FIRE PREVENTION IN THE OPERATING ROOM

Updated January 2020

OBJECTIVES

After completing this activity, the participant will be able to:

1. Identify the locations where a fire may occur.
2. Identify the three components of the fire triangle.
3. Identify fire prevention interventions.
4. Describe the fire risk assessment process at Methodist Hospital.

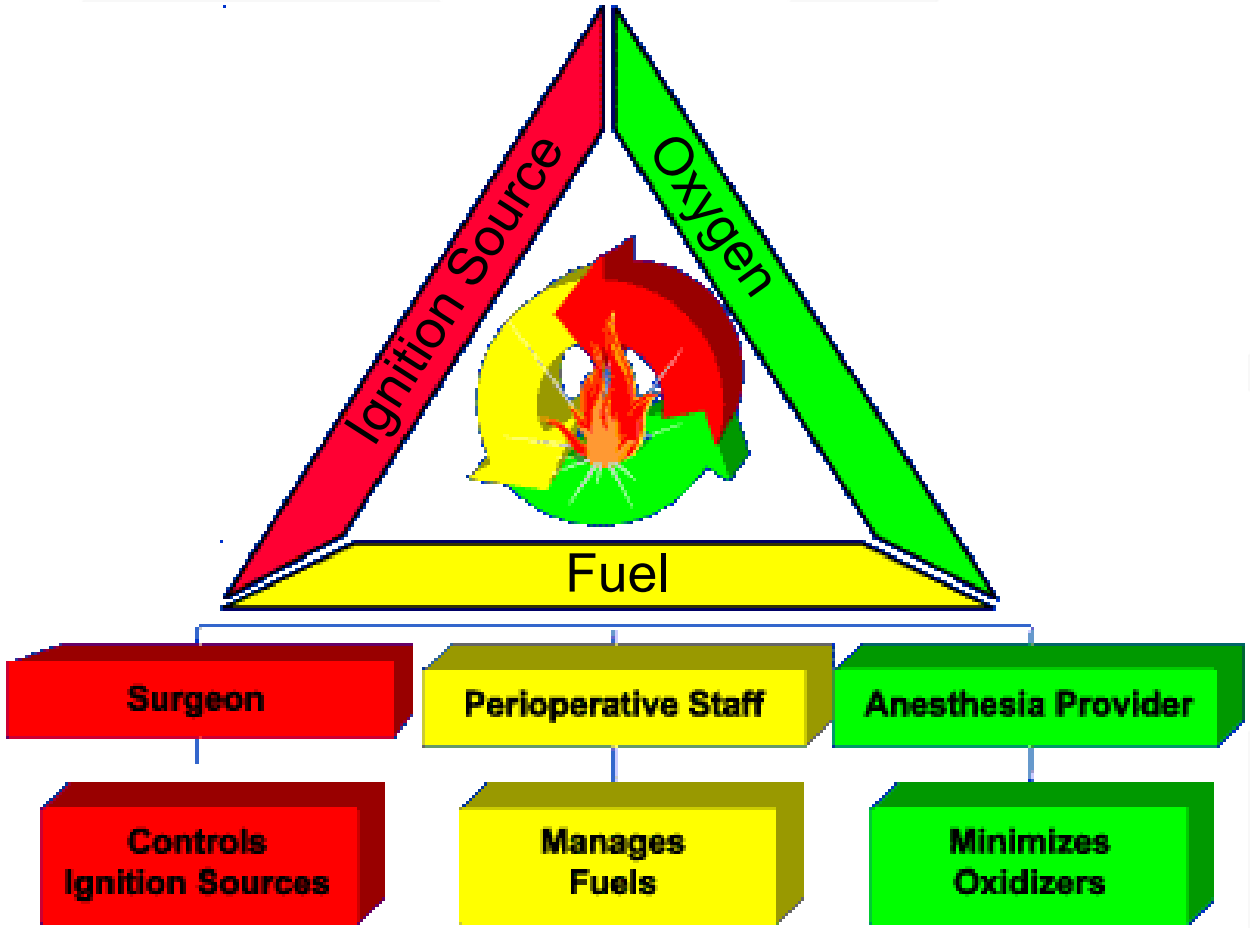
IT IS IMPORTANT TO UNDERSTAND

OR fires are 100%

PREVENTABLE

THE FIRE TRIANGLE IN THE OR

Three elements must come together for a fire to occur:



FUEL SOURCES

The elements of the Fire Triangle:

- Alcohol Prep
- Linen, Drapes, Sponges, Gowns, Tapes
- Plastic Equipment Drapes & Anesthesia Equipment
- OR Table Pads
- Patient's tissues – Adipose, Skin, Hair
- Solutions, Ointments, Bone Cement
- Patient's hair – especially after prepping with alcohol
- Surgical caps worn by the patient

USE OF ALCOHOL BASED PREP SOLUTIONS

Control the alcohol when prepping to minimize dripping & pooling. Use correct volume of prep solution.

- Use tuck towels to soak up the alcohol if there is a drip from prepped area. Remove tuck towels after prep complete.
- Allow preps containing alcohol to dry & vapors to dissipate before draping and using cautery.
- **THIS PROCESS TAKES A MINIMUM OF THREE (3) MINUTES:**

When prepping in or near hair (e.g., chest, head, armpits, back, etc.), allow the prep to dry. Manufacturer states this may take up to one hour (consider clipping hair).

