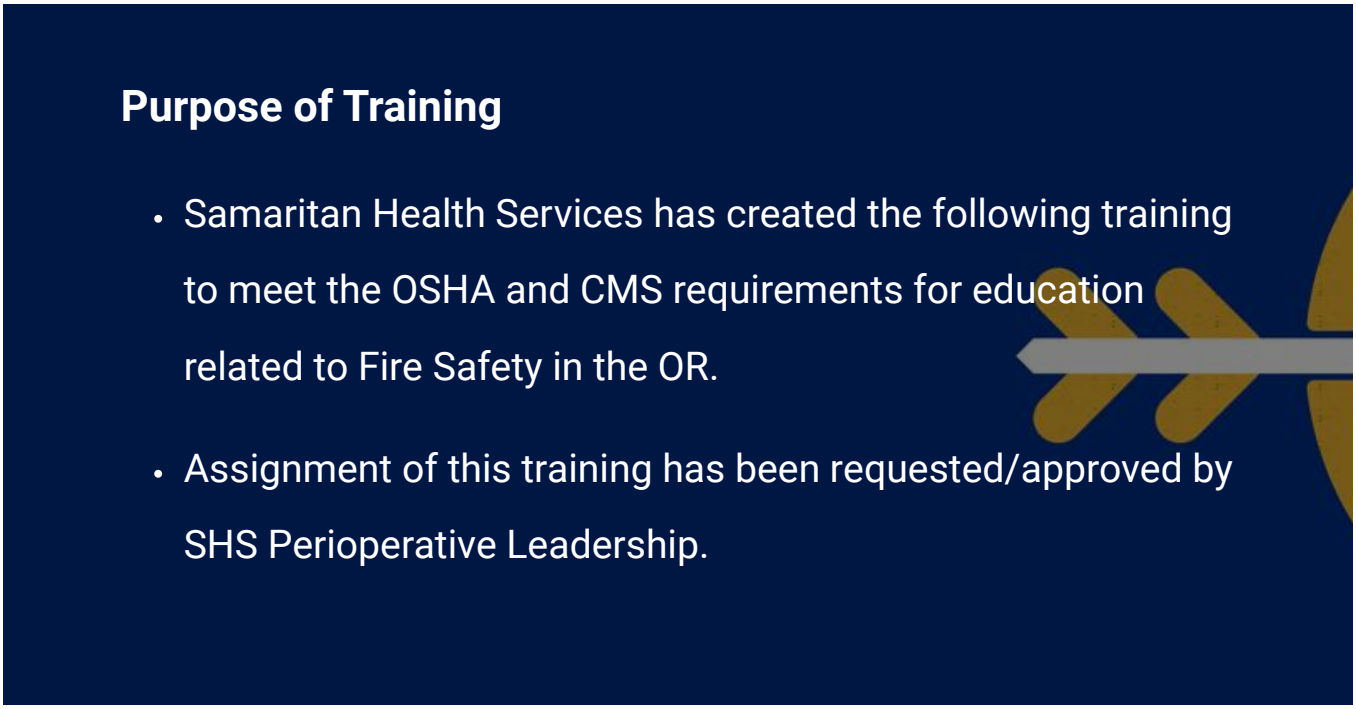
Fire Safety in OR and Periop

Samaritan Health Services

- Introduction
- Outcomes
- Pretest
- Fire Prevention
- Fire Prevention Assessment Tool
- Appropriate Fire Extinguishers
- Course Completion
- References

Introduction



Course Requirements

There are two options to completing this module.

Option 1: Pretest
If you opt to take the pretest and pass (you must answer **ALL** questions correctly to pass), you will be taken to the end of the module where you will receive credit for completing the course.
If you do not pass the pretest, you will be routed to the learning module for completion.

TAKE THE PRETEST

Option 2: Complete the Module

If you opt to review the learning module, your test questions will be at the end of the module. You must answer **ALL** the questions correctly to pass the training.

PROCEED TO MODULE

Questions/Concerns

For questions and concerns related to:

- Reason for assignment, course content, or quiz questions/answers, contact Corrie Phillips at corriep@samhealth.org.
- Technical issues, including courses not progressing or grading correctly, contact eLearning at elearning@samhealth.org.

