

Patient Safety Tip of the Week

June 5, 2018

Pennsylvania Patient Safety Authority on Iatrogenic Burns

Our past columns on iatrogenic burns have had a heavy focus on surgery-related things like burns related to instruments that had been flash sterilized and inadequately cooled prior to use or related to use of electrocautery devices.

But the Pennsylvania Patient Safety Authority recently published an excellent advisory focusing on iatrogenic burns unrelated to surgery ([Field 2018](#)). Cynthia Field analyzed burn events reported to the Pennsylvania Patient Safety Reporting System (PA-PSRS) in 2016 and found that over 60% occurred in non-surgical settings.

To our surprise, the most frequent thermal burns involved dietary spills of heated drinks or food (53 of their 107 non-surgical iatrogenic burns or 49.5%). Examples included spilled hot soup, coffee, and tea but microwaved foods were also mentioned.

Heating devices were the second most frequent culprits (30.8%). These included warm compresses and hot packs and powered devices such as circulating water or air blankets.

The third most frequent items associated with non-surgical iatrogenic burns related to MRI imaging. The report did not break down the nature of burns associated with MRI but we've discussed these before. Any ferromagnetic device can overheat when exposed to the magnetic forces of the MRI unit. That is why patients are questioned and examined for presence of such devices. Probably the most overlooked ones are transdermal drug patches that contain metal (see our March 2009 What's New in the Patient Safety World column "[Risk of Burns during MRI Scans from Transdermal Drug Patches](#)"). Others have involved wires on monitoring devices, particularly when coiled or looped.

And burns were also seen from defibrillator paddles, chemicals (irritant or caustic substances), and various electrodes or monitoring devices. There were also 6 cases related to ultraviolet light therapy and a smattering of other causes.

Field highlights our frequent point that burns are a function of not only temperature but also duration of exposure. The classic example is the flash sterilized tool that is warm to the touch, but when placed on the drapes over a patient's abdomen in the OR, leads to a dermal burn. And she also notes our warnings that patients with impaired sensation are especially vulnerable to iatrogenic burns and those with impaired ability to communicate

(eg. aphasia, dementia, etc.) may not be able to convey when they are in pain from an impending burn.

So we'll add some of Field's recommendations to the list from our September 5, 2017 Patient Safety Tip of the Week "[Another Iatrogenic Burn](#)" of things your organization should you do to minimize the risks of iatrogenic burns:

- Do an inventory or survey in your organization to see if you use "warm compresses" or heat therapy (if you have computerized order entry you might be able to find these orders. Otherwise you'll have to just survey nurses and doctors to see if they are ever used at your organization).
- If you find warm compresses are being used, make sure there is a good clinical evidence base to support their use for that particular indication.
- Establish burn risk assessments
It's not likely to be good use of time doing universal burn risk assessment on admission. Rather, you need to identify in which patients and **when** burn risk assessments should be done. Obviously that would be in any patient in whom use of heat is contemplated. The assessment would include whether the patient has the ability to perceive pain and temperature in the site(s) where heat is to be applied.
- In your neonatal units, make sure you have protocols in place for assessment of temperature of any object that may come into contact with the skin of an infant and any other heat sources (eg. lights) that may be close to the infant.
- If you apply heat, have protocols that require assessment of temperature and specify intervals at which skin assessment must be done.
- In the OR, beware of the burn danger any time a "flashed" piece of equipment is used and have a system to ensure such instruments have adequately cooled before use.
- Better yet, optimize your equipment/instrument inventory and practices so that you don't every need to "flash" sterilize items.
- In the MRI suite, your protocols must include steps to identify any wires or cables that cannot be removed and ensure that there is minimal "coiling" or "looping" of these. Also make sure the patient is not wearing any transdermal drug patches that might contain metal or ferromagnetic components. (But also don't forget after the scan is completed to restore the cables or drug patches.)
- See the recommendations in our December 23, 2014 Patient Safety Tip of the Week "[Iatrogenic Burns in the News Again](#)" regarding use of warming devices.
- See the recommendations in our October 5, 2010 Patient Safety Tip of the Week "[More Iatrogenic Burns](#)" regarding use of dental handpieces.
- Heed the advice in our September 5, 2017 Patient Safety Tip of the Week "[Another Iatrogenic Burn](#)" regarding steps to minimize the risk of burns related to electrocautery devices and operating microscopes.

And Field's recommendations:

- Maintain hot tap water at appropriate temperatures to prevent scald burns.
- Maintain warming and solution cabinets at recommended temperatures.
- Implement policies for use of instant hot water dispensers and microwave ovens, based on the patient population and specifications of the devices.

- Implement policies for serving food and beverages at safe temperatures.
- Provide tableware designed to prevent spillage.
- Educate dietary services staff on the safe preparation and delivery of heated beverages and food.

The PPSA Advisory by Field is an important contribution to the relatively scant literature on iatrogenic burns in healthcare, It especially draws attention to the risks of food and beverages that have largely been ignored in the past. We obviously need to pay more attention not only to the temperature of foods and beverages but also to the likelihood that they might be spilled onto the patient due to patient-related factors or environmental factors.

Our prior columns on iatrogenic burns:

- March 2009 “[Risk of Burns during MRI Scans from Transdermal Drug Patches](#)”
- June 1, 2010 “[Iatrogenic Burns](#)”
- October 5, 2010 “[More Iatrogenic Burns](#)”
- December 23, 2014 “[Iatrogenic Burns in the News Again](#)”
- March 2015 “[Another Source of Iatrogenic Burns](#)”
- September 5, 2017 “[Another Iatrogenic Burn](#)”

References:

Field C. Hot Topic: Nonsurgical, Healthcare-Associated Burn Injuries. Pa Patient Saf Advis 2018; 15(1).

http://patientsafety.pa.gov/ADVISORIES/Pages/201803_BurnInjuries.aspx



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