Intra-Op Endoscopy/Medical Procedures Unit (MPU) TECH Pre-Learning Addendum

Contents

Universal Protocol

For additional information refer to full Policy: *Universal Protocol for Invasive Procedures* in PolicyStat

SAFE SURGERY CHECKLIST: PROVIDENCE OREGON		
BRIEFING	**TIMEOUT**	**DEBRIEF**
Verify prior to induction of Anesthesia	**Immediately before procedure start. All team members *suspend activity* & verbally participate.**	**At the end of the case and before the SURGEON leaves the OR.**
Before patient enters OR, CIRCULATOR confirms: ❑ Room thermostat temperature confirmed ❑ Implants / Specials are available	**SURGEON / PROCEDURALIST leads the timeout & begins by stating:** ❑ Patient Name ❑ Procedure planned	**CIRCULATOR confirms with SURGEON:** ❑ Counts are correct ❑ Actual procedure performed
Upon patient entry to OR, CIRCULATOR & SCRUB pause and verify: ❑ Patient identified using 2 unique identifiers matched to consent ❑ Procedure & laterality confirmed with patient & matched to consent ❑ Site marking confirmed per policy ❑ Allergies verified ❑ Active warming / SCD devices available	❑ Laterality * ❑ Confirms visible site marking * ❑ Confirms review of recent labs and display of relevant images *	❑ Wound class ❑ Specimens verified and labeled
	ANESTHESIA PROVIDER states: ❑ Antibiotic given * ❑ Patient glucose *	**ANESTHESIA PROVIDER confirms with SURGEON:** ❑ Estimated blood loss (EBL) ❑ Patient glucose *
	SCRUB continues by stating: ❑ Instruments ready & medications labeled ❑ Confirms plan for management of heat generating devices, including cautery holster location	**SCRUB verifies with CIRCULATOR:** ❑ Local medication administered ❑ Implanted items
CIRCULATOR & ANESTHESIA PROVIDER verify: ❑ Special anesthesia equipment present ❑ Blood product availability addressed *	**CIRCULATOR continues by stating:** ❑ Patient name & procedure match consent form ❑ Are there any other concerns? ❑ **"THE TIMEOUT IS COMPLETE"** Note: A colored towel covers the instrument tray until the CIRCULATOR states that the "TIMEOUT IS COMPLETE"	* *as applicable by policy, protocol or procedure* 

Process for site marking, all invasive procedures:

- The Proceduralist marks the site prior to surgery/invasive procedure.
- The site is marked with patient involved, awake and aware, if possible.
- The marking pen ink will be sufficiently permanent to remain visible after skin prep and draping.
- The mark is made at or near the procedure site or the incision site.
- For sites below the neck, the site is marked with the Proceduralist's first and last name initials. If the Proceduralist's initials are "N.O." their middle initial needs to be included at the time the site is marked.
- For sites above the neck an arrow may be used to point to the intended incision or insertion point.
- For spinal procedures, the mark is made on the skin at the approximate spinal level intended for surgery. Laterality is indicated if intended for the procedure. Additional intraoperative internal marking techniques may be used to confirm the exact spinal level.
- For procedures with laterality of paired internal organs performed via a midline incision or laparoscopically, skin marking is required indicating the intended side.

Fire Safety in Surgical Services

For additional information refer to full Policy: *Fire Safety in Surgical Services* in PolicyStat

II. Response to Fires in the OR

A. In all cases of unexpected fire or smoke in the OR

a. The charge nurse will be contacted as quickly as is safely possible to activate the code red response team (dial 88, pull manual station if the fire alarm is not already activated) and alert other OR staff if deemed necessary.

b. The code red response team will meet the charge nurse or designee at a predetermined location outside the restricted area for briefing and determine the appropriate response.

III. Surgical Intubations-Extinguishing Airway Fires

A. At the first sign of an Airway or Breathing Circuit fire, be prepared to assist with any of the potential interventions, listed below, as deemed appropriate and directed by the attending physician.

a. Disconnect the breathing circuit from the tracheal tube.

b. Remove the tracheal tube:

1. Have another team member extinguish it using water/saline
2. Remove cuff-protective devices and any segments of burned tube that may remain smoldering in the airway
3. Stop the flow of gases to the airway
4. Pour saline or water into the airway
5. Care for the patient:
    1. Re-establish the airway and resume ventilating with air until certain that nothing is left burning in the airway; switch to 100% oxygen
    2. Examine the airway for the extent of damage and treat the patient accordingly
6. Save involved materials and devices for later investigation.

IV. Fires on the Surgical Patient

A. In the event of a small fire on the patient, immediately:

a. Cover and sweep small fires with water/saline soaked sponge/towel.

b. Remove the burning material from the patient.

c. Check for and remove any smoldering material from the OR,

d. Complete a Datix report.

