Surgical Fires

1. Why is this so important?

2. What has changed? What is CMS doing now?

3. Describe how to suppress various fires within the OR (including in and on a patient).

4. Use the building (e.g., smoke compartments, sprinkler protection, rated doors) to protect your patients.

Prevention, Suppression and Evacuation

Importance of Preparedness

Bowl of alcohol mistaken for saline, Connecticut

During cyst removal, Florida

ET Tube burns in patients throat, Minnesota

Smoking and sparks from machine interrupts surgery, Massachusetts
RPA CASE STUDY

- 64 year old male patient
- Bilateral temporal artery biopsy
- Right temporal biopsy completed without incident

LEFT TEMPORAL BIOPSY

- Turned table & put mask on patient
- Prepped again with 26 mL applicator alcohol-based prep solution
- Patient was re-draped
- Incision made with instrument
- Electrocautery activated...
THE ISSUES

- No Fire Risk Assessment
- Open delivery oxygen (100%) & use of electrocautery
- Use of alcohol-based prep solution:
  - Large applicator on head / neck
  - Inadequate total dry time for hairy area
- Poor Communication
- Fire Response

Surgical Fires...

Main causes remain...

- Open delivery oxygen
- Heat devices
- Alcohol-based Preps
- Lack of communication

Preventing Surgical Fires:

“Surgical fires can usually be prevented by educating staff about risk and prevention strategies. Such education should be part of all undergraduate medical, nursing, and other allied health profession education.”
NFPA 99 – Chapter 15

Fire Prevention Procedures
Hazard Assessment
Germicides and Antiseptics
Emergency Procedures
Orientation and Training
Prevention of OR fires includes:

- Minimizing or avoiding an oxidizer-enriched atmosphere near the surgical site
- Safely managing ignition sources
- Safely managing fuels
The affects of oxygen...

Oxygen - Risk Reduction Strategies

- What does your hospital do to educate anesthesia providers on their contribution to the fire triangle?
Critical Heat Conversation

- Oxygen Enrichment Atmospheres
- Communication among surgeons and anesthesia providers
- What does your hospital do to educate surgeons on their contribution to the fire triangle?

Germicides and Antiseptics

15.13.3.6 – A preoperative “time out” period shall be conducted prior to the initiation of any surgical procedure using flammable liquid germicides or antiseptics to verify the following:
  - Application site of flammable germicide or antiseptic is dry prior to draping
  - Pooling of solution has not occurred or has been corrected
  - Any solution-soaked material has been removed from the operating room prior to draping and use of electrosurgery, cautery or lasers
Allow alcohol to dry

“Do not apply drapes until all flammable preps have fully dried; soak up spilled or pooled agent.”

- ECRI

Fire Risk Assessment Form

Emergency Procedures

15.13.3.9.4 "Emergency procedures shall be established for extinguishing drapery, clothing, or equipment fires."
Surgical Site / Skin / Hair Sponges Fire / Oral Cavity

- Most Common!
- Scrub Tech suppresses most of the time
- Don’t forget to CHECK
- Fire procedure should include language on how to deal with this type of fire

Drape Fires

Fire Extinguishers

- What type of extinguisher do you have in your OR?
- Last resort for fire on a patient
Roles and Responsibilities

Take care of the room  Maintain the Airway

Roles and Responsibility

Assist and help move table

Final decision maker

Fire Response Teams

Are your responders ready to handle a surgical fire?

What if evacuation of 1 or more ORs have to take place?
Charge Nurse – Make Decisions

Must know:
- When to evacuate
- Where to evacuate
- Who is first
- Who is last
- Accountability of staff
- Work with arriving Fire Department

When / When Not to Evacuate?

Fire Still Burning

Fire is Out

Most Important Steps

- Shut door to fire room
- Does your hospital have a policy on who shuts off the gases to the room and when?
- Do staff know where the shut-offs are?
Orientation and Training

15.13.3.10.3 – “Fire exit drills shall be conducted annually or more frequently as determined by the applicable building code.”

Orientation and Training

15.13.3.10.1 – “New operating room/surgical suite personnel, including physicians and surgeons shall be taught….”

The Take Away...

• Fire prevention procedures shall be established
  • Include fire risk assessment
• Fire procedures shall be developed which:
  • Compliment the building fire protection features
  • Guide staff on various fires they will encounter
  • Provide clear roles and responsibilities for all staff
• Conduct annual surgical fire safety training for all members of the surgical team
Evidence-based References

1. NFPA® 99 – Chapter 15
2. ECRI Institute
3. APSF Fire Prevention Algorithm (updated March 2013)
5. AORN
   - Fire Safety Tool Kit
   - Surgical Fire Prevention and Extinguishment
6. American Society of Anesthesiologists
   - Patient Safety Highlights 2014 - Operating Room Fire Safety
   - Practice Advisory for the Prevention and Management of Operating Room Fires

QUESTIONS?
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