



Directions: Once CE module is open, the eight page educational module is printer friendly. The post test is on pages 7 & 8 with detailed instructions located in the post test section. Thank you for your participation in this very important safety matter.

Fire Safety-Preventing an O.R. Fire Training Effort

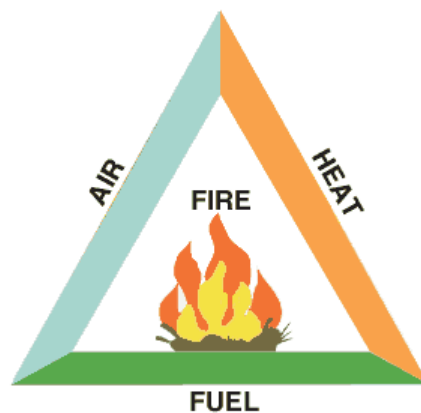
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After reading the computer-based training module, participants will be able to:

- Identify the components of the fire triangle
- Identify the action to take if a fire occurs at any of the surgical centers
- Identify proper handling of electrosurgical cautery
- Identify appropriate fire safety steps to take when performing head and neck Surgery

REMEMBER: PREVENTION IS THE ONLY EFFECTIVE CURE!

Fire Triangle



Continuing Education **MCDS, SCSC, NSC, TW**
Fire Safety-Preventing an O.R. Fire Training Effort
Page 2.

Understanding the “**fire triangle**” is the most basic concept in fire prevention and control. **In order for any fire to occur, three critical elements must be present:**

- **A fuel or combustible material.**
- **An ignition or heat source.**
- **Oxygen in sufficient quantities to support combustion.**

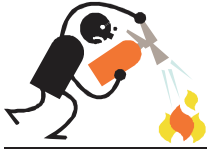
When all three of these elements come together, combustion is the result. If only one of these elements is removed from contact with the other two, the threat of fire can be minimized. If oxygen, heat or the fuel supply can be removed, there is minimal risk of fire.

R.A.C.E – Understand and know what R.A.C.E. stands for.



- **Rescue** – all persons in danger.
- **Alarm** –pull the nearest Fire Alarm Box, announce location of fire over facility paging system, notify receptionist of fire’s location, receptionist will call 911.
- **Code Red Fire (Provide location)**
- **Contain** –note location of fire extinguishers located on fire evacuation maps located throughout the facility. Know location, type and use of extinguishers. Close all doors and turn on all lights upon exiting building.
- **Evacuate**-all patients, staff and visitors from facility via the fire evacuation exits located on maps located throughout the facility.

Continuing Education **MCDS, SCSC, NSC, TW**
Fire Safety-Preventing an O.R. Fire Training Effort
Page 3.



Stay calm, stay organized, and communicate with other staff.

Never walk through a fire door during a Code Red.



Remember an ABC Fire Extinguisher extinguishes all types fires.

This is the type of extinguisher available to use at all surgery centers.

- “A” Trash, Wood & Paper
- “B” Liquids & Grease
- “C” Electrical



P.A.S.S

- Pull the pin between the handles.
- Aim the nozzle at the base of the fire. Stand 8 to 10 feet away and aim 1 foot in front of the base of fire.
- Squeeze the handle. Squeeze slowly but firmly.
- Sweep from side to side.

Continuing Education **MCDS, SCSC, NSC, TW**
Fire Safety-Preventing an O.R. Fire Training Effort
Page 4.

O. R. Environment

In normal situations we are usually safe when the three elements are kept apart. In the O.R., factors come into play that increase the risk of the three elements coming into contact:

- O.R. environment contains combustible materials including gauze sponges, towels, drapes and plastic materials.
- The use of high-energy or ignition sources is common, including lasers, fiberoptic light sources, ESUs and other electrical equipment such as endoscopes, monitors and hyperthermia units.
- There is an oxygen-enriched environment due to the inhalation anesthesia used. In many instances of regional or local anesthesia, the patient receives supplemental oxygen to counteract the respiratory depressant effects of sedation. Nitrous oxide, which is frequently used as an adjunct to anesthesia, will support combustion just as readily as oxygen.
- The O.R. team must be aware that all three elements (**fuel, ignition sources, and oxygen**) are present in the O.R. every time there is a procedure. Every precaution must be taken to ensure that the three elements are kept apart.

Head and Neck Procedures (**Also true for chest procedures, O₂ may pool in the open body cavity**)

- Attention must be given to prepping, draping and positioning the patient, as patients with their heads draped are more susceptible to fire because supplemental oxygen can accumulate under the drapes.
- To decrease the risk of fire, prep solutions must be given adequate time to dry (2-3 minutes) especially if there is alcohol in the solution.
- Draping and positioning should be performed in a manner that does not allow pooling of oxygen under the drapes.
- Effort should be made to use no more oxygen than is necessary to maintain adequate oxygen levels. If possible, provide room air or less than or equal to 30% oxygen, depending on the patient needs. Oxygen combined with air decreases the risk of fire.
- If facial hair is exposed, coat the hair with water-soluble surgical lubricating jelly to make the hair nonflammable.
- Moisten sponges, gauze, and pledgets to render them ignition resistant.

Continuing Education **MCDS, SCSC, NSC, TW**
Fire Safety-Preventing an O.R. Fire Training Effort
Page 5.

Safety Tip: Be proactive, during all procedures, have sterile water or saline on the back table prior to ESU, argon beam coagulator (ABC) or lasers being used.

Safety Measures (electrosurgery, electrocautery, or laser surgery)

- Stop supplemental O2 at least 1 minute before and during use of the unit, if possible. Surgical team communication is essential.
- Activate the unit only when the active tip is in view, especially if looking through the microscope.
- Deactivate the unit before the tip leaves the surgical site.
- Place electrosurgical electrodes in a holster or in another location off the patient when not in active use.
- Place lasers in standby mode when not in active use.
- Do not place rubber catheter sleeves over electrosurgical electrodes.

Fiberoptic Light Sources

Fiberoptic light sources can start fires.

- Complete all cable connections before activating the source.
- Place the light source in standby mode, or turn the unit off when disconnecting cables.
- Never leave a light cord that is still luminating on top of the patient drapes.
- Surgical drapes are fire retardant, but they are still flammable.

Fire Safety Steps in the O.R. or Procedural areas (**should be taken in order**)

- **Immediately smother/put out the fire (when safe to do so).**
- **Remove the burning material from contacting the patient (drapes, ETT, etc.).**
- **Have Anesthesiologist stop the flow of gases.**
- **Set off the fire alarm (pull station) announce location of fire.**
- **Evacuate the patient, if necessary.**
- **Save any material/devices for follow-up investigation.**

Continuing Education **MCDS, SCSC, NSC, TW**
Fire Safety-Preventing an O.R. Fire Training Effort
Page 6.

References

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Bruner, John, M.R., "Fire in the Operating Room." American Society of Anesthesiologists. 22.26.

Emergency Care Research Institute (1980). "Fires During Surgery of the Head and Neck Area." Health Devices. ECRI Publication.

Mathias, Judith M. (1995) "A Brief Historical Review of Non-Anesthetic Causes of Fires and Explosions I in the Operating Room." British Journal of Anesthesia, 73, 847-856.

Post Test

The post test found on pages 7 and 8 will evaluate your understanding of the fire prevention concepts.

Please write your name and date on pages 7 & 8, and circle your home base/surgery center.

Remember to return your completed post test to your manager or to the clinical educator. It will be graded and placed in your educational file.

Thank you in advance for your time and cooperation.

The Clinical Education Department

Continuing Education MCDS, SCSC, NSC, TW
Fire Safety-Preventing an O.R. Fire Post Test
Page 7.

Name: _____ Date: _____

1. The R in RACE, stands for run.
True False
2. The 3 key elements necessary for fire are fuel, an ignition or heat source, and oxygen.
True False
3. All oxygen flowing to the patient should be shut off during an OR fire. The patient would be ventilated by an ambu bag using ambient air, not oxygen.
True False
4. When a fire in the OR is announced, all staff members not involved in patient care should report to the clinical manager.
True False
5. Oxidizers include O₂, nitrous oxide, flammable prep solution such as Duraprep and alcohol.
True False
6. An ABC fire extinguisher extinguishes all types of fires and is available for use at all of our surgery centers.
True False

Continuing Education MCDS, SCSC, NSC, TW
Fire Safety-Preventing an O.R. Fire Post Test
Page 8.

Name: _____ Date: _____

7. When using a fire extinguisher, pull the pin, aim the nozzle at the base of the fire, Standing 8-10 feet away, aiming 1 foot in front of the base of the fire.

True False

8. Patients with their heads draped are more susceptible to fire because O2 can accumulate under the drape.

True False

9. Fiberoptic light sources can start fires.

True False

10. The safest place for an ESU cautery pencil when not in use is to place it upon the surgical drape.

True False