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MUNSON MEDICAL CENTER
MUNSON HEALTHCARE

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Last Revised	5/15/2023
Next Review	5/14/2026
Owner	Kerry Kole: Medical Director
Area/ Department	Trauma Services
Applicability	MMC
Tags	Procedure

Massive Transfusion Protocol

Purpose

To provide a process in the case of a massive transfusion.

Policy

Indications

A. Massive blood loss and profound hemorrhagic/hypovolemic shock.

B. Triggers:

1. Greater than 6 units packed red blood cells (PRBC) transfused within 2 hours.
2. Hemodynamically unstable patient with identified or suspected coagulopathy of trauma or disseminated intravascular coagulopathy (DIC)
3. Any time at the discretion of the trauma surgeon / intensivist.
4. Assessment of blood consumption (ABC) score of greater than or equal to 3 (total possible score 4)
    a. Penetrating mechanism (no= 0; yes= 1)
    b. Emergency department (ED) systolic blood pressure less than 90 mmHg (no= 0; yes= 1)
    c. ED heart rate greater than 120 bpm (no= 0; yes= 1)
    d. Positive Ultrasound FAST Exam (no= 0; yes= 1)
5. Trauma patient who requires more than 1 liter crystalloid to maintain systolic blood pressure greater than 90mmHg.

Responsible Parties

A. Team leaders: depending on area in hospital
    1. Trauma surgeon (trauma bay, operating room (OR), intensive care unit (ICU))
    2. Intensivist (in ICU when trauma surgeon unavailable).
    3. ED physician (in ED when trauma surgeon unavailable)
    4. Anesthesiologist (in OR or Post Anesthesia Care Unit (PACU))
    5. Trauma advanced practice provider (APP)
    6. Obstetrician (OB)
    7. Sound hospitalist

B. Clinical pathologist

C. Lab blood bank / laboratory personnel

D. Pharmacy

E. Nursing supervisor / charge nurse

F. Clinical team:
    1. Trauma physician assistant (PA)/nurse practitioner (NP)
    2. ED registered nurse (RN)/paramedic
    3. ICU RN
    4. OR RN
    5. ED Technician / ICU technician / OR technician

G. Vascular Access

Procedure

A. Initiation of the massive transfusion protocol (MTP):
    1. Trauma surgeon, intensivist, ED physician, trauma APP, anesthesiologist, Sound hospitalist, or OB initiate MTP.
        a. Staff member call switchboard to page out MTP overhead and to all responsible parties.
        b. Staff member enter order for Massive Transfusion in Cerner
            i. Initiate *Lab - every 30 minutes* immediately
        c. Blood bank and lab supervisor notified (by switchboard) of MTP initiation.
        d. Nursing/house supervisor to come to area if needed.
        e. Blood bank will notify clinical pathologist of MTP initiation
        f. Maintain communication with blood bank during the initiation and maintenance of MTP.

g. Consider the use of tranexamic acid (TXA) on patients greater than 18yrs old, initial 1g dose over 10 minutes and then a second 1g dose over the next 8 hours. **MUST BE USED WITHIN 3 HOURS OF INITIAL INJURY, IDEALLY less than 1 HOUR

h. Communicate with pharmacy the need for anticoagulation reversal agents.

2. Clinical pathologist or designee:
    a. Supervises procurement of lab tests.
    b. Tracks the use and available supply of blood and blood products.
    c. Advises the clinical team on the use of blood, blood products, and procoagulants
    d. Use of products based on lab results and available reserves.
3. Lab: confirm patient identification (ID) and medical record number (MR#) (actual or John Doe)
    a. Initial testing
        i. Type and cross (GTAB)
        ii. STAT coagulation profile: Prothrombin time (PT), partial thromboplastin time (PTT), fibrinogen, hemoglobin (HGB), platelet count
        iii. Basic metabolic panel (BMP), arterial blood gas (ABG), and lactate.
    b. Massive transfusion serial lab process.
        i. Repeat labs every 30 minutes until discontinued by clinical team.
        ii. Include complete blood count (CBC), PT/PTT, fibrinogen, lactate, BMP, and ionized calcium.
4. Blood bank:
    a. Prepares and releases
        i. First of five uncrossmatched PRBCs – O-negative or O-positive as indicated
        ii. 5 more units uncrossmatched, O-negative or O-positive PRBC as indicated (unless type specific available).
        iii. 5 single units of plasma
        iv. 5 units platelets
    b. Delivers the first trauma pack to the location of the MTP
    c. Prepares fresh frozen plasma (FFP) to stay 5 single units ahead.
    d. Prepares platelets to stay 5 units ahead.
    e. Ships components at temperatures appropriate for the product being

delivered. This should prevent inappropriate temperature storage of a blood product, such as refrigeration of platelets.

f. Prepares trauma packs (see attached schedule). Trauma packs should be ready to be delivered every 20 minutes.

g. Updates to appropriate type-specific or crossmatched components once available.

h. Tracks results of labs as they become available.

i. Communicates with clinical pathologist and designated clinical team leader (usually the trauma surgeon, anesthesiologist, or intensivist depending on clinical area).

j. Access and maintenance of services:

i. Notifies blood center and requests urgent delivery as needed.

ii. Communicates status of reserves to clinical pathologist.

5. ED RN/paramedic and ICU RN respond to all MTPs

a. Maternity Unit: ED Brings Belmont and Maternity provides the MTP Cart

b. ED MTP: ICU brings the Belmont only (not the MTP cart)

c. All Other Units: ICU Brings MTP Cart and Belmont. ED also brings Belmont for backup.

6. Vascular Access ensure patient has large bore IV (unless physician inserting Cordis)

B. Maintenance of MTP:

1. Charge nurse/Patient Care Coordinator:

a. Checks for accuracy of specimens and verification of patient identity.

b. Expedites transfer of patient within the institution.

c. Expedites transfer of lab specimens in timely fashion.

d. Communicates with and assists clinical team to maintain accuracy and timeliness.

2. Clinical team:

a. Draws, labels and maintains serial labs every 30 minutes during MTP or until discontinued by team leader (see heading III, below).

b. Transfuses shipped trauma packs at regular intervals as needed

c. Documents Input/Output (I/O) and medication administration record (MAR) during MTP.

d. Accompany the patient to the OR or ICU.

e. Remain with the patient until the MTP is terminated.

3. Team leader:

a. Ensures timeliness of serial blood draws.

b. Ensures timeliness of transfusions.

c. Supervises clinical team during the maintenance of MTP.

d. Designates alternate team leader when appropriate (e.g.: trauma surgeon designates anesthesiologist when operating).

e. Communicates with clinical pathologist regarding trend of lab results and transfusion needs.

i. Laboratory goals:

1. HGB 8-10 g/dL during the resuscitation and in the first 24 hours post stabilization. After 24 hour period of stabilization the HGB may be reduced to 7 g/dL if not actively bleeding.

2. Platelet count greater than 100,000 during resuscitation and in the first 24 hours post stabilization. After the 24 hour period of stabilization the goal is a platelet count greater than 50,000.

3. Coagulation testing goals: INR less than 2.0 and PTT less than 55 seconds. INR of 1.8 may be needed in TBI patients.

4. Fibrinogen greater than 150 mg/dL.

f. Terminates MTP (See heading III)

4. Clinical pathologist or designee:

a. Monitors coagulation and lab results

b. Advises team leader and clinical team of need for other blood components or specific alterations in transfusion needs (e.g. cryoprecipitate)

c. Notifies team leader of critical shortages in blood supply.

C. Termination of MTP:

1. Determined by team leader when either of the following are achieved

a. Achievement of endpoints of resuscitation ("stabilization").

i. Normalization of vital signs, including temperature.

ii. Normalization or improvement of coagulation parameters.

iii. Termination of bleeding/exsanguination.

b. Failure or Futility.

2. Call 55555 for switchboard to announce termination of MTP overhead.

3. Maintenance of hematologic function:

a. Serial hematologic assessments (CBC, PT/INR, PTT) every 6 hours for 24 hours, then twice daily (BID) or as needed.

b. Do not transfuse if there is no evidence of bleeding

c. Transfuse FFP if there is evidence of oozing until INR less than 2.0.

d. Transfuse platelets if platelets less than 50 k/dL.

e. Transfuse red blood cells (RBC) to maintain HGB 8-10 g/dL in first 24 hours post stabilization; transfuse for HGB less than 7 g/dL after 24 hours (restrictive transfusion trigger) unless evidence of new bleeding.

f. Transfuse cryoprecipitate if fibrinogen less than 150 g/dL.

D. Review of case and debriefing:

1. What went well.
2. What did not.
3. Product wasted.

E. *If rotational thromboelastometry (ROTEM) is available, the following cut-points for transfusion triggers may also be used:

1. Plasma for CT exTEM greater than 100 seconds and/or CT inTEM greater than 230 seconds.
2. Cryoprecipitate (fibrinogen concentrate) and/or plasma for MCF fibTEM less than 8 mm.
3. Platelets for MCF exTEMless than 45 mm and MCF fibTEM greater than 10 mm.
4. Anti-fibrinolytics for ML exTEM greater than 15 percent.

Document ID: 038.P003

Attachments

- ED Step-by-step instructions for using the Massive Transfusion Protocol Edits.doc
- Expected Response to Product
- MTP schedule.docx
- Step by step instructions for MTP in ICU 2019.pdf

Approval Signatures

Step Description	Approver	Date
System Policy Oversight Committee	Terri Fries: Document Mgmt Spec	5/15/2023

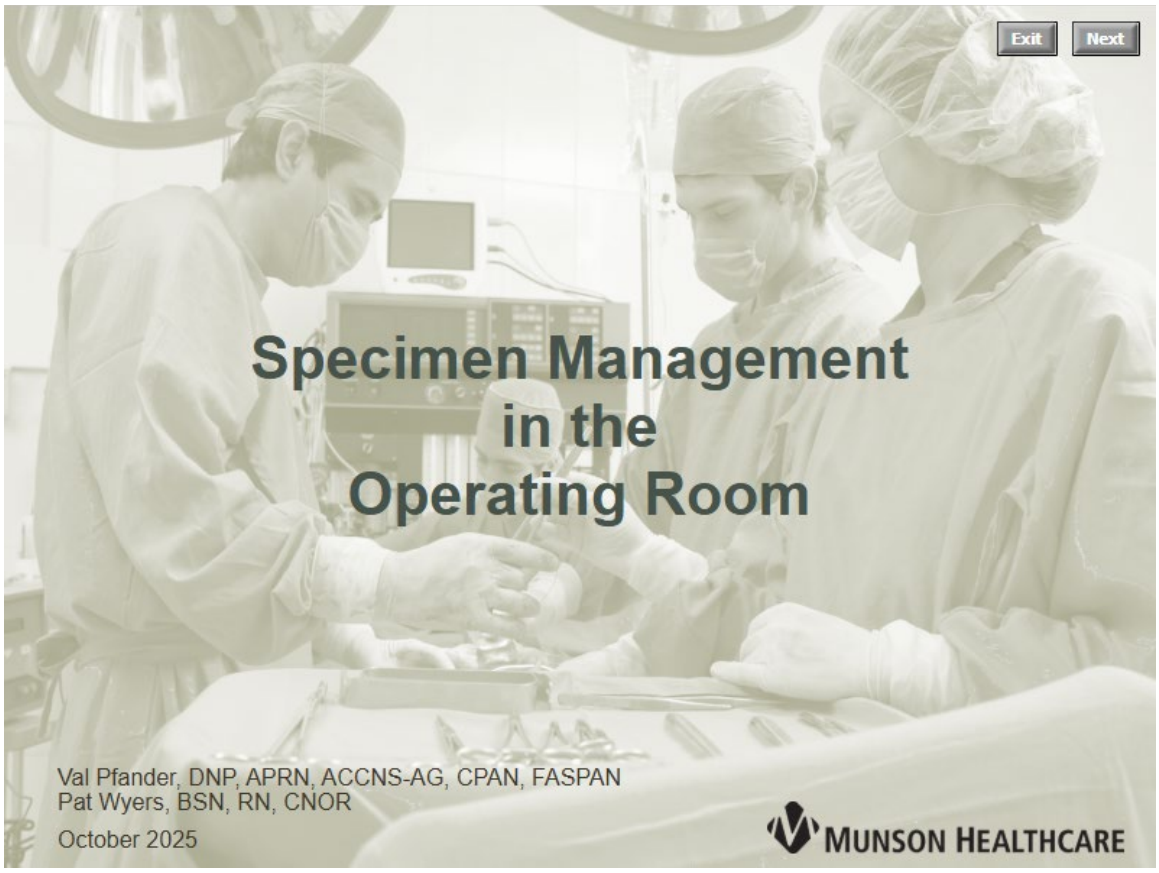
Mgr Trauma Program	Sarah Helveston: Mgr Trauma Program	5/15/2023
Document Owner	Kerry Kole: Medical Director	5/13/2023

Applicability

Munson Medical Center

Standards

No standards are associated with this document



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Goal & Objectives

Goal

This course provides information on the process for specimen handling, labeling, and handoff in the Operating Room at Munson Medical Center.