B. In the event of a large fire or unexpected smoke:

a. Stop the flow of breathing gases to the patient.

b. Remove the burning material from the patient.

c. Have another team member extinguish the burning material with water/saline.

d. Care for the patient:

i. Resume ventilation

ii. Control bleeding.

iii. Evacuate patient to another smoke compartment, if indicated due to smoke or fire.

iv. Examine the patient for injuries and treat accordingly.

e. ONLY THE NURSE SUPERVISOR AND/OR THE DEPARTMENT MANAGER, OR THEIR AUTHORIZED DESIGNEE, WILL SHUT OFF MED GAS SERVING THE AREA THAT THEY MANAGE.

f. Complete a Datix report.

C. Save all items that are involved in the fire to facilitate the investigation.

a. Provide all items that are involved in the fire to quality/risk management personnel.

b. All fire events must be investigated and findings are reported to Safety/Environment of Care Committee.

V. Fire or smoke in the OR ***not involving a patient***:

A. Extinguish the fire using the appropriate fire extinguisher.

B. For fire involving equipment - if possible/practical disconnect equipment and remove from the OR for hand-off to the code response team.Do not leave extinguished equipment unattended.

C. Evaluate the status of the OR and proceed or prepare to evacuate the patient.

D. Complete a UOR

Specimen Handling

For additional information refer to full Policy: *Specimen Handling in Surgical Services* in PolicyStat

Specimen Handling is a complex process with many steps involved to ensure the test is completed correctly for the correct patient.
Policy: *Specimen Handling in Surgical Services* comprehensively outlines all steps needed to ensure safety. Refer to full policy when on site if handling specimens.

OR/Procedural RN Specimen Handling Responsibilities:

1. Correctly and appropriately handle, label, document and provide safe delivery of specimens.
    i. Specimens requiring special handling will be directly taken to pathology, where pathology personnel are notified and verbally told what exam is required and whether a call back is needed.
2. Specimens are:
    i. Obtained from the sterile field as soon as possible/within a timely fashion with surgeon's permission.
    ii. Placed in closed containers, with secure lids, and kept moist.
    iii. Verified with the surgeon in order to correctly document:
        a. Specimens in EPIC
        b. The information and details on the consultation form (if/when needed)
        c. See detailed process further below in policy
    iv. Correctly logged in the specimen log book when transporting/dropping off specimens for pathology.
        a. See detailed process in Procedure B, section 4 in policy,

1. Each specimen must be accurately and legibly labeled with the following:
    a. Patient identification – patient sticker (to include at a minimum two patient identifiers - patient name, DOB)
    b. Letter of Specimen
    c. Name and/or Description of specimen, including site and laterality
    d. Date specimen collect
    e. Time specimen collected from the field
    f. OR RN initials
    g. Surgeon

Dress Code

For additional information refer to full Policy: *Dress Code (Surgical and Procedural Attire)* in PolicyStat

Surgical Attire

A. Facility approved and laundered, or disposable, surgical attire must be donned daily in a designated dressing area before entry into semi-restricted and restricted areas.
    a. Personal surgical attire is not allowed. Surgical attire must not be worn arriving or leaving the medical center.
        a. Use of personal hair coverings permitted as described in section "B".
    b. Surgical attire must be changed daily
    c. Whenever it becomes visibly soiled, contaminated, or wet.
    d. Surgical attire contaminated with visible blood or body fluids must remain at the medical center for safe transport to laundering facility.
    e. Personal clothing that is worn under surgical attire must be clean and with minimal amount of low lint fabric showing beyond surgical attire (e.g. neckline of undershirt).
    f. Arms may be covered during performance of preoperative patient skin prep; wearing sterile gloves for application or delivery of all patient skin preps is required
    g. Jumpsuits designed to completely cover personal apparel are provided for visitors entering the department to work briefly in the semi-restricted and restricted areas (e.g. biomedical engineers, repairmen, law enforcement).

B. All personnel must cover scalp and hair when entering the semi-restricted and restricted areas.
    a. All efforts will be made to cover as much hair as possible.
    b. Facial hair (beards and moustaches) should be be covered when in the restricted areas and while prepping and packaging items in the clean assembly section of sterile processing.
    c. If reusable head coverings are worn, hospital-laundered cloth options are preferred.
        a. Personal head coverings may be worn. They should be visibly clean, contain hair well, and have no rips or holes that allow hair to protrude.
        b. Personal head coverings that become visibly contaminated with blood, body fluids, or other potentially infectious materials must be laundered on campus before being taken home. Contact Environmental Services for assistance with contaminated attire.
    d. Remove head covering at the end of shift or when they are contaminated.

C. Clean, dedicated shoes must be worn when entering the semi restricted and restricted areas.
    a. Shoes should have closed toes and low heals to minimize the risk of injury.
    b. Shoe covers or boots must be worn in the instances when gross contamination can reasonably be anticipated.
    c. Single use shoe covers worn as PPE must be removed immediately after use. After removal discard and perform hand hygiene.

D. Masks must be worn at all times in the restricted areas during sterile procedures.
    a. Masks must cover both the nose and mouth and be secured in a manner that prevents venting.
    b. Masks are discarded directly after removal; hand hygiene performed. They are not to be worn around the neck or in pockets.
    c. Masks must be changed when soiled, between cases and when leaving the surgical suite.

E. Protective eyewear or face shields must be worn whenever activities could place caregiver at risk for a splash to the face or eyes.