3 minute timer…

PATIENT DRAPES

- Two clips will be used at the top of the drapes to maximize open surface area
- Incise drapes should be used to minimize the chance of leaking oxygen to the surgical site
- Water based lubricant should be placed on any body hair within the drape fenestration and along the patient's hairline if the drape is raised above the patient's head

ALL PREPPING MUST OCCUR PRIOR TO DRAPING! DO NOT do a final chloraprep swipe over the incisional area.

OXYGEN PLUS OTHER GASSES

General anesthesia should generally be the default approach above the xiphoid process

If open delivery is needed, be vigilant and committed to constant and open communication regarding oxygen concentration levels and the use of ignition sources throughout the procedure

Anesthesia should start oxygen at 30% and increase as necessary rather than starting at 100% and decreasing as medically appropriate

Be mindful of emissions from GI Tract, Rectum and Perineal area

IGNITION SOURCES

- Electrosurgical unit (ESU)
- Argon beam coagulator
- Power tools (eg, drills, burrs)
- Laser
- Fiber-optic light
- Defibrillator
- Electrical equipment

IGNITION SOURCES & OPEN OXYGEN

- Physician should announce the initial intention of activating the device
- Anesthesia provider can confirm that oxygen concentration is low (≤30% preferred)
- Air/oxygen blenders to be used for open-source oxygen
- **ONE MINUTE** should be given to reduce the concentration of oxygen prior to cautery use
- **COMMUNICATION** between team members is vital

Fires Can Occur Anywhere Else on or in the Body or in the OR suite

- Perineal area
- Anywhere - Alcohol prep
- Abdomen - Cauterizing – open or laparoscopically
- Drapes ignited by light cords or cautery pencils
- Surgeon’s fiberoptic light cords coming unattached from head lamp
- Cautery ground pads catching on fire

TIMEOUTS

- Leader should command the attention of all parties
- Background noise and music should be minimized
- All staff members must fully stop and commit full attention
- Staff members should contribute as per their roles and responsibilities
- Fire risk assessment

TIMEOUTS

- **Introductions as needed**
- **Patient Name**
- **Procedure**
- **Site/Side Marked**
- **Allergies**

- **Fire Risk Assessment**
- **Antibiotic Given**
- **Equipment/Implants**
- **Images available**
- **Any Patient Specific Concerns?**

Fire Risk Assessment: Time Out for Patient Safety

1. Is Oxygen in Use?

- *Surgeon & Anesthesia:* Discuss if secured airway or open oxygen source and outline approach for providing supplemental oxygen during open delivery (e.g., starting at 30%; discontinue prior to use of heat source)

2. Procedure or Surgical Site is Above the Xyphoid?

- *Surgeon:* Identify if an alcohol or non-alcohol prep was used
- *Scrub Tech:* Announce the dry-time of prep, and how pooling was avoided
- *Circulating Nurse:* Confirm that alcohol soaked materials were removed from sterile field

3. Ignition Source in Use (ESU, Laser, Fiberoptic Cord)?

- *Surgeon:* Discuss any heat or ignition sources on the field and the plan to manage them throughout the case (e.g., ESU holster, saline in the field, laser on stand-by) Announce the use of a heat source

If any TWO of these are YES, the patient is High Risk

Additional Strategies:

- *Anesthesia & Scrub Tech:* Discuss whether an incise drape is being used and confirm that the drape is raised above the patient's head using two clip points

FIRE RESPONSE PROCESS

For ALL FIRES

- Activate the alarm system
- Extinguish fire on patient with available irrigation, pull drapes off of patient then extinguish burning material
- Manage patient airway
- Communicate with personnel in the surrounding areas about the presence of fire
- Delegate responsibilities for non-direct caregivers
- Assign a staff member to help with crowd control and to help with directing people
- Show the fire response team or fire department personnel to the location

FOLLOW R.A.C.E. PROTOCOL

- **R**escue those in danger
- **A**lert
  - Shout “Code Red”
  - Pull alarm
  - Call 6911
  - Off campus call 911
- **C**onfine the fire by closing doors
- **E**xtinguish or evacuate

P.A.S.S.

Know the location of all fire extinguishers and pull stations

- **P**ull Pin
- **A**im Low at Base of Fire
- **S**queeze Trigger
- **S**weep from Side to Side

APSF FIRE SAFETY FILM

Before proceeding to the final step of this course on the next slide, please click the link below to watch the operating room fire safety film produced by the Anesthesia Patient Safety Foundation.

APSF Fire Safety Film

COURSE CONFIRMATION

As the final step of this course, please fill out the short form at the link below to alert the Medical Staff Office that you have reviewed the education on operating room fire safety:

Course confirmation

REFERENCES

Centers for Medicare & Medicaid Services. *State Operations Manual. Appendix A—Survey Protocol, Regulations and Interpretive Guidelines for Hospitals.* http://cms.gov/manuals/Downloads/som107ap_a_hospitals.pdf. Accessed October 28, 2018.

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Guideline for a safe environment of care. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc.

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