Objectives

1. Define the five rights of specimen handling.
2. Identify the preparation required for various specimens.
3. Explain the guidelines for labeling surgical specimens.
4. Describe the roles for specimen handoffs through all phases.
5. Identify the process for documenting surgical specimens.

Importance of Surgical Specimens

Specimens are sent to pathology for a variety of reasons:

- Identification and documentation of the specimen
- Histological or other examinations
- Proof of surgical procedure
- Diagnosis and potential treatment and/or therapy

It is the responsibility of the perioperative nurse to correctly identify, label, preserve, and document the removal and transportation of specimens.

Specimen Management

Incorrect management of specimens can lead to suboptimal patient outcomes:

- Misdiagnosis
- Delayed treatment
- Incorrect treatment
- Additional surgical interventions

Incorrect management includes:

- Mislabeled containers
- Improper preparation resulting in crushed or dried-out specimens
- Incorrect documentation of the surgical site or description of the specimen

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Test Your Knowledge

Improper management of specimens can lead to harm to the patient by:
(Choose all that apply.)

- [x] Inaccurate or incomplete patient diagnosis
- [x] Delayed treatment
- [x] Incorrect treatment
- [x] Additional surgical interventions

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The Five Rights of Specimen Handling

Right Patient
- Confirmation of patient name and date of birth

Right Specimen
- Especially important when multiple specimens are procured
- Each specimen must go into separate containers unless directed otherwise by the surgeon

Right Date and Time
- Date and time of collection can be critical depending on the test ordered

Right Surgeon
- Provides a point of contact for lab or pathology reports

Right Laboratory Test
- Each test requires specific handling, such as need of a fixative solution or delivery to a specific area in the lab by a specific time

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Test Your Knowledge

The Five Rights of Specimen Handling include:
(Choose all that apply.)

- [x] Right Patient
- [x] Right Laboratory Test
- [x] Right Specimen
- [x] Right Surgeon
- [x] Right Date and Time

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Surgical Specimen Preparation

Routine Specimens

- Do not require immediate processing by the pathologist.
- Should be placed in a preservative fluid and sent to Pathology, non-urgently.

Frozen Section Specimens

- Should be sent immediately to the lab.
- Should not be placed in preservative fluid.

Surgical Specimen Preparation *(cont.)*

Culture Specimens

- Swabbed tissue specimens are obtained at the sterile field and are placed immediately in a transport medium in a sterile tube (aerobic and anaerobic).
- Tissue excision obtained at the sterile field is placed on a small piece of non-adherent dressing and put in a sterile container.
- Cultures are transported to the laboratory **as soon as possible**.

Cytology Specimens

- Can be tissue or bodily fluid.
- Specimen is placed in a sterile container.
- May be obtained as "washings." Washing is the process of injecting saline by the surgeon, and either followed by aspiration of the fluid and placement into a sterile container, or followed by swabbing the fluid and smearing onto a glass slide.

Surgical Specimen Preparation *(cont.)*

Forensic Specimens

- Physical evidence taken from a victim or suspect in a crime.
- Can include patient belongings, body tissue, fluids, or foreign bodies.
- Most common types are bullets, pieces of glass, wood, paint, or bloodstained clothing.
- Require secure processing and documentation following Security Guideline: Evidence Disposition.

Explanted Medical Devices

- No explants will be released to the patient, vendor, or surgeon.
- Explants in which the surgeon orders pathology testing will be sent to the lab and the disposition of the explanted device documented on the OR Record.
- If explant needs to be disposed of, follow MHC Hazardous Materials and Waste Management Plan for proper disposal.

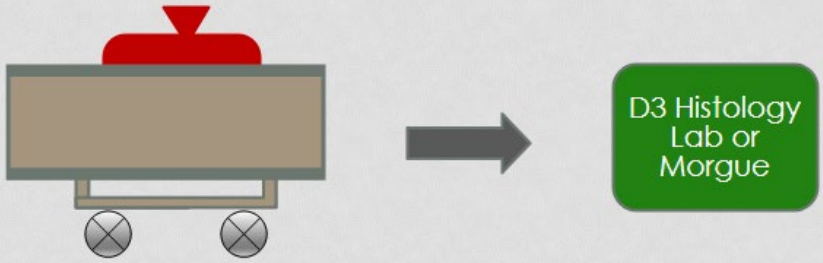
Surgical Specimen Preparation *(cont.)*

Stones, Calculi, or Foreign Bodies

- Placed in a dry container and sent to Pathology for gross examination and chemical analysis.

Amputated Limbs or Extremities

- Double bagged and contained in a impervious biohazard bag or wrapper.



Surgical Specimens

- All surgical specimens are considered to be a biohazard.
- Personal protective equipment (gloves, mask, and eye protection) must be worn when handling or transporting the specimens to their containers.
- Protective attire recommended to be worn while dispensing formalin includes chemical goggles, gloves, and a plastic apron over a long-sleeved warm-up jacket or a fluid-resistant cover gown.

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Test Your Knowledge

Which specimens do not require immediate processing by the pathologist?

- (●) Routine
- ( ) Frozen section
- ( ) Anaerobic culture
- ( ) Aerobic culture

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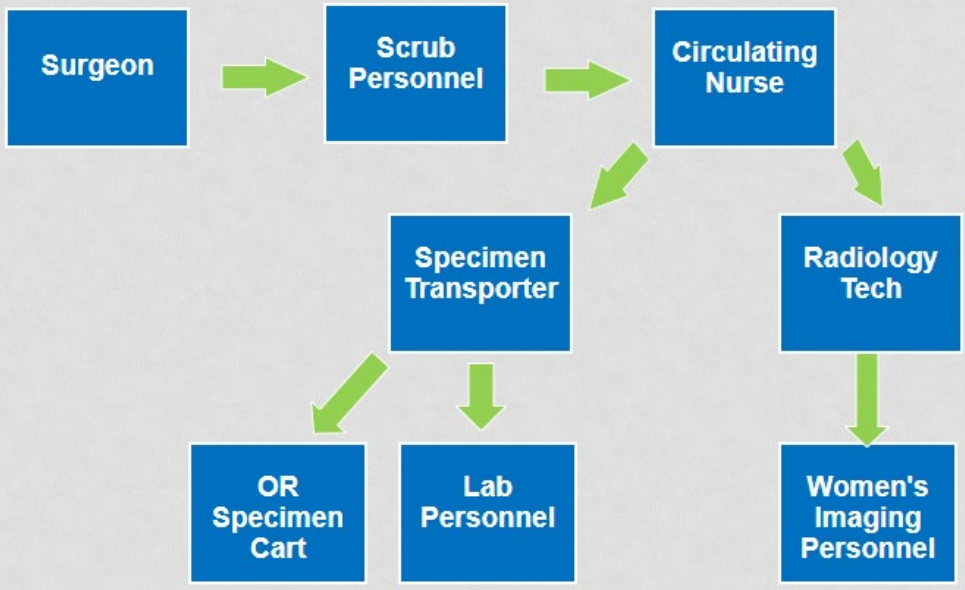
Specimen Handoff Sequence



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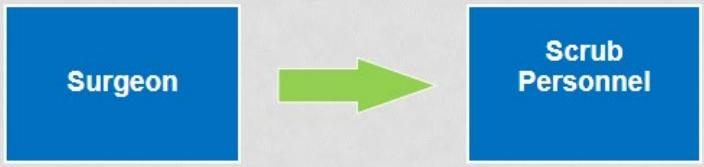
Handoff Between Surgeon and Scrub

The surgeon will **verbally state**:

- Specimen type and source
- The intended laboratory test(s)
- Any special laboratory instructions



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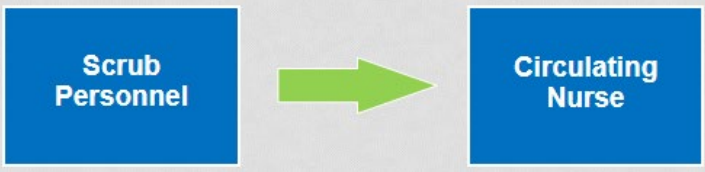
Handoff Between Scrub and Circulating Nurse

Handoff includes **verbal validation** of the following:

- Patient's name and date-of-birth
- Specimen source
- Specimen type
- Specimen preparation



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Circulator Roles

1. Completes the **Lab Requisition**.
2. Confirm the information auto-filled correctly and printed from Surginet.
3. Affix printed specimen label to the specimen container.
    i. **Important**: Add the time of tissue/tumor removal on breast specimens.

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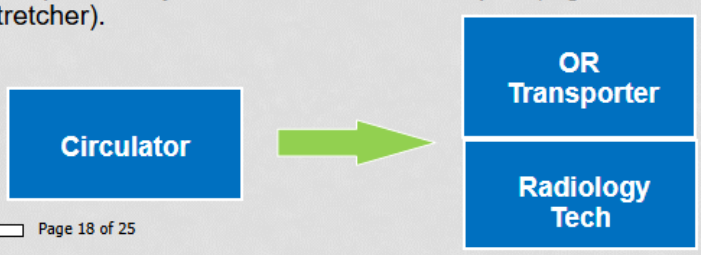
Handoff - Circulator to OR Transporter or Radiology Tech

Handoff includes **verbal validation** of the following:

- Patient's name and date-of-birth
- Specimen source and type
- Fixative agent (e.g., formalin) if required
- Delivery location (e.g., Women's Imaging, Histology, Microbiology, Cytology, OR Specimen Cart, Morgue, or D2 Lab drop-off station)

After the handoff has been completed, the specimen must be **immediately delivered** to the set destination. The specimen **cannot be handed off** to another staff member or placed anywhere else to await transport (e.g., on a cart, laundry hamper, or stretcher).



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Test Your Knowledge

Select the statement that correctly describes the specimen transport process.

- ○ After the specimen has been handed off to the specimen tranporter, it is ok to hand it off to another OR staff member so you can go on break.
- ◉ After the specimen has been handed off to the specimen transporter, it cannot be handed off to another staff member or set down to await transport.
- ○ After the specimen has been handed off to the specimen transporter, it is ok to set it down for a brief moment to complete a task.