F. Fluid impervious aprons are worn by caregivers performing decontamination and other activities where contact with large volumes of blood or body fluids are unavoidable.

G. Nametags are considered part of the caregiver's dress requirement and must be worn on the scrub top or jacket.
    a. Daily cleaning with low level disinfectant recommended.
    b. Clean badge with low level disinfectant when badge becomes soiled with blood, body fluid or other potentially infectious material.
    c. Badge holders such as lanyards, chains or beads pose a risk for contamination and may be difficult to clean and should not be worn.

H. Personal x-ray gowns may be used, but must be maintained according to hospital policy

I. Fabric stethoscopes coverings must not be used; stethoscopes should not be worn around the neck.
    a. Stethoscopes must be cleaning with low level disinfectant between patients.

J. Personal cover apparel, laboratory coats and jackets, must not be worn in the semi-restricted and restricted areas.

K. Personal items necessary for patient care (e.g. back packs, brief cases, fanny packs) may be brought into the semi-restricted and restricted areas. These items should be completely contained in a hospital provided plastic bag and placed in a designated area off the floor.

L. Personal Cell Phones/Electronic Devices brought into the operating room - Daily cleaning with low level disinfectant is recommended.

Personal Grooming

A. Fingernails should be clean, short and healthy.

B. Nail polish is discouraged. If polish is worn it must be free from chips and/or cracks. Caregivers who wear nail polish must use the same discipline of vigorous surgical scrub as if no polish is worn.

C. Artificial nails – any fingernail enhancement or resin bonding product, including extensions or tips, gels, acrylic overlays, resin wraps – cannot be worn when working in the OR, or when handling sterile supplies.

D. Jewelry, if worn, should not pose safety risk to patients or the wearer
    1. Jewelry (rings, watches, bracelets, etc) must be removed from hands before performing surgical hand scrub, per AORN guidelines for hand hygiene.
    2. Necklaces, if worn, should be tucked into the neckline of the wearer's shirt (scrub top) when scrubbed, or when performing sterile tasks, to avoid having them dangle over the sterile field and pose risk of contamination.

E. On duty caregivers must not wear fragrance of any kind.

Non-Sterile Procedure Rooms (e.g. GI lab/laser lab)

A. It is not required for caregivers/providers to change their clothing once they arrive at work.

B. PPE must be selected based on the potential for exposure during a particular task. PPE in the non-sterile procedure/GI rooms includes:
    a. Gloves
    b. Gowns
    c. Masks
    d. Goggles/eye/face shields

C. Effective use of PPE includes proper removal, disposable and hand hygiene.

References:

Labeling of Medications and Solutions

For additional information refer to full Policy: *Labeling of Medications and Solutions* in PolicyStat

A. Labeling occurs when any medication or solution is transferred from the original packaging to another container, unless it is administered immediately by the person who prepares the medication or solution. If the medication or solution that has been removed from its original container will be used over the course of the procedure, the receiving container (including syringes) must be labeled.

B. All solutions and medications used will be in containers that legibly and correctly identify the current contents.

1. Medications and solutions both on and off the sterile field are labeled even if there is only one medication being used.
2. Containers that have not been appropriately labeled will not be used. Any medication or solution found without proper identification will be discarded.
3. The contents must be identified by a label on the main body of the container (i.e. not the lid).
4. A handwritten label or tape may be used.

C. Labels will include:

1. Name of the solution/medication/substance;
2. Strength of solution/medication;
3. Quantity
4. Diluent and volume if not apparent from container;
5. Expiration date when not used within 24 hours
6. Expiration time when expiration occurs in less than 24 hours
   (Expiration date and time are not necessary for short procedures).

D. Medication containers do not need to be labeled if immediately prepared and administered by the same person.

1. If the provider preparing the medication or solution participates in another function before administration, the container must be labeled.
2. If more than one medication is prepared by the provider, each medication container must be labeled.

E. If two or more people participate in the preparation and administration of the medication or solution, a two-person verbal and visual verification of the label's accuracy is required. (Medications prepared and labeled by a pharmacist do not require a second person verification).

F. At the conclusion of an operative or non-operative procedure, all supplies including the contents of any medication(s) or solution(s) will be appropriately discarded. This applies to multi-dose vials unless the vial was accessed outside of the patient room or procedural area. Refer to CDC link under References for information on dating multi-dose vials utilized outside of the immediate patient treatment area.

Positioning the Patient

For additional information refer to full Policy: *Postitioning the Patient in the Perioperative Setting* in PolicyStat

Patient positioning is a complex process with many steps involved to ensure patient safety Policy: *Postitioning the Patient in the Perioperative* **comprehensively outlines all steps needed to ensure safety. Refer to full policy when on site if positioning patients.**

Documentation of patient care

1. Patient care and the use of positioning equipment should be documented on the intraoperative record by the circulating nurse.
2. Documentation should include but not be limited to:
    a. Preoperative assessment with descriptions of the patient's overall skin condition on arrival and discharge from the perioperative suite.
    b. Preoperative assessment of ROM of joints involved in positioning.
    c. Type and location of positioning equipment/padding used.
    d. Initials/names, titles of persons involved in positioning the patient.
    e. Patient position for procedure and any change in position if repositioning is necessary.
    f. Postoperative assessment for injury related to position.

