- June 2018 “[ISMP on Fire Risk from Skin Preps](#)”

### **References:**

FDA (US Food & Drug Administration). Recommendations to Reduce Surgical Fires and Related Patient Injury: FDA Safety Communication. FDA Safety Communication 2018; May 29, 2018

[https://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/ucm608637.htm?utm\\_campaign=Recommendations%20to%20Reduce%20Surgical%20Fires%20and%20Related%20Patient%20Injury%3A%20FDA%20Safety%20Communication&utm\\_medium=email&utm\\_source=Eloqua&elqTrackId=CE6387A047AA7CBC5D816C55DCC11CC4&elq=a16f88ad9d9c4975a580da247c546926&elqaid=3738&elqat=1&elqCampaignId=2878](https://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/ucm608637.htm?utm_campaign=Recommendations%20to%20Reduce%20Surgical%20Fires%20and%20Related%20Patient%20Injury%3A%20FDA%20Safety%20Communication&utm_medium=email&utm_source=Eloqua&elqTrackId=CE6387A047AA7CBC5D816C55DCC11CC4&elq=a16f88ad9d9c4975a580da247c546926&elqaid=3738&elqat=1&elqCampaignId=2878)

The Asahi Shimbun. Fart blamed for fire during surgery; patient seriously burned. The Asahi Shimbun 2016; October 30, 2016

<http://www.asahi.com/ajw/articles/AJ201610300030.html>

SF VAMC Surgical Fire Risk Assessment Protocol

[https://www.patientsafety.va.gov/docs/TIPS/TIPS\\_NovDec10.pdf#page=3](https://www.patientsafety.va.gov/docs/TIPS/TIPS_NovDec10.pdf#page=3)

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