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Specimen Log Documentation

The specimen transporter places a patient sticker on the **OR Specimen Log** (located on the OR specimen cart) and completes the required components circled below in red.

SPECIMEN LOG

Complete for every requisition slip				(x) Select only one specimen type Enter time to Lab in shaded section								To be completed by Lab Staff		
Patient Sticker	Initials	Log Date	# Containers	Formalin	Fresh	Frozen	Culture	Cytology	Calculi	Woman's Imaging	Morgue	Lab Init.	P/ U Date	Number of Containers

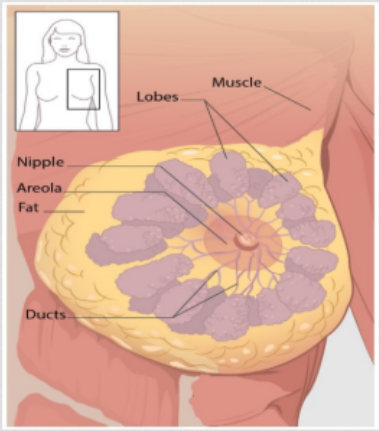
Breast Tissue and Lymph Node Specimen Specifics

Like healthy breast cells, most breast cancer cells - but not all - have hormone receptors and respond to the signals coming from these hormones.

Knowing whether or not breast cancer cells have hormone receptors is an important piece of information for making treatment decisions.

For hormone-receptor-positive breast cancer cells, hormonal therapy can be used to interrupt the influence of hormones on the cells' growth and overall functioning. If you take the hormone away or block it, as these medications do, the cancer cells are less likely to survive.

Source: www.breastcancer.org



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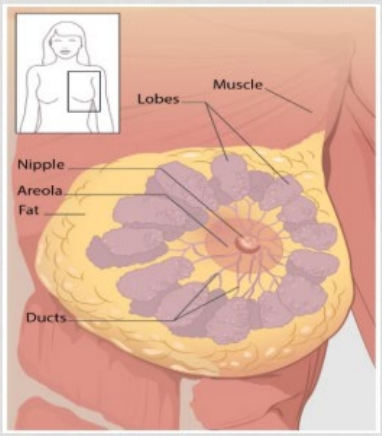
Breast Tissue and Lymph Node Specimen Specifics

- Careful collection and handling of breast specimens and lymph nodes will protect and preserve the molecular and genetic signatures of the specimen.
- Transport these specimens from the Operating Room to the Pathology Lab **as soon as possible** for immediate examination.
- The time from tumor/tissue removal, to examination by a pathologist, should be kept to less than or equal to one hour to meet regulatory compliance.
- These guidelines guarantee accurate ER/PR/HER2 biomarkers, which are used to determine the most appropriate type of treatment.

Please click the graphic, to learn more about breast cancer tissue.



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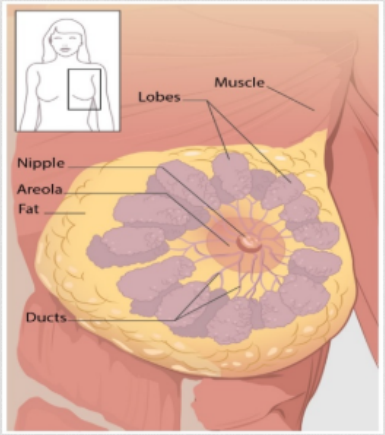

Breast Tissue and Lymph Node Lab Requisition

The following information must be addressed when completing the *Breast Tissue and Lymph Node* Lab Requisition:

- Surgeon name
- First and last name of primary care provider
- Date
- Circulating nurse's initials
- OR Room and phone number
- Clinical History/Pre-Op Diagnosis
- Specimen Description
  - Breast tissue
  - Nodes (Sentinel – Hot, Blue, Hot and Blue)
- Time specimen removed from patient
- Receiving area (per surgeon order):
  - Women's Imaging/Radiology
  - Histology/D3 Lab
  - OR Specimen Cart
- Handoff signatures

Test Your Knowledge

To comply with regulatory requirements and policy, specimens from breast tissue or surrounding lymph nodes should be examined by a pathologist within:

- (●) 1 hour
- ( ) 6 hours
- ( ) 12 hours
- ( ) 24 hours

Documentation

Each specimen must be documented in these places:

- OR Specimen Log
- Intraoperative Record

The Intraoperative Record:

- Is the legal record of activities that took place in the OR.
- Accounts for each and every specimen and/or culture obtained during the surgical procedure.
- Is the individual record of each specimen.

Important!
Each specimen container should contain only one specimen, unless directed otherwise by the surgeon.

References

Association of PeriOperative Registered Nurses. (2025). *Guidelines for perioperative practice*.

College of American Pathologists (2023). *Practical guide to specimen handling in surgical pathology.* Retrieved from https://cap.objects.frb.io/documents/practical-guide-specimen-handling.pdf

Breast Cancer Organization. [Breast image]. Retrieved from https://www.breastcancer.org/

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Fire Safety in Anesthetizing/ Procedural Areas

Jeannette Reynolds, MSN, BBA, RN, CPAN
Kathy Sahs, BS, CHSP
Sam Smith, MSN, RN, CCRN, SANE
Magdalena Stewart, DNP, CNS
Pat Wyers, BSN, RN, CNOR

July 2024

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Goal and Objectives

Goal:

To educate anesthetizing/procedural area staff about the recommended actions for fire prevention and fire response.

Objectives:

After completing this activity, the participant will be able to:

1. Identify the three components of the fire triangle.
2. Identify steps for fire prevention interventions.
3. Describe the staff's role in fire safety.
4. Discuss the steps to extinguish a fire.

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Procedural Fire Facts

According to The Joint Commission (TJC)

- 90-100 surgical fires occur yearly.
- 70% involve use of an electrosurgical device (ESU), also known as a Bovie.
- 15% are related to use of a light source.
- Other contributing factors include:
  - Inadequate orientation, understanding and/or communication of fire risk in procedural areas
  - Insufficient time-out procedures
  - Overconfidence, distraction, or loss of situational awareness
  - Equipment malfunction

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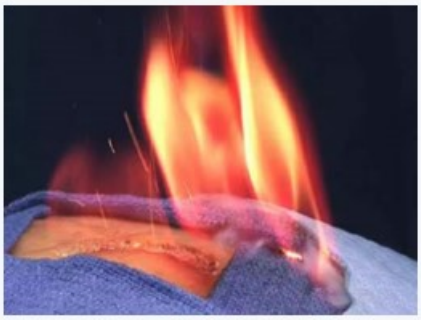
It Happens Here!

In the first quarter of 2022, an MHC OR had two fire/unintentional smoke events from equipment (laser and surgical drill). No patient or staff injury occurred.

Also in April 2022, a fire occurred when a patient applied petroleum jelly to their lips while on high-flow oxygen. The patient sustained first- and second-degree burns.



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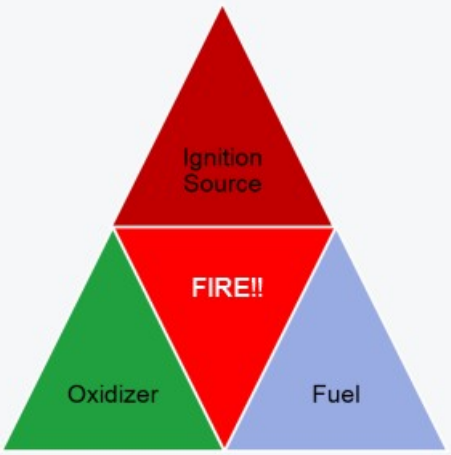
Fire Triangle

There are three elements necessary for a fire:

- Ignition source
- Fuel
- Oxidizer



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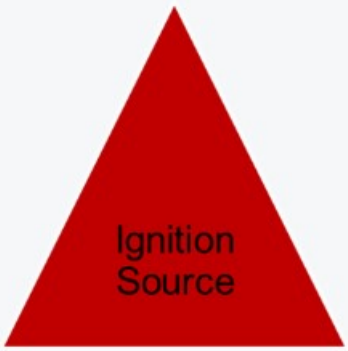
Common Ignition Sources

An ignition source is anything providing enough energy to start a fire:

- ESU/Bovie
- Argon beam coagulator
- Power tools (e.g., drills, burrs)
- Laser
- Fiber Optic light cords
- Defibrillator
- Electrical equipment



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Common Fuels

A fuel is anything that will burn:

- Alcohol-based skin antiseptic agents (preps)
- Drapes
- Gowns
- Endotracheal tubes
- Skin degreasers/tinctures/aerosols
- Body tissues and hair
- Intestinal gases
- Petroleum-based products

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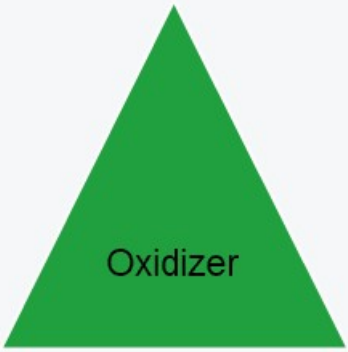
Common Oxidizers

An oxidizer is a gas which supports combustion:

- Oxygen
- Nitrous oxide



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Fire Risk Assessment

Fire risk assessment is a team effort.

As part of the preprocedural briefing process, the proecdural team should initiate a fire risk assessment to assess for the presence of the three elements of the fire triangle (AORN).

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Fire Risk Assessment *(cont.)*

Before each procedure, evaluate the following:

- Are there alcohol-based prep agents or other flammable solutions being used?
- Is the procedure being performed above the xiphoid process?
- Is there open oxygen or nitrous oxide being administered?
- Is an ESU, laser, fiber-optic light cord, defibrillator, drill, or saw being used?
- Are there other possible contributors?

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You must complete the activity.

Controlling Ignition Sources

Click each arrow:

Fiber-Optic Light Source:

- Place the light source in standby mode or turn it off when not in use.
- Inspect light cables before use. Remove from service if broken light bundles are visible.
- Place the scope and light source on a designated heat-resistant surface when not in use.

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Controlling Fuels

Surgical Skin Prep:

- Prevent pooling of skin prep solutions.
- Remove and discard prep-soaked materials, ensuring they are at least 3 feet from an ignition source.
- Skin prep dry time should follow manufacturer instructions for use to allow fumes to dissipate before draping.
- Allow chemicals to dry (e.g., alcohol, collodion, tinctures).
- Use water-soluble gel to cover facial hair.

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Controlling Oxidizers

Considerations for oxygen/flammable gas administration:

- Check the anesthesia circuits for possible leaks prior to the start of the procedure.
- Tent the surgical drapes to allow for free air flow.
- Keep the oxygen percentage as low as possible on non-intubated patients.
- Inform the surgeon when an open oxygen source is being used.
- Turn off oxygen or nitrous for 1 minute prior to use of an ignition source in head, neck, or upper chest procedures.

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Controlling Oxidizers *(cont.)*

Oropharynx Procedures

- Inflate the endotracheal tube cuff with tinted saline.
- Evacuate intended surgical smoke from small or enclosed spaces.
- Pack wet sponges around the back of the patient's throat.
- Document placement and removal of throat sponges.
- If oxygen is being used, suction the patient's oropharynx deeply before using the ignition source.

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See Unintended Smoke or Flames?

Pull the fire alarm!

All team members should be alerted to the presence of a fire or unintended smoke, no matter how small. Alerting other team members decreases the risk of injury to the patient and personnel.