Latex

For additional information refer to full Policy: *Latex Policy* in PolicyStat

POLICY STATEMENT

1. Providence is a latex-**reduced** environment.
2. Providence approved latex gloves are the only type of latex-containing glove permitted in Providence Oregon facilities and are used in departments such as: Operating rooms, to include c-section rooms and cardiac catheterization labs or wherever a sterile surgical procedure is performed.
3. Non-sterile latex exam gloves should not be purchased or used.
4. Latex balloons are not permitted in Providence Oregon facilities.
5. Where alternatives are available, departments will evaluate alternate products that do not contain latex to possibly replace latex containing products.
6. During test procedures, departments will avoid, whenever possible, use of any product containing latex, e.g. not use latex tourniquets, syringes with rubber gasket, latex tubing, etc.

DEFINITIONS

High Risk Populations include:

1. Individuals with spina bifida/spinal cord injury.
2. Individuals with history of chronic or recurrent infections of the genitourinary tract.
3. Individuals with occupational exposure to latex.
4. Individuals with multiple allergies to medications and/or environmental allergens, e.g., food allergies to bananas, avocados, tropical fruits, kiwi, and nuts.
5. Individuals with a history of a local reaction (urticaria or contact dermatitis) to latex

Latex means natural rubber latex (NRL) manufactured from the milky sap of the rubber tree *Hevea brasiliensis*.

Latex paint does not contain the latex protein. It is not linked to latex sensitivity and is not covered by this policy.

Latex-reduced environment is an environment that minimizes contact and aerosolized latex allergen exposure.

RESPONSIBILITIES

Managers

a. Implement this policy within the department.

b. Ensure latex-free products are used whenever possible.

c. Do not order latex products outside the system to replace latex-free products available through the system.

Caregivers

a. Complete the latex questionnaire provided by Caregiver Health during the initial health screening.

b. Do not bring latex containing products, including latex balloons, into Providence facilities.

c. Report known or suspected latex sensitivity/allergy to Caregiver Health via the EHS Hotline (503- 216-3200)

d. Caregivers who experience signs and symptoms that may be associated with latex products, or symptoms that interfere with their ability to perform essential job functions will report to their supervisor, file an incident report and/or a Job Accommodation Request via the Sedgwick Portal.

e. Caregivers who are sensitized to latex will:

- Seek to minimize contact with latex containing products.
- Follow policies and procedures for latex sensitive individual.
- Collaborate with their core leader and HR Client Manager to discuss the need for accommodation.

Caregiver Health

a. Direct caregivers to the Sedgwick Portal for reporting of health issues related to Latex sensitivity or to submit a Job Accommodation Request.

Counts: Instruments and Sharps

For additional information refer to full Policy: *Counts: Instruments, Sharps and Related Miscellaneous Items* in PolicyStat

A. Counts are the professional responsibility of the entire surgical team:
B. All counts, including documentation on count board, are performed visually, audibly, and concurrently by 2 persons, one of them being an R.N.
C. All items counted should be individually identified and accounted for in its entirety (examples: disassembled, multiple parts, broken, etc.)
D. A final count should not be considered complete until all counted items used in the procedure have been visually accounted for by the circulator and scrub person concurrently prior to the end of the case (see Final Count definition).
E. Count boards will be used as the communication tool to document the patient's name, DOB, and surgical procedure, in addition to all sponge, sharp and miscellaneous counts items counted.
F. Items hidden from view and/or introduced into a cavity or natural orifice will be promptly communicated by the scrub person to the entire surgical team and noted on the count board by the circulator.
G. Additional counts may be done at the discretion/request of any team member.
H. All cases with countable sponges will have an initial and final count.
I. Sharps counts are performed on ALL procedures.
J. Instrument counts are performed on all cases in which a major body cavity will be opened/entered or potentially ope ned/entered.

Steps for discrepancy

1. RN Circulator informs the surgeon and surgical team as soon as discrepancy is identified
2. Ask for additional personnel as necessary.
3. Repeat the specific count (needle, sponge, instrument).
4. Procedure suspended or slowed if patient's condition permits
5. Visual inspection of the area surrounding the surgical field, including floor, kick buckets, linen and trash receptacles, etc. performed.
6. If the missing item is located, a complete recount must be conducted for that item
7. If there is an unresolved discrepancy, a count verification x-ray will be taken before the end of surgery/ procedure, and the patient leaves the OR, *if the patient's condition permits*

Count documentation should be recorded in real time and include the following components.

i. Staff members performing each count(s). In the event of down time protocol the circulator will document the initials of persons performing each count(s) on the downtime form. Identify the specific counts necessary for the procedure (this will vary based on the procedure being performed - see Table 2: Indication of Intraoperative Counts).
   Examples:
   - First initial count
   - Relief
   - Closing Count
   - Final /Skin
   - Cavity within a cavity
   - Major cavity if indicated
   - Skin Closure / Final Count
   - Additional counts as needed
   - Other

ii. The result of the count (either incorrect or correct)
iii. Items being intentionally left in (if any)
iv. The physician notified (yes/no)

