ST. JOHN HEALTH SYSTEM

PHYSICIAN SAFETY MANUAL
Fire Risks in OR

- Three basic elements of all fires constitute the traditional fire triangle. A fire will occur when an ignition source, an oxidizer, and a fuel source come tighter in the proper proportions and under the right conditions. These three elements are present in every surgery, typically including surgical instruments, breathing gases, and associated equipment. Consequently, each member of the surgical team is associated with one of the basic elements.

- **Sources of Ignition** - Lasers, fiber optic light sources, electrosurgical /cautery devices, orthopedic burrs creating sparks, and defibrillator paddles. Anytime these devices are not in use they should be turned off, holstered if possible or placed on a surface free of flammable materials and should not be laid on or across the patient.

- **Sources of Fuel** - Flammable prepping agents, drapes, towel’s, PPE’s, dressings, ointments mattresses, pillows, blankets, patient’s hair, GI gases (methane) etc. Any fuel source should always be contained or managed to reduce the possibility of ignition.

- **Oxidizers** - Oxygen and nitrous oxide. The supply of these gases should be stopped quickly in the event of a fire in an OR/Procedure Room. Heat sources in the OR help to evaporate liquids or vaporize solids, thus producing the vapors necessary to mix with
oxygen. Oxygen is supplied from numerous sources – anesthesia machine, ventilator, wall/ceiling outlets, gas cylinder or the thermal decomposition of nitrous oxide.

Surgeons usually have ignition source:
- Electrosurgical or Electrocautery devices
- Lasers, heated probes
- Drills and burrs, argon beam coagulators
- Fiber optic light cable sources
- Defibrillator paddles or pads

Anesthesia usually brings oxidizers:
- Oxygen-enriched atmospheres
- Nitrous oxide
- Medical compressed air
- Ambient air

Nurses usually bring the fuel
Make sure surgical prep is dry:
- Drapes, mattresses, sheets and gowns
- Body hair, gloves, hoses, endoscopes
- Body tissue, adhesive tape, ointments
- Aerosol adhesives, alcohol
- Tinctures and surgical skin prep
- Do not use alcohol based preps

**Building Elements in Place to Reduce the Risk of Fire**
- **Line Isolation Monitor (LIM)** continuously monitors the Isolated Power System and immediately detects line-to-ground faults. It protects the patient and staff against electrical shock due to defective patient-care-related electrical appliances. In the event a LIM alarm is activated, the first thing the OR staff should do is contact Property and Facilities personnel for instruction.
- **Equi Potential Grounding** – Found in some areas (e.g. 6 South at SJMC) in lieu of LIM, checked by maintenance every six months.
- **Humidity** – closely monitored to adhere to state specified range of 35% - 60%. Low humidity causes static electricity. A simple spark can be the ignition source of a fire.
- **Medical Gas Isolation Valves** - are located directly outside each room in the sub sterile corridor and clearly labeled for identification of the area served by each valve.
• **Fire Extinguisher** – located in all OR rooms or outside in corridors
• **Sprinkler Systems** – located in all OR rooms. Will discharge water when the fire becomes very hot. The sprinklers will confine the fire to the OR suite.
• **Smoke Evacuation System** – will remove the smoke and fumes generated by a fire from the OR to avoid contamination in other suites, to enable staff to function, and to reduce the risk of damage to the facility.
• **Fire Compartment** – is comprised of walls, floors, ceilings, and doors designed to contain smoke and fire for at least one hour and will not allow outside smoke and fire from entering the compartment.

**Common Practices to Reduce the Risk of Fire**

• 3 minute skin prep dry time, blotting pools that have formed on, under, or around the patient or pooled in umbilicus and cricoid notch
• Water based lubricants which will not burn (K-Y Jelly). Instead heat vaporizes the water in the lubricant and cools the area. This lubricant can be used to coat hair to make it fire resistant.
• Stand-by Mode on lasers, holsters for Electrocautery equipment, placement of heated tips on nonflammable material (not on patient)
• Non-Flammable drapes, gowns, tubing, etc.
• Fire Risk Assessment- Laminated cards are in every OR to be performed before each surgery, communicated and documented.

Electrosurgical active electrode should be placed in holster after each use to prevent accidental firing.
Fire Response

- Fire in OR’s spread quickly and time is wasted in retrieving a fire extinguisher.
- If the fire is on or near the patient
  - shut off the supply of medical gases
  - pull burning drapes and linens away from the patient
  - pour sterile water that is readily available on the fire to extinguish
- Other staff members should retrieve a fire extinguisher. If a fire is still present when they return with the extinguisher they should use the **PASS** method for extinguishing the fire.
  - P - Pull the pin
  - A - Aim the nose
  - S - Squeeze the handle
  - S - Sweep as you spray from side to side
- Remember **RACE**:
  - R - Rescue the patient
  - A - Alarm other staff
    - Engage Pull Station, located at all exits
    - Call Operator at facility specific extension
  - C - Clear halls of all equipment
  - C - Close all doors
  - E - Extinguish
- Don’t start any new cases until directed by Incident Command or Fire Marshall

## FIRE PROTOCOL IN THE OPERATING SUITE

<table>
<thead>
<tr>
<th>Patient and OR Personnel</th>
<th>Patient Fire (Airway)</th>
<th>Equipment and Fire</th>
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<tbody>
<tr>
<td>Environment (Non-Airway)</td>
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<td></td>
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<tr>
<td>Extinguish flame, remove smoldering</td>
<td>Discontinue gas delivery</td>
<td>If safely possible, unplug device remove from OR.</td>
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<tr>
<td>Material and , soak area with saline, sweep with moist towel.</td>
<td>Remove EET and smoldering fuel sources (Sponges, etc) from airway.</td>
<td>If unable to remove obtain extinguisher and extinguish.</td>
</tr>
<tr>
<td>Discontinue airway gases until fire is controlled.</td>
<td>Irrigate with saline, assess damage and resume care of Pt.</td>
<td>Assess smoke risk.</td>
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<td>Assess damage and resume care of patient</td>
<td>Intubate, use medical air, confirm all sources extinguished.</td>
<td>Activate fire pull box and call surgery control desk and emergency number.</td>
</tr>
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<td>Obtain fire extinguisher.</td>
<td>Administer 100% O2</td>
<td>If not controlled promptly consider evacuation confine and shut off OR gas supply.</td>
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St. John Health System Emergency Numbers

St. John Medical Center

**Safety Office  43157**
**Security**  Extension 42197 or from an outside line at: (918)-744-2197.
**Risk Management**  Extension 43982
**Facilities**  Extension 43972
Dial “89” to report Fire

St. John Broken Arrow
Emergency Extension 20000
Facilities Extension  48098

St. John Owasso
Emergency Extension 7999
Facilities Extension   Pager 220-2201

St. John Broken Arrow
Emergency Extension
Facilities Extension

Jane Phillips Medical Center
Emergency Extension
Facilities Extension