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Fire Pull Station Locations and Responders

- It is the responsibility of each team member to be aware of the locations for fire pulls in his/her areas.
- When a fire pull is activated, the facility response team and the fire department will respond to the alarm.
- Assign a staff member to assist responders with donning disposable coveralls and lead them to the location of the fire.

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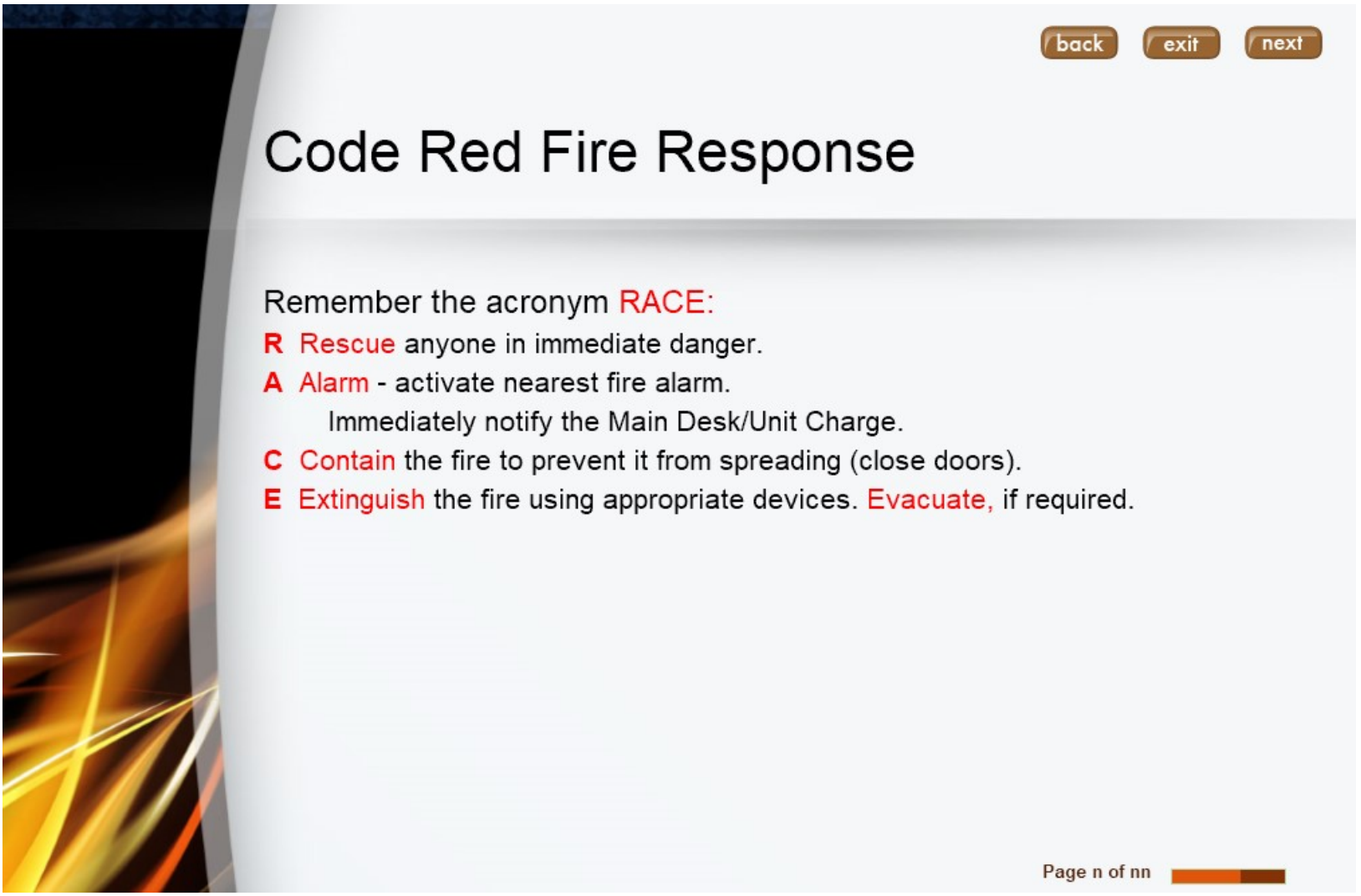
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Code Red Fire Response
Remember the acronym RACE:
R Rescue anyone in immediate danger.
A Alarm - activate nearest fire alarm.
Immediately notify the Main Desk/Unit Charge.
C Contain the fire to prevent it from spreading (close doors).
E Extinguish the fire using appropriate devices. Evacuate, if required.
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Medical Gas Shut-off

Be aware of the medical gas shut-off valve locations in your area. They are typically located outside the procedural suite and labeled.

In the event of a fire, the team should critically evaluate medical gas shut off for that specific area, then communicate medical gases have been emergently shut off in your location.

The decision to further shut off medical gases is made upon mutual consent among Nursing Administration, Respiratory Therapy, Facilities services, and anesthesia providers (if present).

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Extinguish a Fire Using Solution

- Douse the base of the fire with a nonflammable liquid (saline or water) if readily available.
- Impermeable drapes must be removed to effectively extinguish the fire.

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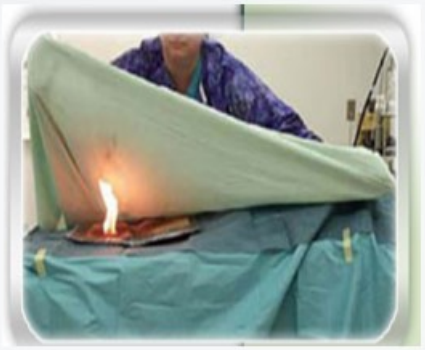
Extinguish a Fire by Smothering

- Keep your body away from fire.
- Hold towel between fire and patient's airway.
- Drop the end of towel closest to the head.
- Drop the other end of towel over the fire.
- Sweep hand over towel from head toward feet. DO NOT PAT the fire! This fans the flames and expands the fire.
- Lift the towel carefully to determine if flames are extinguished.
- Remove drapes or burned material from patient and inspect for injury.



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Extinguish a Fire Using a Fire Extinguisher

Remember the acronym PASS:

P Pull the pin.

A Aim nozzle at the base of the fire.

S Squeeze the handle to release the extinguishing agent.

S Sweep the stream over the base of the fire.

If possible, spray extinguisher away from the patient or other people.

http://www.dol.gov

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Fire Extinguisher Types

Most patient care areas have ABC multipurpose fire extinguishers available for use.

A. Fires involving wood, paper, cloth, and post plastics.
B. Fires involving flammable liquids or grease.
C. Fires involving energized electric equipment.

Some areas (OR, Sterile Processing, and MRI suites) may also have specialty extinguishers such as BC, CO_2, or water mist (non-magnetic) available for use.

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Airway Fire Management

Assist the anesthesia provider to:

1. Stop the medical gas flow.
2. Disconnect the breathing circuit.
3. Pour normal saline or water directly into the airway, if directed.
4. Remove the endotracheal tube, saving any burned segments.
5. Examine the airway.
6. Re-establish airway support.

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After a Fire is Extinguished

1. Inspect the area for a secondary fire on the underlying drapes or towels.
2. Assess the patient for injury.
3. Determine what needs to be done to complete the case (new room, tear down, supplies, instruments, etc.).
4. Complete an incident report using VOICE.
5. Notify nursing administration and the administrator on call.
6. Save all materials from the fire for inspection by facility specialists and the fire department.

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Fire Evacuation

Depending on the severity of the fire, evacuation may be limited to the immediate area followed by partial or total department evacuation.

Unless the patient and staff are in immediate danger, the decision to evacuate and the safest route to go occurs in conjunction with unit/facility leadership.