Sponge Accounting

For additional information refer to full Policy: *Sponge Accounting* in PolicyStat

A. Sponges are counted during the initial setup of all procedures.
B. All counts are performed visually, audibly, and concurrently by two persons, one of them being an R.N.
C. Count boards will be used to document the sponge, sharp, and miscellaneous counts
D. Depending on circumstances of the case, additional counts may be called for at the discretion of the scrub/circulating nurse.
E. All counted items must remain within the OR and/or sterile field during the procedure. Linen or waste containers will not be removed from the OR until all counts are completed and resolved.
F. All sponges must be separated during counts
G. Pocketed sponge holder bags will be used for all cases requiring the use of ratec or laparotomy sponges.
H. All raytec and laparotomy sponges will be added to the field by the count of ten.
I. Sponge holder bags must have a back that does not allow sponges to be visualized from one bag to the next.
J. Sponge holder bags will be loaded horizontally/bottom up with the radiopaque marker visible inside the pocket.
K. Kick bucket liners must clearly be seen through.
L. Each sponge holder bag must hold only one size and type of sponge.
M. At permanent change of relief counts of sponges are done as per usual and must be physically reviewed using both visual and audible communication between circulating nurses.
N. The closing count consists of:
    1. a methodical wound exam by the surgeon,
    2. verification of counts prior to closing the wound
    3. verification that closing counts are correct/incorrect.
O. The "final accounting" is complete:
    1. After the wound is closed, dressings are on and all raytec and laparotomy sponges are off the field and in the sponge holder bags.
    2. The number of sponges in the holder bags must coincide with the number of sponges documented on the dry erase board.
P. The primary surgeon verifies that all sponges holder slots are full (in the absence of the surgeon, the practitioner who closes the skin, or the anesthesiologist may do the verification)
Q. Counted sponges intentionally used as packing in surgical wound:
    1. Record the number and types of sponges retained
    2. Record the reason for leaving the sponges in the wound
    3. Documentation of the number and type of retained sponges will be confirmed as correct by the surgeon
    4. Upon return to surgery, the previous perioperative record must be available to reconcile the number of sponges being removed
    5. Number and type of sponges removed will be noted in the current patient's record
    6. Sponges being removed will be isolated and not included in counts for the subsequent procedure
    7. The count on the subsequent procedure will be noted as correct after all sponges have been accounted for

Documentation

A. Count Board:
    1. Circulator records the number and type of sponges before the procedure.
    2. Circulator records items added during the procedure and includes them in subsequent counts.
    3. Additional raytec and laparotomy sponges are documented as a running total (e.g. $10^{10}20^{10}30$ either horizontal or vertical depending on the consensus of the institution.
B. Intra-operative Record - Electronic Medical Record (EMR):

Formaldehyde Awareness

Health Hazards of Formalin

Formaldehyde, one of the ingredients in formalin, is a **carcinogen** and **mutagenic**.

- **Carcinogen** = a chemical demonstrated to cause cancer in humans or to cause cancer in animals, thus considered capable of causing cancer in humans
- **Mutagenic** = a physical or chemical agent that permanently changes genetic material (usually DNA) in an organism.

In 2011, the National Toxicology Program, an interagency program of the Department of Health and Human Services, named formaldehyde as a known human carcinogen in its 12th Report on Carcinogens.

Health Hazards of Formalin

Formaldehyde, one of the ingredients in formalin, is a **sensitizer**.

- **Sensitizer =** a chemical substance or mixture that causes a substantial number of persons to develop an allergic reaction (like asthma or skin rash) after repeated exposure

Formaldehyde may cause skin sensitization which becomes evident upon re-exposure. Formaldehyde may also cause an allergic respiratory reaction.

Health Hazards of Formalin

Formaldehyde is **corrosive** to the eyes and an **irritant** to the skin and respiratory tract.

- **Corrosive** = highly reactive substance / chemical that causes significant damage to living tissue it comes into contact with.
- **Irritant** = a chemical substance or mixture which on immediate, prolonged or repeated contact with tissue induces a local inflammatory response in the skin, eyes or mucous membranes.

Eye irritation, headaches, skin rash and respiratory issues are all early signs of formalin exposure.

Protecting Yourself from Exposure

The **best** way to protect yourself is to **avoid exposure**:

- Substitute a less toxic product if possible.
- Keep containers closed whenever possible.
- Conduct work in areas with local exhaust ventilation.
- Use the smallest quantity necessary.
- Wear appropriate PPE.

The **most effective exposure controls** are:

1. Good ventilation
2. Safe work practices
3. Personal protective equipment (PPE)
    - Nitrile gloves
    - Chemical goggles
    - Lab coat / liquid resistant gown, if splash potential exists
    - Respiratory protection, if pouring without local exhaust ventilation.

