

## NURSING PROCEDURE:

# Fire Safety and Fire Risk Assessment

Revised 5/10

PERMITTED TO DO PROCEDURE	
RN/LPN	Procedure Area Technician
X	X

### **PURPOSE:**

To define department specific Fire Safety Procedure within Christiana Care Health Services

### **SUPPORTIVE DATA**

The Fire Safety Procedure is intended to minimize the risk of injury to patients and employees by adherence to policies/procedures as outlined in the Christiana Care Health Services Policy, [Fire Prevention Management Plan](#) and the [OR Fire Disaster and Evacuation Plan](#).

### **DEFINITIONS**

Fire Triangle: Fuel + Ignition Source + Oxidizer

Fuel: Anything that can burn, including almost everything that comes in contact with the patient or that are used on or in the patient, as well as the patients themselves.

Ignition Sources: That which provides the heat energy that can start a fire should the energy be directed onto or come in contact with some fuel, either in ambient air or in an oxidizer-enriched atmosphere: examples include ESU, light source, laser.

Oxidizer: Gases that can support combustion: examples include air, oxygen, and nitrous oxide.

### **PROTOCOLS:**

#### **A. Routine protocol:**

1. Check all electrical equipment before use.

2. Ensure that all flammable prepping solutions are completely dry and fumes have dissipated (a minimum of 3 minutes) before applying surgical drapes.
3. Do not allow prep solutions to pool on, around, or beneath the patient.
4. Close open bottles of flammable agents and remove all bowls of volatile solutions from the sterile field as soon as possible after use.
5. Assess the flammability of all materials used in, on, or around the patient.
6. Utilize standard draping procedure.
7. Protect all heat sources when not in use (cautery pencil holster, laser in stand-by mode, etc).
8. Activate heat source only when active tip is in line of sight.
9. Deactivate the unit before tip leaves the surgical site.
10. Properly position multiple foot controls and remove when not in use.

**B. High Risk Protocol:**

1. All routine protocol measures.
2. Arrange drapes to minimize oxygen buildup underneath
3. Keep oxygen concentrations below 30% if this can be safely accomplished.
4. Use an adherent incise drape, if possible, to help isolate head, face, neck, and upper-chest incisions from oxygen-enriched atmospheres and from flammable vapors beneath the drapes.
5. Minimize the Electrical Surgical Unit (ESU) setting.
6. Use wet sponges as appropriate.
7. Have a basin of sterile saline and/or bulb syringe readily available for suppression purposes.
8. Have a syringe full of saline readily available to anesthesia care provider for procedures within the oral cavity.

### C. Head and Neck Procedures:

1. Stop supplemental oxygen at least 1 minute before and during use of ESU/Laser/disposable cautery.
2. Scavenge deep within the oropharynx with a metal suction cannula to catch leaking O<sub>2</sub> and N<sub>2</sub>O.
3. Use air or FiO<sub>2</sub> of 30% for open delivery if applicable.
4. Use appropriate laser-resistant endotracheal tubes during upper-airway/facial surgery
5. Use wet gauze or sponges with uncuffed endotracheal tubes to minimize leakage of O<sub>2</sub> into the oropharynx; keep wet.
6. If endotracheal tube cuff leaks are found during surgery in the oropharynx, wet sponges around the tube cuffs may provide extra protection to help retard fire potential. Do not use the ESU/Laser for at least 1 minute after stopping cuff leak.

### **PROCEDURE:**

- A. Fire Risk Assessment is performed by the procedure team as part of the Time Out immediately prior to the start of each procedure.
- B. The circulating or bedside RN assesses the potential fire risks
  - Open Oxygen Source
  - Available Ignition Source
  - Surgical Site Above The Xiphoid or < 30 cm/12 inches from oxygen source.
- C. If a risk is present, a score of 1 is applied. If the risk is not present a score of 0 is applied. The numbers are added to achieve the Fire Risk Assessment score.
- D. Fire Risk Assessment score may range from the lowest risk score of 0 to the highest risk score of 3.
- E. Based on the resulting Fire Risk Assessment score, the procedure team will take the required precautions associated with each score as listed below:

#### **Fire Risk Score of 0 - 1** (indicates a low level risk of fire)

- Initiate the routine fire safety protocol

#### **Fire Risk Score of 2** (indicates a low risk of fire with potential to convert to a Fire Risk Assessment score of 3)

- Initiate the routine fire safety protocol

- Observe closely for conversion to Fire Risk Assessment score of 3.
- If the fire risk converts to a high risk of 3, a fire safety moment of verification must take place.
- The RN verbalizes the higher fire risk score to the team, the fire triangle (heat source, fuel, and oxidizers) is assessed and the appropriate safety measures applied as indicated below.

**Fire Risk Score of 3** (indicates the highest risk of fire)

- Initiate the high fire safety protocol.
- Anesthesia personnel will follow guidelines for high fire risk as indicated in [Department of Anesthesia Intra-op Fire Safety Policy D-292](#).

F. For additional information see [Electrosurgery Safety Guidelines](#) and/or [Laser Safety Policy](#).

G. Fire Safety Strategies in Procedure Areas

1. Electrical Equipment and Cords:

- a. Check all electrical equipment, cords, and plugs for damage and verify inspection sticker is current before each use.
- b. Remove unneeded foot switches so that they are not accidentally activated.
- c. See CCHS [Electrical Safety Policy](#) and OR [Procedure Electrical Equipment, Care/Inspection/Repair](#).

2. Electrosurgery/Argon Beam Coagulator

- a. Allow sufficient time for fumes to dissipate before draping when flammable prep agents are used.
- b. Minimize build-up of N<sub>2</sub>O and O<sub>2</sub> beneath drapes and in oropharynx.
- c. Keep all ESU pencils in safety holster when not in use.
- d. Do not use rubber catheters or protective covers as insulators on the active electrode tip.
- e. Coat facial hair near the surgical site with water-soluble surgical lubricating jelly to decrease the risk of hair igniting during use of ESU or laser when O<sub>2</sub> and/or N<sub>2</sub>O are present.

3. Video/Equipment Fiberoptic Light Source:

- a. Set intensity on fiberoptic light source on standby before activation and when not in use.
- b. Do not place activated scope on drapes or patient. Fiberoptic light sources may get hot enough to start a fire.
- c. Turn the light source off when disconnecting light cable from endoscope.

#### 4. Laser

- a. Allow the laser to be activated only by the person wielding it.
- b. Deactivate the laser and place it in standby mode before removing it from the surgical site.
- c. Never clamp laser fibers to drapes; clamping can break the fibers.
- d. Use surgical devices designed to minimize laser reflection.
- e. Keep all moistened sponges, gauze, pledgets, and strings moist throughout the procedure to render them ignition resistant.
- f. Consider the use of towels soaked in saline or sterile water around the operative site to minimize the risk of igniting the towels.

#### 5. Other Equipment (includes but not limited to any heat producing equipment such as: drills, burrs, saws, and defibrillators).

- a. Do not leave equipment on patient when not in use.
- b. Slowly drip saline on burrs/drills/saws to reduce heat build up.
- c. No gaps should be present between patient and electrodes before activating defibrillator paddles.
- d. For additional information see [Electrosurgery Safety Guidelines](#) and/or [Laser Safety Policy](#)

### **ATTACHMENT I** ([Department of Anesthesia Intra-op Fire Safety Policy D-292.](#))

#### **REFERENCE:**

ECRI, Health Devices 35 (2), October, 2009,  
[New Clinical Guide To Surgical Fire Prevention,](#)  
pp 314-332.

AORN Standards, Recommended Practices, and Guidelines (2010), AORN Guidance Statement: Fire Prevention in the Operating Room, pp 225-227.

American National Standards Institute, Safe Use of Lasers (ANSI Z 136.3 – 2000, Z 136.1 –

2005).

Russell Phillips & Associates, LLC (6/2004),  
Fire and Emergency Management  
or Healthcare Facilities-