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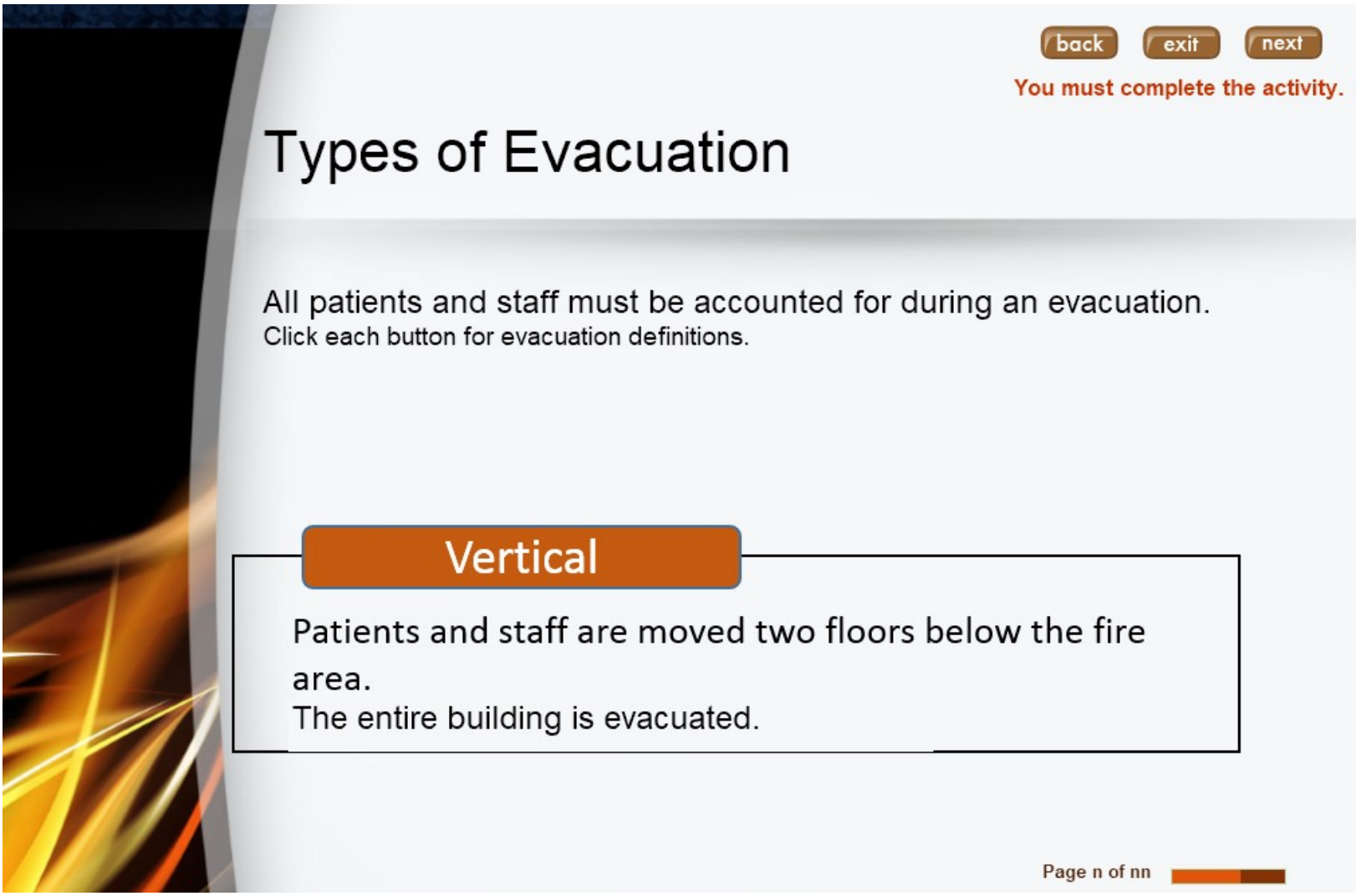
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You must complete the activity.
Types of Evacuation
All patients and staff must be accounted for during an evacuation.
Click each button for evacuation definitions.
Vertical
Patients and staff are moved two floors below the fire area.
The entire building is evacuated.
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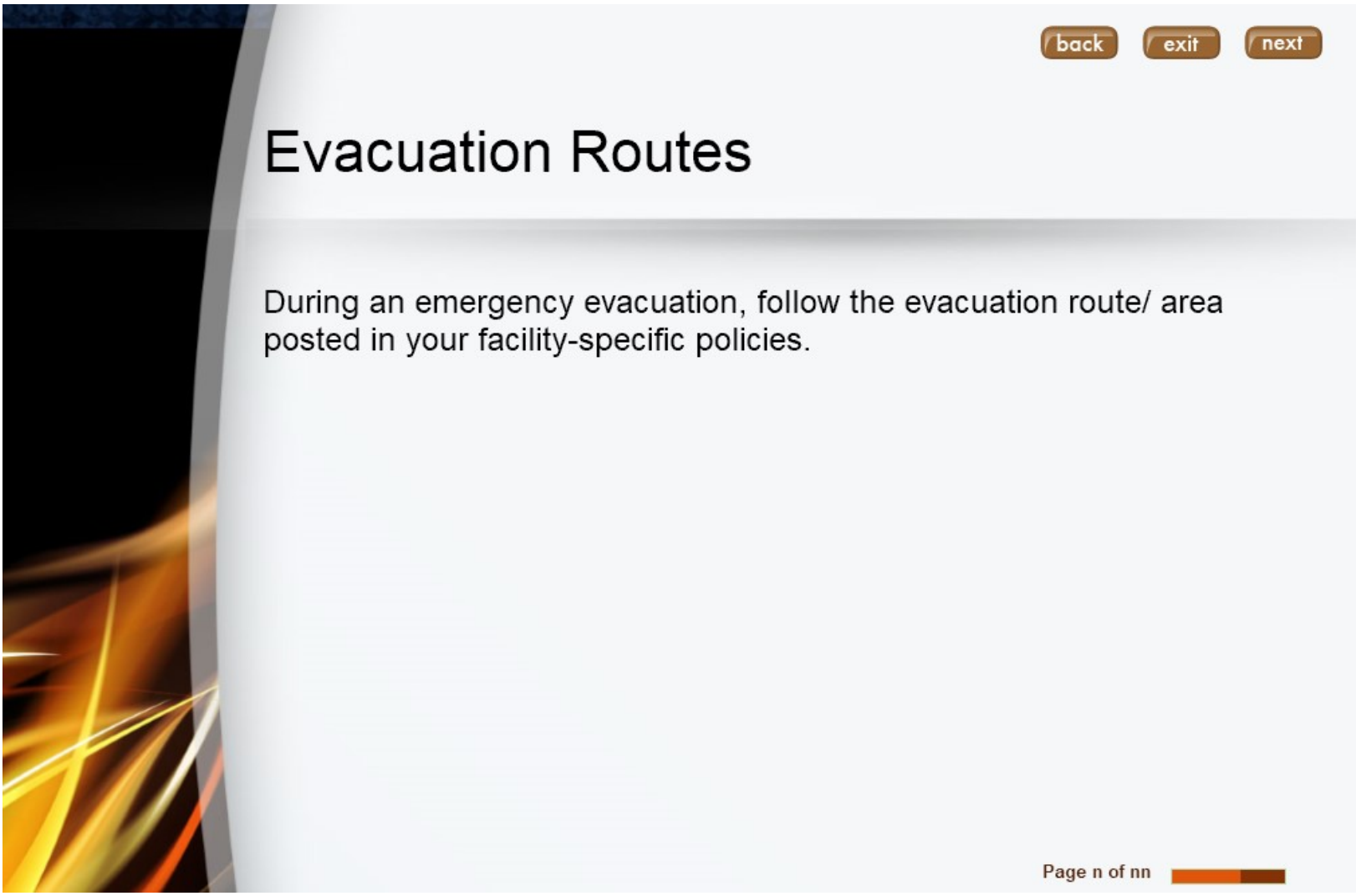
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Evacuation Routes
During an emergency evacuation, follow the evacuation route/ area posted in your facility-specific policies.
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Teamwork

Fire prevention and fire control takes a **critically-thinking team**.
Keep in mind the following:

- Location of the fire alarms, extinguishers, and gas shut-offs.
- Closest evacuation route.
- Cases that are at risk for fires.
- Steps to take to prevent fires.
- Steps to take when there is a fire.
- Who to contact STAT.

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References

Association of PeriOperative Registered Nurses Guidelines for Perioperative Practice. (2022). *Environment of Care* *http://online.statref.com/document/zCT1HcgrG7DjzPC-uTPnBj*

Association of PeriOperative Registered Nurses. (2022). *Fire safety toolkit.* *https://test.aorn.org/guidelines/clinical-resources/tool-kits/fire-safety-tool-kit*

MHC PolicyStat Evacuation Plan

MHC PolicyStat Munson Medical Center Fire Plan

MHC PolicyStat Operating Room Fire Plan

Pfander, Valerie (2017-2022). Fire Safety in the Operating Room. Munson Medical Center

MUNSON HEALTHCARE

exit next>

Laser Safety in Surgery

Rachel Chase, BSN, RN
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April 2025

Goal and Objectives

Goal

To provide guidance and oversight for the safe use of lasers at Munson Healthcare (MHC).

Objectives

1. Explain the types of lasers used at Munson Healthcare.
2. Describe procedures for safely working with lasers in the operating room.
3. Identify mitigation strategies for potential risks of laser use.
4. State the purpose and roles of a laser safety program.

Laser Types at MHC

Class 3B
Warning Level
Avoid exposure to beam.
Eye may be injured from beam or reflection at a single angle.
Can heat skin if beam held for several seconds at a close range.
Potential fire hazard

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Laser Types at MHC *(cont.)*

Gas Laser (CO_2)

- Used for Gynecology, Podiatry, Urology, General, Head, and Neck surgery

Class 4
Danger Level
Avoid eye or skin exposure to beam or scattered radiation.
Severe eye hazard. Do not stare at "dot" on a surface.
Can instantly burn skin.
Can instantly burn materials causing fire.

https://www.lasersafetyfacts.com/laserclasses.html

Laser Types at MHC *(cont.)*

Diode Laser

- Used for Ophthalmology

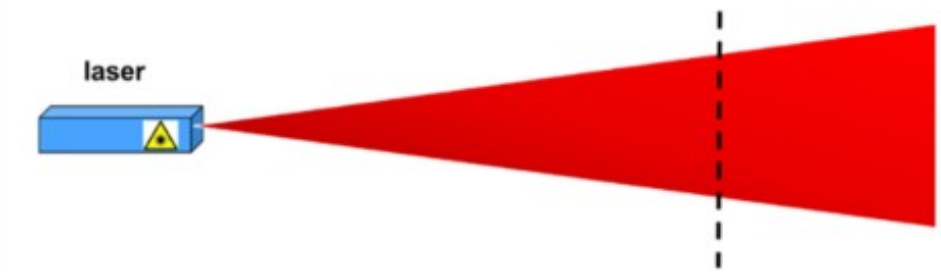
Class 4
Danger Level
Avoid eye or skin exposure to beam or scattered radiation.
Severe eye hazard. Do not stare at "dot" on a surface.
Can instantly burn skin.
Can instantly burn materials causing fire.

https://www.lasersafetyfacts.com/laserclasses.html

Nominal Hazard Zone (NHZ)

The **Nominal hazard zone** is the operating or procedure room where the laser is being used (the space where laser radiation exceeds the applicable maximum permissible exposure).

Injuries can occur within the perimeter of the NHZ if eye and skin precautions are not enforced.



The beam will actually diverge, e.g., become less intense, and therefore, less dangerous. Eventually, a distance is reached where the beam is 'safe'.

Control Access

Danger signs *specific* to the type of laser being used shall be placed in visible locations at all entrances to a room when lasers are in use.

Laser goggles will be placed at the entrances to rooms where a laser is in use.

Laser Safety Precautions

- **Test** the laser before use, following the manufacturer's instructions.
- Complete a laser safety checklist approved by the healthcare organization before each procedure involving a laser.
- Use a **Lower Power** Setting.
  - Use the lowest setting that achieves the desired result.
- Keep the **doors closed**.
- **Cover windows** as applicable to the laser being used.
  - No need to cover windows for Holmium & CO_2 laser.
- After the case is complete:
  - Disable laser or remove the laser key after use and place it in a designated secure location.
  - Remove danger signs when laser is not in use.
  - Return laser to its designated storage location after use.

Staff Eye Protection

Wear laser goggles in the NHZ when there is risk of exposure from a laser beam.

Laser goggles **must** meet criteria for use on the specific laser type.

Before **donning,** inspect the goggles for coating damage, cracks, pitting, discoloration, frame integrity, and light leaks.

Clean laser goggles before returning them to the laser cart.

Patient Eye Protection

AWAKE patients (e.g., Local/MAC): Place laser goggles on the patient which are designated for the type of laser being used.

GENERAL anesthesia patients: Apply wet gauze to eyes in addition to laser goggles.

Clean laser goggles before returning them to the laser cart.

Fire Prevention

Oxidizer

- Decrease O_2 percentage before activating laser near patient's head or neck.
- Use moistened radiopaque sponges to cover the anus during perineal surgery.

Ignition Source

- Place laser in **STANDBY mode** when not aimed at target tissue.
- Minimize the use of reflective surfaces. Use anodized, dull, non-reflective or matte-finished instruments/equipment near the laser site.
- Verify the laser fiber is kept in view during active use.
- Ensure the end of the fiber is covered with a moist sponge or towel when the laser is not in use.
- Confirm the working end of the laser fiber is secured before and between uses.

Fire Prevention *(cont.)*

Fuel

- Verify the presence of saline or sterile water on the sterile field.
- Use non-alcohol-based skin prep, allow to dry thoroughly, and prevent pooling.
- Use a laser-retardant endotracheal (ET) tube during airway procedures.
- Inflate the ET tube cuff with sterile water or saline for airway or aerodigestive tract procedures. Methylene blue may be added to the sterile water or saline.
- Place moist packs on exposed tissue around the surgical site or ET tube, as applicable.

Electrical Safety

The laser operator should **inspect** the foot switch connectors, circuit breakers, and power cords prior to use.

Do **not place liquids** on or near the laser console.

The laser operator will **report** defects or damage to the Laser Safety Officer.

Any suspected defect or damaged laser/accessory shall be **isolated** and **given** to the Biomedical Engineering department for inspection and approval before use.

Management of Airborne Contaminates

Laser-generated airborne contaminants (LGAC) are considered an airborne hazard and may contain particulates and metal fumes.

- A smoke evacuation system will be used whenever there is a potential for producing smoke from a laser procedure.
  - The Holmium laser & Diode laser plume is self-contained and a smoke evacuator is not needed.
- Install a new smoke evacuation filter when needed, according to manufacturer instructions.
- Hold evacuator suction tubing within close proximity of the plume.
- A fit-tested surgical N95 mask will be worn in conjunction with smoke evacuation and filtration during smoke-generating procedures involving tissue that contains Human Papillomavirus (HPV).
  - A sign will be posted at the OR entrance to notify the OR team members that respiratory protection is being used as a secondary protection from surgical smoke.
  - A fit-tested surgical N95 mask may be worn in conjunction with smoke evacuation and filtration during surgical smoke-generating procedures involving the liver.