Personal Protective Equipment

- Caregivers who have a **lower potential** for exposure based on work activities (e.g., placing tissue sample in formalin container and then securing lid).
    - Nitrile gloves are **required**
    - Chemical goggles are recommended
- Caregivers who have **increased potential** for exposure based on work activities where splash potential is possible (e.g., work over open containers of / pour formalin or work with tissue soaked in formalin).
    - Nitrile gloves are **required**
    - Chemical goggles (***not*** safety glasses) are **required**
    - Lab coat / liquid resistant gown is **required**
    - Face shield worn over chemical goggles is recommended

Reminder: Remove PPE and wash hands with soap & water before leaving work area.

Signs and Symptoms of Exposure

You may suspect you are exposed to formaldehyde if you experience:

- Eye irritation
- Headaches
- Skin rash
- Respiratory issues.

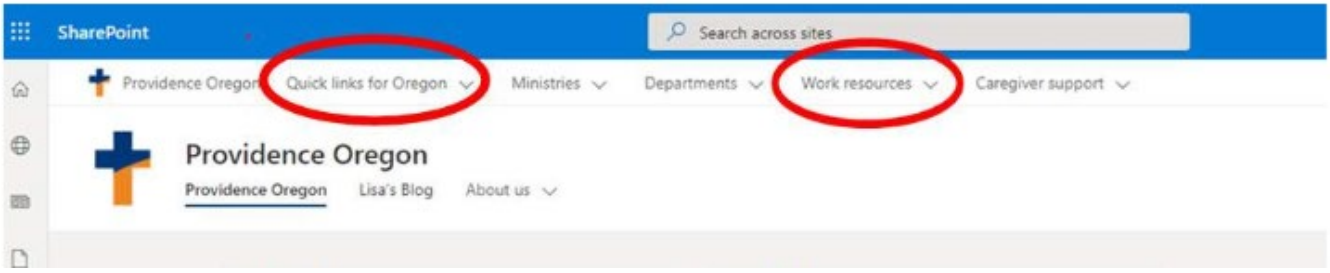
Formaldehyde Awareness

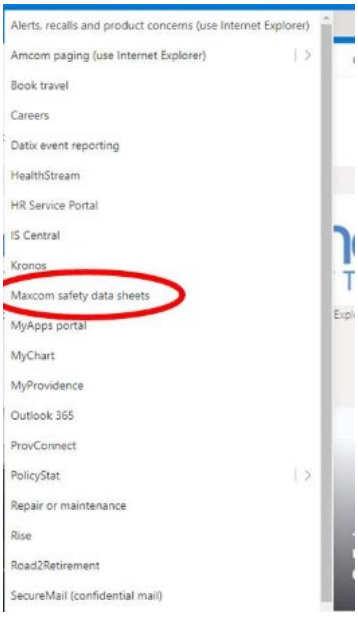
Emergency First Aid

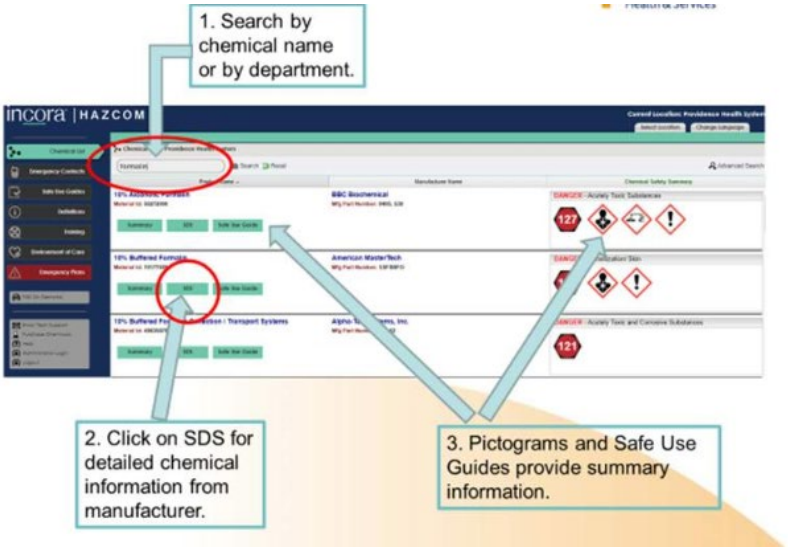
If you are exposed to formaldehyde:

- Flush eyes with water for 15 minutes at eyewash station
- Remove to fresh air
- Remove contaminated clothing and wash skin with soap and water
- Seek medical attention as soon as possible
- Notify your Core Leader and Caregiver Health Services

Locating Safety Data Sheets







Formaldehyde Awareness

Labeling

- All containers must be labeled.
- Manufacturer's original label is adequate.
- If you create a secondary container, you must label it with:
    a. Name of chemical
    b. Hazard warning statement (e.g., irritant, corrosive, etc.)

Formalin Pictograms

Formalin poses a chronic health hazard: it is a human carcinogen and mutagen.

Formalin is corrosive and can cause serious eye damage.

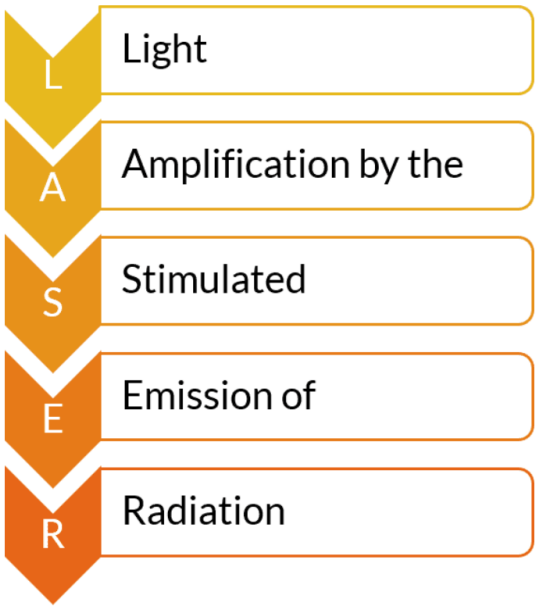
Formalin is a skin and respiratory tract irritant and an allergic sensitizer.

Spill Cleanup

- Work areas where formalin / formaldehyde is used **must** be supplied with spill clean-up materials necessary to manage small or incidental spills.
- Small or incidental spills will be cleaned up by trained caregivers in the immediate area.
    - Wear gloves and chemical goggles
    - Cover drains and limit spread of spill
    - Use absorbent material
    - Work from outside of the spill, in
    - Place spill debris into a closed, labeled bag or container
    - Complete Spill Report Form from Hazardous Chemical Spill Clean-up – Code Orange Policy
    - Contact Safety and Environmental Health Manager / Security for disposal
- Call a Code Orange whenever assistance with hazardous chemical spills is necessary or if you are unsure how to proceed safely.

Laser Safety

Light, concentrated and focused, stimulates atoms to emit radiant energy when activated. Stimulation is achieved by electricity, chemicals, flash lamp, or other lasers.



Laser Effects on Tissue

1. Laser energy may be ***reflected*** back off the tissue
2. Laser energy may be ***scattered*** into surrounding tissue
3. Laser energy can be ***transmitted*** through tissue
4. Laser energy can be ***absorbed*** by tissue

Common Medical Lasers include:

- Carbon dioxide
- Erbium: YAG (Er:YAG)
- Holmium: YAG (Ho:YAG)
- Neodymium: Yttrium-aluminum-garnet (Nd:YAG)
- Alexandrite
- Diodes
- Potassium titanyl phosphate (KTP)
- Tunable Dye
- Pulsed Dye
- Helium-Neon
- Argon
- Excimer
- Vectra Genesis

Hazardous Effects of Lasers

Eye Injury

Eyes are the most sensitive organs to light and the most vulnerable to injury. The risk of injury increases with high powered lasers.

Tissue Burns

Tissue burns can result from accidental emission of laser beam on adjacent tissue or be reflected from a shiny object to non-target areas.

Fire

Concerns are combustible material such as drapes or flammable solutions, as well as oxygen rich environments that act as catalyst for an ignition source such as lasers. This is especially true when lasers are used near endotracheal tubes.

Smoke Plume Inhalation

Laser smoke contains dead and live cellular material and viruses, as well as chemical by-products. Inhalation of these materials have potential harmful health effects.

Electrical Hazards

High voltage electrical current and some lasers present risk concerning toxic gases or flash lamps that can explode are concerns to be aware of.

Laser Safety Responsibilities

All caregivers:

1. Wear appropriate PPE in the Nominal Hazard Zone and when using laser.
2. Follow instructions from LSO or designee during procedures in observance of the chain of command as described in Addendum E.
3. Attend laser safety training.
4. Observe environmental safety precautions as needed per laser wavelength.

Lasar Safety (cont)

What is the NHZ?

The *Nominal Hazard Zone (NHZ)* is the area around the laser in which the ***Maximum Permissible Exposure (MPE)*** is exceeded.

- NHZ should be identified prior to start of case.
- Usually contained within the room but may extend through open doors or transparent windows.
- Laser warning signs, specific to the type being used, should be placed at the entrance to treatment areas.
- Doors should remain ***closed*** and ***windows covered*** to prevent beam transmission.

Lasar Safety (while in use)

1. Access to laser keys/codes should be restricted to authorized personnel skilled in laser operation.
2. Place laser standby mode when not in active use.
3. Use non-reflective instruments during laser procedure/case and site to decrease reflectivity of laser beams.
4. The laser foot switch should only be placed in a position convenient to the operator and should only be activated by the operator.
5. The laser assistant (e.g. RN or laser technician) should not have competing responsibilities that would require leaving the laser unattended.
6. Be Aware of Emergency Shut down Procedures.
7. Appropriate padding, PPE, backstops or guards should be used to prevent the laser beam from striking normal tissue.

Eyewear Safety

For Caregivers

- Eyewear must match the type of laser in use
- Laser eyewear should be labeled with the optical density and wavelength for which it is intended
- Eye protection of correct wavelength and density should be available at the entrance to a room where a laser is in use

For Patients

- Patients' eyes should be protected from the laser beam, by either goggles, glasses, wet eye pads or corneal shields
- A lens filter can be used over the end of an endoscope viewing port to protect from backscatter

Laser plume should be removed close to its production source by ***exhaust systems*** such as wall suction with a 0.1 micron in-line filter or smoke evacuation units.