Outcomes

By the end of this course, learners will be able to:

- Recall the three parts of the fire triangle
- Identify elements of a fire risk assessment
- Describe actions taken to prevent surgical fires
- Describe actions taken to manage fire in perioperative settings

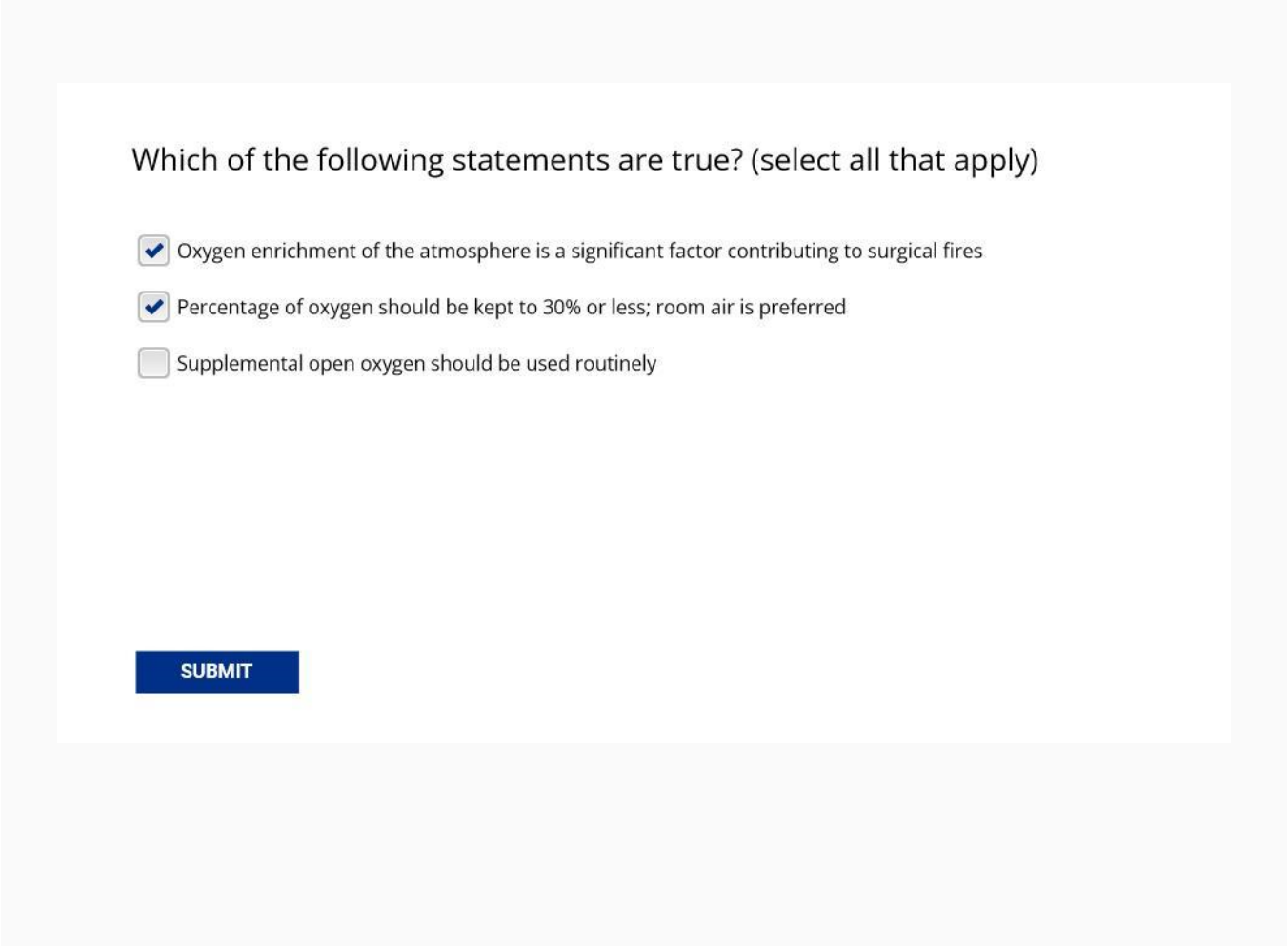
CONTINUE

Pretest

If you pass the pretest, the CONTINUE button will become available to take you to the end of this course. You MUST continue to the Course Completion page for your score to be recorded.

If you do NOT pass the pretest, the CONTINUE button will NOT be available. Instead, the only available option will be the VIEW CONTENT button.

Complete the content above before moving on.



Go to Content

Use this button to access the course content.

- **If you did NOT pass the pretest**, you must complete the course by clicking on the VIEW CONTENT button found here.
- **If you DID pass the pretest**, you can view the content or **jump to the end of the course to have your score recorded** using the CONTINUE button below.

VIEW CONTENT

Complete the content above before moving on.

Click on the button to proceed to the exit screen where your result will be recorded.

RECORD RESULTS

Fire Prevention

The Fire Triangle

ALL SURGICAL FIRES ARE PREVENTABLE

EXAMPLES:

For fire to occur, all three parts of the fire triangle must come together

- fuel
- oxygen
- heat/ignition

ALL SURGICAL FIRES ARE PREVENTABLE

EXAMPLES:

1. FUEL: Surgical drapes, Foam positioning devices, paper/gauze materials
2. OXYGEN: Nitrous Oxide, Methane, Alcohol vapor, oxidizer
3. HEAT/IGNITION: Laser, ESU active electrode, Fiber optic light cord

Knowledge Check 1 of 9

Match the parts of the fire triangle with examples.

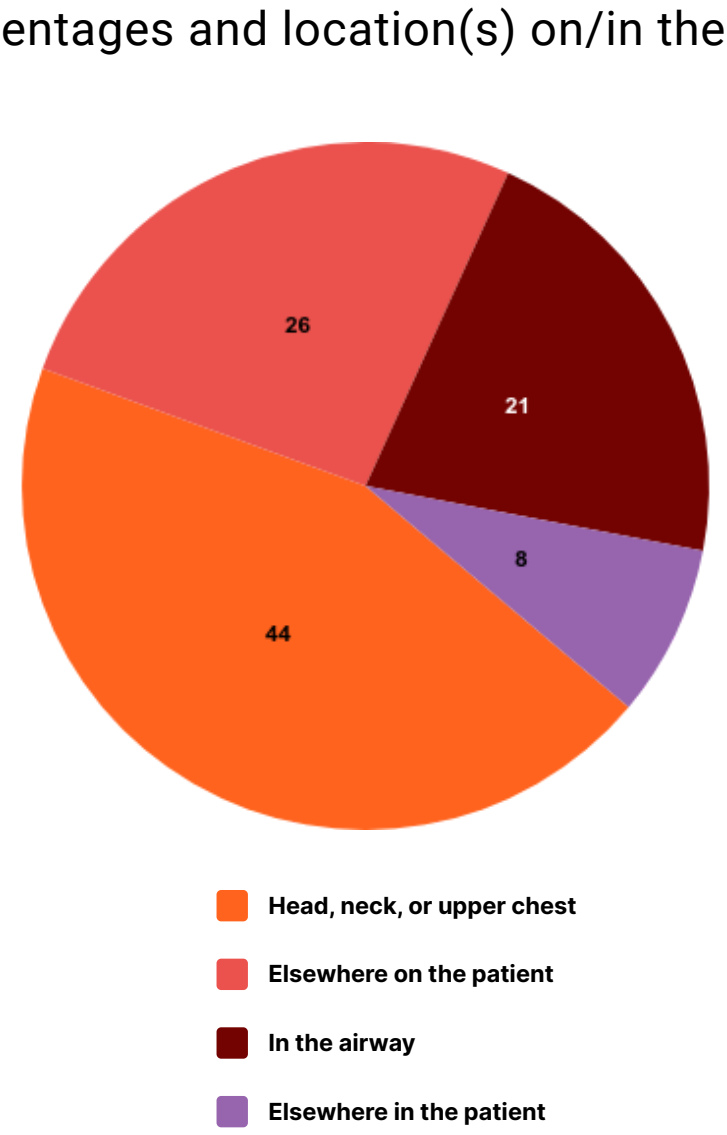
Fuel	ESUs
Heat	Bone cement
Oxygen	O^2 as an oxidizer

SUBMIT

Annual Incidents

Estimated frequency of fire in the OR in the US

- 200-240 incidents



Fire Prevention Assessment

- Fire Prevention Assessment is to be done prior to all surgical and other invasive procedures
- All members of the surgical team participate and communicate assessment risk during the time out
- Assessment should be documented in the patient chart

Documentation on the fire risk assessment includes:

- Ignition sources that are present
- Fuel sources that are present
- Potential for an oxygen-rich environment
- Interventions to control each source

Knowledge Check 2 of 9

Which of the following would be documented on a fire risk assessment? (Select all that apply)

- [ ] Ignition source
- [ ] Patient positioning
- [ ] Interventions to control sources

☐ Potential oxygen-rich environment

SUBMIT

Go to next section

NEXT

Fire Prevention Assessment Tool

AORN Fire Risk Assessment

A. Is an alcohol-based/volatile prep being used preoperatively?

B. Is the surgical procedure above the xiphoid process?

C. Is open oxygen or nitrous oxide being administered?

D. Is a laser, electrosurgical unit, or fiber-optic light cord used?

E. Are there other possible contributors? (e.g., drill, burr or saw blade)

AORN & Electronic Medical Record (EMR)

- AORN has established guidelines for fire prevention assessments
- Healthcare facilities implement a fire assessment tool in their EMR (SHS uses Epic) following AORN guidelines
- The fire assessment tool in Epic uses slightly different language but follows AORN guidelines (ex. heat instead of ignition)

Ignition Sources

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

Ignition Source Interventions

- Place return electrode on large muscle close to surgical site
- Keep active electrode cords from coiling
- Store ESU pencil in holster
- Keep surgical drapes or linens away
- Moisten drapes, towels, and sponges that are in contact with ESU active electrode
- Only the person controlling the active electrode (AE) activates the ESU
- Use Wet sponges around the surgical site
- Have water or saline and the appropriate type of fire extinguisher available
- Use a laser-resistant endotracheal tube (ET) tube during upper airway procedures
- Place wet sponges around the surgical site and the tube cuff if the laser is used close to ET tube
- Only the person controlling the laser is to activate it
- Verify water and appropriate fire extinguisher are available
- Use approved protective covers as insulators for AE tip
- Activate AE only when near target tissue/away from metal
- Inspect for impaired insulation/intactness
- Use lowest setting, & cut or blend settings (instead of coagulation) when possible

Knowledge Check 3 of 9

Which of the following are actions to follow to help prevent fires during procedures? (Select all that apply)

- [ ] Moisten drapes, towels, and sponges that are in contact with ESU active electrode

- [ ] Only the person controlling the active electrode activates ESU
- [ ] Store ESU pencil against the drapes
- [ ] Place return electrode on large muscle close to surgical site

SUBMIT

Oxidizer Sources

- Oxygen
- Oxygen-rich environment
- Nitrous Oxide

Oxidizer Source Interventions

- Keep oxygen level as low as possible
- Allow for venting of oxygen delivered by mask or nasal cannula (NC)
- Tent drapes to allow for air flow
- Use of an adhesive incise drape
- Titrate O2 at lowest percentage needed for pt
- Stop supplemental oxygen before or during use of ignition source
- Pack wet sponges around the back of patient's throat

- Check anesthesia circuits for leaks
- Turn off the oxygen at the end of each case
- Prevent accumulation of smoke in small spaces (ex. back of throat)

If a patient requires supplementary oxygen greater than 30%, a laryngeal mask airway or endotracheal tube should be used, unless contraindicated by the procedure (e.g., patient must respond verbally)

Knowledge Check 4 of 9

Which of the following examples are ways to prevent surgical fires if open oxygen or nitrous oxide must be administered to a patient? (Select all that apply)

- [ ] Titrate O^2 at lowest percentage needed
- [ ] Deliver 5 Liter/min Oxygen under surgical drapes
- [ ] Pack wet sponges around back of throat
- [ ] If supplemental O^2 is less than 20%, a laryngeal mask airway or ET should be used
- [ ] Prevent accumulation of smoke in small spaces (e.g., back of throat)

SUBMIT

Fuel Sources

- Patient
- Personnel
- Drapes
- Gowns
- Alcohol-based skin prep
- Linens
- Dressings
- Human Hair
- Endotracheal Tubes
- Sponges

Fuel Source Interventions

- Use moist towels and sponges with ignition sources
- Use water-based ointment in facial hair and other hair near surgical site
- Prevent pooling of skin prep solutions on/around patient
- Remove skin prep agent/allow vapors to dissipate before draping
- Validate prep agent is dry; perform prep “time out”
- Do not use ignition source until dry/vapors gone

Knowledge Check 5 of 9

Which of the following are not actions taken to prevent fire?

- ◯ Allow the alcohol-based skin prep to completely dry
- ◯ Prevent pooling of alcohol-based skin prep
- ◯ Use the same amount of drying time regardless of type of prep
- ◯ Allow vapors to dissipate before draping

SUBMIT

Above the Xiphoid Process Interventions

- Cover/coat patient's head and facial hair near the surgical site with water-soluble surgical lubricant
- Use an adhesive incise drape

Knowledge Check 6 of 9

Surgical procedures being done above the xiphoid process should not include

- ◯ Coating the patient's facial hair with petroleum-based lubricant
- ◯ Covering/coating the patient's hair near the surgical site with water soluble surgical lubricant
- ◯ Using an adhesive incise drape