Establish a Laser Safety Program

You must complete the activity to advance.

The Laser Safety Program should be in accordance with in the American National Standards Institute laser safety recommendations.

Click buttons to view responsibilities for specific roles:

Laser Safety Officer

The person responsible for evaluation of laser hazards, and authorized/responsible for monitoring and overseeing the control of laser hazards and logs.
(Required)

Laser Safety Specialist/Assistant

The designated employee responsible for oversight of safe laser use in each room where a laser is used.

Works under the supervision of the Laser Safety Officer.
(Recommended)

Laser User

The person credentialed by the facility (surgeon) to control the application of the laser for its intended purpose within the user's scope of practice, license, education, and experience.
(Required)

References

AORN. (2025). *Guidelines for perioperative use*. Laser safety chapter.

Laser Safety Facts. https://www.lasersafetyfacts.com/laserclasses.html

United States Department of Labor. Occupational Safety and Health Administration. *Guidelines for laser safety*. https://www.osha.gov/SLTC/etools/hospital/surgical/surgical.html#Lasers

MUNSON HEALTHCARE

Malignant Hyperthermia

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April 2025

Goals and Objectives

Goals

To assist staff in recognizing signs and symptoms of malignant hyperthermia (MH) to be able to implement treatment options.

To increase awareness of the Malignant Hyperthermia Association of United States (MHAUS).

Objectives

1. List the signs of malignant hyperthermia (MH).
2. State which patients are more conducive to the development of this crisis.
3. Demonstrate knowledge and understanding of administering dantrolene sodium (Ryanodex).
4. Describe management of an MH crisis to include cooling measures, electrolyte imbalances, and dysrhythmias.

Course contains videos - use  or 

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What is Malignant Hyperthermia?

MH is a genetically inherited disorder of skeletal muscle that predisposes susceptible individuals to a life-threatening adverse reaction upon exposure to some anesthetic agents.

It leads to a hypermetabolic crisis manifesting as metabolic and respiratory acidosis, tachycardia, cardiac arrhythmias, skeletal muscle rigidity, and heat production.

Although the occurrence of an MH crisis is rare, incidence varies per geographic location which includes Michigan.

Malignant Hyperthermia

While most cases of MH occur during general anesthesia, the one-hour period immediately following surgery (including the recovery room) is also a critical time.

In addition, MH can occur if trigger anesthetics and/or succinylcholine are used in any location, such as EDs, dental surgeries, surgeon's offices, or ICUs.

Malignant Hyperthermia *(cont.)*

Triggers for MH include:

- Inhaled general anesthetics (e.g. desflurane, enflurane, halothane, isoflurane, sevoflurane)
- Succinylcholine
- Exertional heat or exercise (rare)

MH Susceptible Patients

Currently, no simple diagnostic test is available for screening the general public.

Patients with a history of MH, family history, or even possible history are treated as though they are MH susceptible.

Screening:

- Scheduled cases will be screened prior to surgery.
- Emergent cases will be screened prior to induction when patient condition or family presence allows.
- Screening should include family or personal history of MH and/or complications from anesthesia.

Pre-Procedure Prep

During the preprocedural screening, if a patient has been identified as MH susceptible, the following preparation is needed:

- Anesthesia/providers create a detailed plan considering alternative anesthetic agents.
- When possible, schedule the patient as a first case.
- Notify all post-procedure destinations.
- Place the MH cart outside of the procedure room.

Clinical Features

The sequence and timing of clinical manifestations may vary from patient to patient.

- Unexplained tachycardia or arrhythmias (usually ventricular tachycardia and premature ventricular contractions) - **Early Sign**
- Unexplained increase in end-tital carbon dioxide ($EtCO_2$) - **Early Sign**
- Tachypnea or breathing over the ventilator - **Early Sign**
- Sinus tachycardia - **Early Sign**
- Masseter muscle or generalized muscle rigidity - **Early Sign**
- Hyperkalemia - mixed metabolic/respiratory acidosis - **Early Sign**
- Rapidly rising body temperature (hyperthermia) - **Late Sign**
- Myoglobinuria - **Late Sign**
- Rhabdomyolysis - **Late Sign**
- Disseminated intravascular coagulation (DIC) - **Late Sign**

Pediatric patients

- Sinus tachycardia, hypercarbia, rapid temperature increase, and skin mottling; may not see muscle rigidity in pediatrics

Response to an MH Crisis

Please complete the activity before moving on.

If a MH crisis is suspected, immediately take the following steps:
(Click each arrow to view the information.)

- Call/page anesthesia provider STAT if not present.
- Discontinue volatile agents (inhaled general anesthetics and/or Succinylcholine).
- Obtain the MH Cart/Bag and dantrolene (Ryanodex or Dantrium).
- Obtain MH Crisis Checklist from MH Cart/Bag and follow the guidelines on the checklist.
  1. Master copies of hospital specific MH crisis checklists are attached to the MHC PolicyStat - Malignant Hyperthermia Guidelines.
- Contact the Malignant Hyperthermia Association of the United States (MHAUS) for additional support.
- Contact Pharmacy & Phlebotomy to assist, as needed.

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MH Initial Treatment

- Hyperventilate with 100% oxygen at flows of 10ml/min.
  - If available, insert activated charcoal filters into the anesthesia breathing circuit.
- Administer initial dose of dantrolene (Ryanodex or Dantrium) 2.5 mg/kg IVP
- Establish large bore IV access (avoid hands), infuse Dextrose 5% (D5W) or 0.9% sodium chloride.
  - Avoid Lactated Ringer's and Normasol, which contain calcium.
- Continue patient monitoring of ECG, pulse oximetry, capnometry, and core body temperature.

MH Crisis Medications

- Dantrolene sodium IV (Ryanodex, Dantrium)
- Preservative-free sterile water for injection (in vials)
- 8.4% sodium bicarbonate
- 10% calcium chloride
- 50% dextrose
- 2% lidocaine (amiodarone is also acceptable)
- Regular insulin, 100 unit/mL (refrigerated)
- Normal saline solution (at least 3,000 mL, refrigerated)
- D5W

Dantrolene Sodium

Dantrolene sodium is available as a solution (Dantrium), or as a suspension (Ryanodex) once reconstituted, for treatment of MH.

Product Comparison

	Dantrium	Ryanodex
Vial strength	Each vial 20 mg	Each vial 250 mg
Reconstitution per vial	60 ml of sterile water preservative free yields 0.33 mg/ml	5 ml of sterile water preservative free yields 50 mg/ml
Time to reconstitute	15-20 minutes for 13 vials	<1 minute for 1 vial
# Vials/per dose	13-18 vials	1-2 vials
Color	**Shaken until solution is clear**	**Uniform orange color**
Dose	**2.5 mg/kg**	**2.5 mg/kg**

You must watch the video to advance.

Dantrolene Sodium (Ryanodex)

Mixing and Administration Instructions:

- Each vial is to be reconstituted with 5 mL of sterile water (NO preservative/NO bacteriostatic agent).
- Mix thoroughly.
- Draw up patient-specific, weight-based dose (2.5 mg/kg).
- Administer IVP into a large bore IV (avoid hand) of 0.9% normal saline or D5W solution; flush line after dose is given.
- Has potential for tissue necrosis with extravasation.

Ryanodex Video

Click here to watch a 4½ minute video on how to mix and administer Ryanodex.

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Dantrolene Sodium (Ryanodex) *(cont.)*

Dosing chart is on the MH cart, and also comes with the vial of Ryanodex.

Maximum cumulative dose is 10 mg/kg

DOSAGE SCHEDULE TO TREAT MH

- Based on recommended loading dose of 2.5 mg per kg[1]
- Chart calculated using 250 mg vials of RYANODEX® (dantrolene sodium) for injectable suspension reconstituted with 5 mL of sterile water for injection USP (without a bacteriostatic agent)[3]
- In case of emergency, contact the 24-hour MHAUS Hotline at 800.644.9737

RYANODEX® DOSAGE CHART[3]

Patient's weight in kg	Patient's weight in pounds	Number of 250 mg vials to open	mg dosage needed	mL of reconstituted RYANODEX® to administer
5	11	1	12.5 mg	0.25 mL
10	22	1	25.0 mg	0.50 mL
15	33	1	37.5 mg	0.75 mL
20	44	1	50.0 mg	1.00 mL
25	55	1	62.5 mg	1.25 mL
30	66	1	75.0 mg	1.50 mL
35	77	1	87.5 mg	1.75 mL
40	88	1	100.0 mg	2.00 mL
45	99	1	112.5 mg	2.25 mL
50	110	1	125.0 mg	2.50 mL
55	121	1	137.5 mg	2.75 mL
60	132	1	150.0 mg	3.00 mL
65	143	1	162.5 mg	3.25 mL
70	154	1	175.0 mg	3.50 mL
75	165	1	187.5 mg	3.75 mL
80	176	1	200.0 mg	4.00 mL
85	187	1	212.5 mg	4.25 mL
90	198	1	225.0 mg	4.50 mL
95	209	1	237.5 mg	4.75 mL
100	220	1	250.0 mg	5.00 mL
105	231	2	262.5 mg	5.25 mL
110	242	2	275.0 mg	5.50 mL
115	253	2	287.5 mg	5.75 mL
120	264	2	300.0 mg	6.00 mL
125	275	2	312.5 mg	6.25 mL
130	286	2	325.0 mg	6.50 mL
135	297	2	337.5 mg	6.75 mL
140	308	2	350.0 mg	7.00 mL
145	319	2	362.5 mg	7.25 mL
150	330	2	375.0 mg	7.50 mL

Labeled dose range of 1 to 10 mg/kg with a maximum cumulative dose of 10 mg/kg. If the physiologic and metabolic abnormalities of MH continue, administer additional doses.[1]

Dantrolene Sodium (Ryanodex) Locations

Cadillac
MH Cart

Charlevoix
- MH Cart
- Pharmacy

Grayling
MH Cart

Manistee
MH Cart

Otsego Memorial Hospital
- Anesthesia Pyxis
- ICU Pyxis

Paul Oliver Memorial Hospital
MH Cart

MMC
- 2 vials: OR 2nd floor in the MH Cart
- 2 vials: OB (Recovery Room) Pyxis
- 2 vials: Basement Pharmacy

MH Crisis Checklist

Please refer to your facility-specific MH Crisis Checklist and policy for Malignant Hyperthermia treatment and management.

Web Window

https://mobile.mhc.net/Malignant Hyperthermia Crisis Checklist 2022.pdf

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Recommended MH Supplies

Important - Know the location of your hospital's MH supplies.

- Charcoal filters
- Variety of syringes, including (3) 5mL syringes and (3) 60 mL syringes
- IV catheter supplies (large bore)
- Central venous access catheter kits (appropriate sizes for patient population)
- Transducer kits for arterial and central venous catheters
- Arterial blood gas (ABG) kits and syringes (3 mL) for blood gas analysis or point of care monitors
- Pressure bag
- Core temperature probes
- Bucket for ice and cold packs
- Large Steri-Drape™ to cover surgical wound
- Urinary catheter kit
- Urine collection container for myoglobin level
- Small and large plastic bags
- Test strips for urine hemoglobin
- Variety of blood collection tubes

Additional Equipment

- Capnography
- Cooling blanket
- Emergency equipment:
  - Crash cart
  - Defibrillator
  - Intubation supplies
  - Mechanical ventilator
  - Handheld resuscitation bag with mask

MH Supportive Therapy

- Cool patient, as needed, based on body temperature using ice packs to neck, axilla or groin, cooling blankets, chilled intravenous solution, or lavage.
- Obtain lab work, including blood gas.
- Re-dose dantrolene based on patient response.
- Treat respiratory and metabolic acidosis, hyperkalemia, and dysrhythmias, as needed (avoid calcium channel blockers).
- Monitor renal function and treat myoglobinuria, if needed.
- Provider should consider insertion of an arterial line, central venous catheter, and/or a pulmonary artery catheter.

Transferring a MH Suspected or Confirmed Patient

- The anesthesia provider will determine the location to best manage patient care during the acute phase (e.g., inpatient facility Post Anesthesia Care Unit (PACU) or critical care unit).
- Notify house supervisor/admitting for bed placement needs, as applicable.
- The anesthesia provider will arrange the transfer and accompany the patient, as needed.

Post-MH Crisis

- Observe the patient for at least 24 hours on a critical care unit.
- Monitor ABGs, electrolytes, calcium, clotting studies, myoglobin, urine output and color, and other studies as ordered.
- Key indicators of stability include:
  - $EtCO_2$ is declining or normal
  - Heart rate is stable
  - Hyperthermia is resolving
  - Generalized muscle rigidity has resolved
  - Restock MH cart or bag
- Ensure additional vials of dantrolene (Ryanodex or Dantrium) are readily available.

Post-MH Crisis Complications

- Dantrolene sodium (Ryanodex) is associated with flushing, drowsiness, voice disorders, dysphagia, and nausea.
  - Symptoms may persist up to 48 hours post-dose.
- Rhabdomyolysis
  - Urine becomes cola-colored (dark red or brown).
  - Patient may c/o muscle pain.
  - **Immediately** notify attending provider and anesthesia provider.
- Paralysis, blindness, renal failure, reoccurrence of syndrome, muscle weakness, multi-organ failure, and/or death
  - Patients should not ambulate without assistance until normal strength and balance has returned.
- Obstetrical cases
  - Dantrolene sodium (Ryanodex) readily crosses placenta - may lead to side effects in unborn child.
  - Notify the obstetrician and pediatrician of dantrolene sodium (Ryanodex) administration.

Documentation and Reporting

A. Notify the unit manager and director of the event.
B. Document event on unit-based patient care records (EMR).
C. Complete a facility occurrence report (e.g., VOICE) under "adverse medication event".
D. Anesthesia Services should review each case and consider contributing information to the MHAUS.

MH Guidelines

Web Window

https://munsonhealthcare-all.policystat.com/policy/14063752/latest

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Malignant Hyperthermia Association of the United States (MHAUS)

Mission: To promote optimum care and scientific understanding of MH and related disorders.

The MHAUS Association provides:

- Resources for healthcare professionals
  - Education and research
- Patient/family teaching re: MH precautions, susceptibility, and testing centers

Visit **http://www.mhaus.org** for healthcare provider and public education materials.

For support during an MH crisis,

call the 24-hour **MH Hotline**

1-800-644-9737

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References

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MUNSON MEDICAL CENTER
MUNSON HEALTHCARE

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Owner	Sandra Cranson: Coord Nursing Quality
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Applicability	MMC, KMHC
Tags	Procedure

Operating Room Code Blue/White Emergency Response

Purpose

The purpose of this procedure is to provide direction for all operating room (OR) personnel in the event of a Code Blue or Code White in the OR.

Scope

Munson Healthcare (MHC) has adopted this policy for all of its subsidiaries, including but not limited to Munson Medical Center (MMC) and Kalkaska Memorial Health Center (KMHC).

Procedure

A. In the event of an adult or pediatric arrest in the OR, the following notification steps will be taken

1. **The circulating registered nurse (RN) will activate the code blue alarm in the OR and call the OR Desk.** Inform the OR Desk of the code status and room number (Code Blue, OR Suite Number).
2. The OR Desk Coordinator/Charge will immediately
    a. Page "**CODE Blue & OR Suite Number**"
        i. 1st?Anesthesia provider on-call
        ii. 2nd?Anesthesia OR Aides
        iii. Service Line OR Coordinator
    b. Call the anesthesia provider giving medical direction on the case.
    c. Call/page the OR Manager.

d. Notify Pre-op & peri-anesthesia care unit (PACU) Coordinators/Charge Nurses of code blue locat

e. Call central processing department (CPD) for another crash cart to be brought up to the OR.

B. The circulating RN and scrub personnel will remove the sterile area to a safe area. The scrub personnel will remain at the safe area to protect the integrity of the sterile set-up, unless directed otherwise to assist with the code.

C. The anesthesia provider directs the code. The surgeon assumes this role in the absence of the anesthesia provider.

1. Typical roles

a. Anesthesia provider(s): Airway management and directs the code.

b. Surgeon: Secures the surgical wound. Performs compressions, if indicated.

c. OR Aide(s): Transports crash cart to OR suite and plugs in the defibrillator. Remains on standby for further direction (access supplies, lab runs, etc.)

d. Circulating RN: Act as the code scribe, recording events and medications administered on the Code Blue Flow Sheet until additional help arrives. Plays supportive role in accessing additional support, supplies, equipment.

e. RN(s) support: If delegated, assumes the role of scribe from the circulating RN. Remains in close proximity to the anesthesia provider running the code. Other supportive delegations may be assigned.

D. The circulating RN will communicate with the OR Desk coordinator/charge nurse

1. The status of the code

2. Coordination of the patient disposition post code.

3. Request for additional support needed during the event (services, supplies, instruments, equipment).

E. Post code, the circulating RN will complete the Code Blue Critique form and sent it, along with faxing a copy of the Code Blue Flowsheet to the Intensive Care Unit (ICU) Manager.

F. Crash cart post code

1. Wipe down defibrillator and place on exchange crash cart.

2. Take the used crash cart to CPD using the elevators outside the OR proper. Do not send by the OR Dirty or the OR Clean Elevators.

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Step Description	Approver	Date

System Policy Oversight Committee	Terri Fries: Document Mgmt Spec	7/19/2024
VP and CNO Patient Care Services	Tamara Putney: VP and CNO Patient Care Services	7/16/2024
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Applicability

Kalkaska Memorial Health Center, Munson Medical Center

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No standards are associated with this document

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MUNSON HEALTHCARE

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Applicability	MMC
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Operating Room Fire Response

Purpose

To identify effective strategies for the response to fire in the operating rooms (OR) using evidence-based procedures to protect patients and team members. (Refer to the Munson Medical Center [MMC] Fire Plan policy for further information).

Procedure

A. **Upon discovering a fire or unintended smoke**

1. Use the acronym **RACE** to remember immediate lifesaving actions:
    a. **R**= Remove patient from fire source, rescue anyone in immediate danger
    b. **A**= Alarm- pull the nearest fire pull (alarm) and notify the desk.
    c. **C**= Confine fire from spreading (close doors)
    d. **E**= Extinguish fire using appropriate devices; evacuate as needed.
2. Use the acronym **PASS** when using a fire extinguisher
    a. **P**= Pull the pin
    b. **A**= Aim at the base of the fire
    c. **S**= Squeeze the handle
    d. **S**= Sweep from side to side

B. **Roles and Responsibilities**

1. Personnel in the area of the fire:
    a. Announce the fire to the team members

b. Proceed to the nearest fire pull station and pull alarm
c. Notify main desk
d. Close all doors in immediate area
e. Take action to extinguish fire based on fire type specified below

2. Personnel at the desk:
    a. Call security with exact location of fire
    b. Contact department leadership
    c. Assign a staff member to the department's main entrance to direct traffic
    d. Notify charge nurse(s) of adjoining units (i.e. preop, recovery)

C. **Equipment fires or unintended smoke**

1. Disconnect equipment from electrical source (if able to safely unplug)
2. Remove equipment from sterile field
3. Shut off gases to equipment, if applicable
4. Extinguish fire using applicable extinguisher, if necessary
5. Remove affected equipment from room and tag. If equipment cannot be removed from room, evacuate the room.

D. **Fires on the surgical patient**

1. Stop the flow of medical gases
2. Smother fire (do not pat) or extinguish with water or saline
3. Remove burned material from the patient
4. Assess the patient for injury
5. Only use a fire extinguisher on the patient if absolutely necessary
6. Resume patient ventilation through mechanical ventilation bag
7. Control bleeding, if applicable
8. Evacuate if smoke and fire remain in the room

E. **Airway fires**

1. Shut off the medical gas flow
2. Disconnect the breathing circuit from the endotracheal tube (ETT)
3. Remove the ETT, saving any burned segments of tube
4. Examine airway and treat accordingly
5. Re-establish airway support

F. **Evacuation**

1. Depending on the severity of the fire, evacuation could be limited to one OR, a partial evacuation, or total evacuation of the area.

2. The decision to evacuate is done in conjunction with unit/hospital leadership.
3. Should evacuation become necessary, follow the hospital evacuation policy.

G. **Ongoing roles and responsibilities**

1. It is the employee's responsibility to know the fire response plan for the area in which they work.
2. Fire safety education/training will be provided upon hire to the department and periodically thereafter; to include location of medical gas shut offs, fire pull stations, fire extinguisher locations, fire prevention, fire risk assessment, and how to respond to a fire.

Reference

1. Association of Perioperative Registered Nurses. (2020). Fire safety tool kit. Retrieved from https://www.aorn.org/guidelines/clinical-resources/tool-kits/fire-safety-tool-kit

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VP and CNO Patient Care Services	Tamara Putney: VP and CNO Patient Care Services	5/5/2025
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Document Owner	Elizabeth Dougherty: Mgr Nursing Services	4/2/2025

Applicability

Munson Medical Center

Standards

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MUNSON HEALTHCARE

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Tags	Policy

Prevention of Retained Foreign Objects - Surgical Counts Policy

Purpose

To provide guidelines for Operating Room (OR) personnel in performing surgical counts in the OR setting to account for items to ensure accountability, patient safety, and to prevent retained items.

Scope

Munson Healthcare (MHC) has adopted this policy for all of its subsidiaries.

Policy

A. Instruments will be counted on all procedures that include or have the potential for the invasion of a major body cavity (i.e., abdomen, thorax, pelvis, and peritoneum).

B. A baseline instrument count will be performed for laparoscopic procedures. If a procedure remains laparoscopic, subsequent instrument count may be waived.

Procedure

A. Instruments should be counted in Central Services (CS) or Central Processing Department (CPD) using preprinted instrument count sheets prior to sterilization if available.

1. OR scrub/tech should compare number of instruments in each tray to count sheet at the beginning of each case regardless of an instrument count being required or not.
2. Discrepancies shall be reported to CS/CPD.

B. Sponges, sharps, instruments, and miscellaneous items should be counted on all procedures in which these items may be retained.
    1. Counts will be performed:
        a. Prior to timeout or incision is made to establish a baseline.
        b. Prior to closure of a cavity within a cavity.
        c. Prior to closure of a body cavity.
        d. At time of skin closure.
        e. Whenever requested by a team member.
        f. When new items are dispensed or removed from sterile field.
        g. At the time of permanent relief of scrub and/or circulator is made.
        h. Bilateral and multiple procedures may require separate counts.

General Count Information

A. The "surgical count" is the responsibility of the scrub personnel and circulating nurse.

B. Counts are visibly observed and audibly counted concurrently by the scrub personnel and circulating nurse.

C. Items counted should be recorded before proceeding to the next item count.

D. Prohibit non-essential conversation and activity during the surgical count.

E. If the count is interrupted, the count should be restarted.

F. Once the count is initiated, trash and laundry are not to be removed from the room until the final count is complete. Instruments may be removed from the room only for re-sterilization then must be returned to sterile field.