If applicable, personnel should wear ***high-filtration masks*** to prevent inhalation of airborne contaminants.

Lasar Safety (cont)

Lasar Fire Safety

Laser appropriate fire extinguishers and, if applicable, saline should be immediately available.

Sponges and drapes near the surgical site should be kept moist.

Use laser-resistant endotracheal tubes for laser use around an airway.

- Inflate cuff with dyed saline to detect puncture.
- Moistened packs may be placed around the tube.

The laser should not be activated until flammable agents/preps have been allowed to dry per manufacturer instructions, to allow vapors to dissipate.

Surgical procedures need to consider the increased risk an oxygen rich environment.

- The lowest possible oxygen concentration that provides adequate patient oxygen saturation should be used.

Fires, including airway fires, have resulted from the laser sparking in the presence of concentrated oxygen.

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Lasar Safety (cont)

Patients Safety

Patient Positioning Considerations

- During perineal surgery, moistened radiopaque sponges may be used for rectal packing or covering the anus.
- Moist packing prevents the release of methane gas from the rectum. Methane gas is highly flammable and potentially explosive.

Surgical Prep Considerations

1. Alcohol-based prep agents remain flammable until they are completely dry.
   - Particularly hazardous around head, neck, chest procedures due to hair.
   - Pooling can occur in body folds and crevices.
2. Vapors occurring during evaporation also are flammable.
   - Vapors under drapes increases risk of fire or burn injury.
   - Position drapes to prevent trapping vapors.
3. Use of nonflammable prep agents will minimize this risk.

Laser Airway Protection and Considerations

Laser-resistant endotracheal tubes should be used to minimize the potential for fire during laser procedures involving the patient's airway or aerodigestive tract.

1. ET tube cuffs should be inflated with normal saline with dye (methylene blue).
2. Moistened packs may be placed around the endotracheal tube.
   - These packs should be kept moist throughout the procedure.

Lasar Safety (cont)

Documentation

Laser Documentation SHOULD:

- [ ] Be complete, accurate and enable identification of trends
- [ ] Demonstrate compliance with regulatory and accrediting agency requirements.
- [ ] Include at a minimum in Epic:
    - Patient information
    - Type of laser being used
    - Laser settings and parameters
    - Wavelength
    - Joules
- [ ] Include Supply Information – if/when applicable
    - Lot Numbers
    - Wire used
- [ ] Include safety measures implemented during procedure
- [ ] Describe patient protection (eyewear, shielding)
- [ ] Capture treatment time(s)
    - Capture on/off laser activation and deactivation times for head, neck, and chest procedures
- [ ] Accurately list surgical procedures (if applicable)
- [ ] Be reported yearly to Ministry Environment of Care Committee

Waste Anesthesia Gases

What are Waste Anesthesia Gases (WAG)?

- Small amounts of volatile anesthesia gases that leak from the patients anesthetic breather circuit in the air of operating rooms
- Leak from gas cylinders or anesthesia containers
- Exhaled by patients recovering from anesthesia

Who Could be Exposed to WAG?

Everyone working in the OR can be affected.

- Anesthesiologists
- Nurse anesthetists
- Surgical and obstetric nurses
- Operating room (OR) technicians
- Surgeons
- Anesthesia technicians
- Post-anesthesia care nurses
- Circulating nurse

What are the Health Effects of Exposure?

- Headache
- Irritability
- Fatigue
- Nausea
- Drowsiness
- Judgment impairment
- Liver and Kidney disorders
- Miscarriages

What if Anesthesia is Spilled?

If spill happens:

- <10 mL – no special handling other than remove other items away from spilled liquid. It evaporates quickly.
- 10 mL to 30 mL- quickly cover it with a impermeable material (blue chux or towel and cover with plastic bag) to prevent vapors from overwhelming the room and absorb the liquid.
- Large spill – > 30 mL - EVACUATE AREA and call "Code Orange Response Team" for clean up.
- Ensure proper use of PPE during clean-up -Gloves, goggles, face shields. Only help with clean up if trained to do so.

Manage disposal of liquid agents:

1. Once absorbed - Place absorbent or chux into a plastic bag, tie closed
2. Then place in a Yellow Hazmat Bag
3. Call EVS to transport and log waste into Hazardous Waste Storage area.

Passive Badge Monitoring

Semi Annual monitoring is recommended by OSHA.

An anesthesiologist, surgeon, or nurse working near patients head should wear a passive badge monitor for his or her shift.

Passive Badges are to be worn on the outside of clothing, in your breathing zone (in space between shoulders and nose) for their entire shift.

Find Out More!

Check out the following websites:

- OSHA - Guidelines for Waste Anesthesia Gases 296.1910.1200 http://www.osha.gov/dts/osta/anestheticgases/index.html
- CDC / NIOSH Workplace – http://www.cdc.gov/niosh/docs/2007-151/pdfs/2007-151.pdf