SUBMIT

Go to next section

NEXT

CONTINUE

Appropriate Fire Extinguishers

- A, B, and C rated Extinguishers may be used in rooms outside the OR; intended use is on things, not people
- Water mist or CO_2 extinguishers are provided in the OR suite
- If the patient is the fuel source, CO_2 and water mist extinguishers reduce contamination and tissue damage
- Whenever possible, remove burning material from person & extinguish

Remember the acronym “PASS” when using an extinguisher:

Start

Knowledge Check 7 of 9

Which type of extinguishers may be provided in the OR suite? (select all that apply)

- [ ] Water mist
- [ ] CO^2
- [ ] Nitrogen

☐ Foam

SUBMIT

Small Fire Interventions

- Do not panic
- Communicate presence of fire to team
- Pour saline or water slowly on the fire
- Activate Facility Alert + Fire + Location
- Lay a wet towel/sponge over the flame, sweeping towards feet
- Lift the material used to smother the flame to vent heat
- Remove burning material from the patient
- Assess the surgical field and patient
- Notify manager/supervisor and complete a safety event report (RLDatix)

Knowledge Check 8 of 9

If a small surgical fire occurs: (select all that apply)

- [ ] Communicate fire presence to team
- [ ] Pour water or saline slowly on the fire
- [ ] Lay a wet towel/sponge over the flame, sweeping towards feet
- [ ] Stomp on the burning materials with your foot
- [ ] Assess the surgeon for injuries/fill out employee accident report
- [ ] Notify your manager and fill out safety event report (RLDatix)

SUBMIT

Large Fire Interventions

- Do not panic
- Communicate presence of fire to team
- Communicate with anesthesia provider to stop flow of breathing gases to patient
- Activate Facility Alert + Fire + Location
- If drapes involved, remove drape to ground, rolling it on itself to smother fire-avoid moving drape where it may block exit route
- Assess the surgical field and patient
- Verify flames are extinguished

- Notify manager/supervisor and complete a safety event report (RLDatix)

R.A.C.E.R.

When responding to a fire in your area follow the acronym R.A.C.E.R.

Rescue

Alarm

Contain the fire-closing doors/shutting off gases and electricity

Evacuate

Relocate-removing patients beyond first set of smoke barriers

Fire on Equipment

- Do not panic
- Communicate presence of fire to team
- Disconnect equipment from its electrical source
- Shut off gases to equipment to assess the size of the fire
- Shut off the electricity to the equipment at the electrical panel if unable to remove plug from outlet
- Can equipment be safely removed?
- Does the room need to be evacuated?
- Extinguish the fire using a fire extinguisher if appropriate
- Activate Facility Alert + Fire + Location
- Notify manager/supervisor and complete a safety event report (RLDatix)

Knowledge Check 9 of 9

What actions may be taken if fire is located on a piece of equipment? (select all that apply)

- [ ] Call an electrician
- [ ] Communicate presence of fire to team

- [ ] Disconnect equipment from its electrical source
- [ ] Shut off electricity to equipment at panel if unable to unplug from outlet
- [ ] Shut off gases to equipment
- [ ] Pour water all over the equipment

SUBMIT

Go to next section

NEXT

Course Completion

You have successfully completed this course and your score has been recorded.

You may now view the references or exit the module using the button below.

Want to review the content?

A PDF of this course is attached below that you can download for future reference.

Fire Safety in OR and Periop.pdf
2.3 MB

To view the references or restart the course, click here.

REFERENCES

To exit the module, click here.

EXIT

References

Click this button to exit the module

EXIT

Click this button to restart the module

RESTART

References

AORN Fire Safety Tool Kit (2023). Retrieved from

https://www.aorn.org/guidelines-resources/tool-kits/fire-safety/tool-kit

AORN and The Joint Commission Team Up for Time Out Super Heroes (2017) Retrieved from

https://www.prweb.com/releases/2017/06/prweb14400798.htm

Fire prevention and management, OR (2018). Lippincott Procedures and Skills, Wolters

Kluwer/Lippincott Williams & Wilkins Health.

Hughes, A. B. (2015). Implementing AORN recommended practices for a safe environment of care. AORN, 98(2), 153-166. Retrieved from

http://www.sciencedirect.com/science/article/pii/S0001209213006819

RP Summary: Recommended practices for a safe environment of care (2016). AORN, 98(2),

167-171. Retrieved from http://dx.doi.org/10.1016/j.aorn.2013.04.013

Spruce, L. (2016). Back to Basics: Preventing Surgical Fires. AORN, 104(3). 218-222. Retrieved

from http://dx.doi.org/10.1016/j.aorn.2016.07.002