G. Any package containing an incorrect number, other than what it is specified to contain, shall be removed from the field, bagged, labeled, and isolated until the end of the case.

H. Separate counts will be maintained for bilateral or multiple procedures running concurrently.

I. Counts should be done systematically for suture, sponges, instruments, and miscellaneous items beginning at the sterile field, progressing to the mayo stand, back table and finally to sponges that have been discarded from the field.

J. The circulating registered nurse (RN) will inform the surgeon that closing counts are correct.

Soft Goods Count

A. Surgical Soft goods (e.g. sponges, towels, and textiles) opened onto the sterile field should be accounted for during all procedures.

B. Sponges include but are not limited to:
    1. Peanuts (dissectors)
    2. Cottonoids (patties)
    3. X-ray detectable gauze

4. Laparotomy sponges

C. Separate soft goods, keeping like items in individual piles when counted.

D. At Munson Medical Center (MMC) record on Surgical Count Sheet (Form #1515) or dry erase board (cardiothoracic and neurosurgery procedures), all other facilities record on dry erase board according to the type and number of items in the package when applicable or paper count sheet.

E. Leave Radiopaque surgical soft goods intact, do not cut or alter.

F. Use kick buckets with liner to discard soiled sponges from the field using standard precautions.

1. Sponges should not be draped over the sides of kick buckets as it may be difficult for all team members to see each individual sponge.
2. Sponges shall be placed in count bags by type and have X-Ray detectable strip visible for viewing during count.

G. Dispose of contaminated sponges by following the Bloodborne Pathogen Exposure Control Plan Policy.

H. All sponges placed on the sterile filed must be X-ray detectable until the final count is completed and incision is closed.

I. MMC only: Throat packs

1. Will be documented by the circulator on:
   a. The dry erase board.
   b. The Surgical Count Sheet (Form #1515) under "Countable Temporary Items"
   c. The Intraoperative Nurses Record (in and out times).
2. A reminder sign is to be placed on the OR suite interior door to remove the throat pack.

Sharps Count

A. Sharps include but are not limited to suture needles, hypodermic needles, spinal needles, blades, Bovie tips, and safety pins.

B. Sharps must be counted on all surgical procedures and continually maintained on the sterile field by the surgical scrub person.

C. Additional sharps added as the case progresses will be counted and included on a count sheet or dry erase board (as applicable).

D. Suture needles are to be counted according to the number marked on the outer package and verified by the circulating nurse and surgical scrub person when opened. If a discrepancy is found, bag item and isolate from the field.

E. Needle magnets are to be used on all cases where sharps opened. Perform a needle count when the magnet is full and passed off the field. The magnet is retained until the end of the procedure and final counts are done.

F. All counted sharps must remain in the OR suite and/or on sterile field during the procedure.
    1. Sharps that are inadvertently dropped from the sterile field are retrieved by the circulating nurse, displayed to the surgical scrub person for verification and isolated from the sterile field for the final count.
    2. Sharps broken during a procedure must be accounted for in its entirety at the time of the event and prior to closing.

G. After the final count is confirmed, all disposable sharps are to be discarded in the sharps container and handled according to Universal Precautions/Occupational Safety and Health Administration (OSHA) guidelines.

Instrument Count

A. Instruments should be accounted for in all procedures for which the likelihood exists that an instrument could be retained, such as:
    1. All procedures that invade or have the potential to invade a cavity (e.g. peritoneum, uterus).

B. In procedures involving a large quantity of complex instrumentation where an instrument count is not feasible, an appropriate x-ray is taken. Note: A soft goods, sharps, and miscellaneous item count is always done.

C. At MMC only additional instruments presented to the sterile field will be documented and tracked on the appropriate count sheet (Surgical Count Sheet Form #1515 or EV Count Sheet Form # 11317) or dry erase board for cardiothoracic or neurosurgery.

D. Instruments inadvertently dropped from the sterile field, are to be retrieved by the circulating nurse, displayed to the scrub personnel for verification and isolated from the sterile field for the closing and final counts using Standard Precautions.

E. Instruments broken during a procedure must be accounted for in their entirety at the time of the event and prior to closing, even if there was not a required instrument count.

F. All counted instruments must remain in the OR suite to be accounted for in the closing and final counts.

Miscellaneous Items

A. Small miscellaneous items include, but are not limited to vessel loops, umbilical tapes, Bovie scratch pads, defog bottles/foam pad, sharp zones, markers, scissor tips, pen rose drains, disposable staple parts, and clip cartridges.

B. Miscellaneous countable items that have more than one piece, each piece should be counted, and the number of pieces documented.

C. Miscellaneous items must be accounted for on all procedures and documented on the appropriate count sheet (or dry erase board for cardiothoracic or neurosurgery) at MMC and all other MHC facilities document on dry erase board as they are added to the sterile field.

D. Only disposable towels with radiopaque markers are to be used in the wound and must be included in the counts.

E. The surgical scrub person will maintain the miscellaneous items on the sterile field.

Closure Count

A. No closing device will be passed until the surgeon has visually, and when applicable, manually inspected the wound for retained foreign objects.

B. The circulator will document the final wound inspection and time on the count sheet.

C. Count performed when surgical items are no longer in use and ALL have been passed off the field, except items being used for skin closure.

D. The final count can only be recorded as correct or incorrect and announced during the debriefing. (Refer to Incorrect Count Management section). MMC only: The circulating nurse is responsible for documentation of the scans performed on the Notes section of the Intraoperative Nurses Record.

Items Temporarily Placed in the Wound

A. Items such as throat sponges and packing:

1. The surgeon will verbally communicate to the circulator the item(s), number of items and placement location of all items temporarily left in the wound for the duration of the procedure. The item and location will be documented on the count sheet or dry erase board as applicable.
2. At the end of the procedure, the surgeon will validate with the circulator the removal of the item(s), number of items and location prior to closing. The circulator will document on the count sheet the time the item(s) was removed.
3. The final count should not be considered complete until all surgical soft goods used in closing the wound are removed from the wound and returned to the scrub person.

Items Intentionally Left in the Wound

A. Items such as mesh, packing material:

1. The surgeon will verbally communicate any item intentionally left in the wound.
2. The circulator will document the number and type of item(s) on the Intraoperative Nurses Record/Electronic Medical Record (EMR) and on the count sheet or dry erase board as applicable.
3. Give report during the hand-off to the next provider of care- the item(s) intentionally left in the wound, the number of items and the location.
4. When/if the patient returns to surgery and the item(s) is removed, the number and type of item removed must be noted on the Intraoperative Nurses Record/EMR.
5. The removed items should be isolated and not include in the count of the current procedure.
6. An intraoperative x-ray must be planned for and performed to confirm all items intentional left in the wound from the previous surgery have been removed.

Count Exemptions

A. Extreme emergency situations in which there is a threat to life, loss of organ or limb, or conditions in which the patient's status deteriorates such that standard routine procedures may not be able to be performed or completed.

B. It is the circulating nurse's responsibility to document on the patient's OR record the reason counts were not performed. An x-ray will be taken, prior to incision closure and breaking down the sterile field/removal of sterile drapes for any procedure when counts are required and not performed.

C. Closing counts should be performed even if the initial count is waived.

D. Portable x-ray may be taken after transferring the patient from the OR if patient's condition is unstable.

Documenting Counts

A. Document instrument counts using the count sheet accompanying each sterilized set.

B. Document soft goods, sharps, and miscellaneous items using either the standard surgical count sheet, a case specific count sheet (e.g. vascular, obstetrics (OB)), or for procedures involving a large quantity of complex instrumentation (e.g. cardiothoracic, neuro) a surgical count dry erase board as applicable.

    1. For counts using a dry erase board, leave information on board until final count is complete.

C. Sponge/sharp and instrument counts should be documented on the patients OR record/EMR.

    1. Type/number/results of count (s), and if count is not applicable (NA).
    2. Names and titles of personnel performing the counts.
    3. Instruments/sponges remaining with the patient intentionally retained as packing.
    4. Unretrieved device fragments: material composition (if known), size, location, manufacturer, measures taken to retrieve, and patient notification (Munson Healthcare Manistee Hospital (MHMH)).
    5. Actions takes if count discrepancies occur.
    6. Rationale if counts are not performed or completed as per policy.

Procurement Cases (MMC & Munson Healthcare Otsego Memorial Hospital (OMH))

A. All items will be counted on procurement cases.

B. The final count can include an x-ray.

C. For confirmed count discrepancies, the OR desk coordinator or charge will notify the procurement team.

Radio Frequency (RF) Scanning Technology (MMC Only)

A. The use of RF detection technology does not replace standard counting activities. This technology is to be as an adjunct to the standard counting process. See the (Radio Frequency Assure Surgical Detection System policy).

B. The RF wand or mat is used to scan the patient and surrounding area before skin closure.

C. For cases using RF technology, the scan method, console serial number, and final scan confirmation number will be documented on the Intraoperative Nurses Record.

Count Discrepancy

A. When a count discrepancy occurs:

1. Recount
2. MMC Only: Re-wand patient and area if RF item is missing.
3. Notify surgeon.
4. Surgeon performs or repeats a methodical wound examination.
5. Surgical team searches sterile field, laundry, garbage, drapes, floor etc.

B. If discrepancy unresolved:

1. A patient x-ray is taken and resulted in the operating room prior to incision closure.
2. Incorrect count is noted on Intraoperative record/EMR.
3. Results of the x-ray is documented on the Intraoperative record/EMR.
4. 8.0 needles are non-detectable. If any 8-0 or higher needle is missing, the x-ray is waived.
5. Incident report is completed.
6. Surgical Services leadership will be notified as soon as possible.

C. Disclosure to patient is not required if x-ray shows no missing retained item. For clarification on when surgeon should disclose to patient, refer to policy Disclosure of Unanticipated Outcomes.

Hospital Specific Resources

Hospital	Intranet Form
Munson Healthcare Cadillac Hospital (CAD)	Operating Room Record Form SUR20191 Operating Room Record Pg. 2 Form SUR20381
MMC	Surgical Count Sheet Form #1515 EV Count Sheet Form #11317

References

1. Association of PeriOperative Registered Nurses (AORN) standards (2020). Retained surgical items. Denver, CO: AORN Publications Department.
2. Gibbs, V. C. (2018). No thing left behind: Prevention of retained surgical items. A Multi-Stakeholder Policy. Retrieved from http://www.nothingleft behind.org

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Approval Signatures

Step Description	Approver	Date
System Policy Oversight Committee	Terri Fries: Document Mgmt Spec	2/8/2024
VP and CNO Patient Care Services	Tamara Putney: VP and CNO Patient Care Services	2/7/2024
Dir Nursing Surgical Services	Amy Verburg: Dir Surgical Services	2/7/2024
Svc Line Mgr Surg Svcs	Jeremy Cannon: VP Nursing Services	2/7/2024
Document Owner	Lisa Lord: Coord Nursing Quality	2/7/2024

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Kalkaska Memorial Health Center, Munson Medical Center, Paul Oliver Memorial Hospital

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Applicability	MMC
Tags	Procedure

Radio Frequency Assure Surgical Detection System

Purpose

To provide additional safety against accidental sponge retention within a surgical wound.

Definitions

1. **Radio Frequency (RF) Assure Console:** The console contains the electronics that power and regulate the wand and mat, and the control panel for user operation and for communication of system reports, status and alarms.
2. **Radio Frequency (RF) Tag and Radio Frequency (RF) Tagged Gauze, Sponge & Operating Room (OR) