



PREVENTING FIRES IN THE OPERATING ROOM

According to the **NFPA (National Fire Prevention Association) JOURNAL**, more than 600 operating room fires are reported annually across the United States. 1 Growing use of electrosurgical devices and paper hospital drapes in the operating rooms has contributed to these fires which result in serious injury or even death.

In support of our **Mission, Vision and Values** statement and set forth by ‘**Value U: Undivided commitment to quality.**’ and ‘**Value S: Service to our patients, physicians and ourselves.**’, Crouse Hospital takes the lead in promoting operating room safety.

Education, communication and awareness are the best tools in preventing fires to ensure patient safety. It is the responsibility of every medical professional in the operating room (including but not limited to: Anesthesiologists, surgeons, PAs, NPs, CRNAs ,nurses, and technicians to fulfill this obligation.

THREE COMPONENTS OF THE FIRE TRIANGLE

There are **three** components which **must** be present in order for a fire to occur, commonly referred to as “the fire triangle.”



OXYGEN:

Oxygen sources include oxygen or nitrous oxide.

HEAT:

Heat sources include lights, drills, fiber optic cables, lasers and other electrosurgical devices.

FUEL:

Fuel sources include body/facial/head hair, tracheal tubes, paper drapes, clothing, sponges, ointments, liquid or gel prep products, and alcohol.

Anesthesiologists monitor the **oxygen/nitrous oxide** during surgery and control the flow of those gasses. The anesthesiologist should be aware of tanks, lines and delivery routes of the oxygen to prevent accidental contact with heat and fuel sources.

Surgeons operate the tools which provide the **heat** source. The surgeon should be aware of the intensity and direction of the heat source to prevent accidental contact with the oxygen and fuel sources.

Surgical supplies used throughout the surgery and even the patient's body provide the **fuel** source. All OR team members should be aware of the immediate environment to prevent accidental contact with the oxygen and heat sources.

The most effective way to prevent a fire is for the operating room team to constantly monitor these elements and maintain the appropriate distance from each element.

PRE-OPERATIVE PREPARATION

Prior to surgery, **electric equipment** should be examined and inspected for signs of wear or missing pieces. If a piece of equipment is known to malfunction, DO NOT USE IT. It should be tagged out of service and reported as broken. Likewise, do not use any equipment that is already tagged for repair. ALL operating room team members must be adequately trained to use equipment appropriately.

Gas valves and lines should be examined to ensure there are no leaks which may allow oxygen to escape into the air.

The operating field should be examined to ensure **surgical supplies and drapes** are laid out appropriately to minimize potential sources of fuel.

INTRA-OPERATIVE OBSERVANCE

The patient's body is an often over-looked, ready source of fuel. Two-thirds of surgical fires occur on the head and neck. It is important to follow manufacturer instructions for prep product drying times. Prep product drying time varies from 3 minutes to 60 minutes, so it is important to allow adequate time for the prep to be visibly dry before draping. Avoid pooling on and around the patient. Replace linens that become soaked with the solution.



The surgical operating team should be familiar with the acronym “**TVT**”:

- T:** Time – Allow sufficient alcohol-based prepping solution dry time -- (3 minutes on a shaved area and up to 60 minutes on an unshaved area);
- V:** Visual – Is the body surface shiny (wet) or dull (dry)?;
- T:** Touch - Feel for moist prep material on or around the operative prep site.

Surgeons should ensure all heat source equipment is used appropriately. Do not keep finger triggers or foot pedals pressed in an on position between intervals of use. Make sure the source is off and residue free before placing on the table or patient.

Communication and coordination are vital elements in preventing fires. Any member of the operating team should call a **TIME OUT** to question unusual odors, sparks or visible signs something is wrong or “not quite right.” It is appropriate to be cautious.

If a fire is suspected or in the event of a fire, STOP THE SURGERY IMMEDIATELY. Take immediate steps to control the fire and decrease risk to the patient. Remove the endotracheal tube and cease the flow of all airway gases. Remove the flammable material and douse the fire appropriately. Assess the patient and/or other individuals and attend to any injury.

POST-OPERATIVE PROCEDURES

When surgery is complete, it is necessary to appropriately dispose of prep products and surgical supplies. Turn device switches off and disconnect equipment from electrical outlets. Remove damaged/malfunctioning equipment from the area to prevent future use. Visually ‘sweep’ the room for any signs of irregularities and report concerns to the responsible individual.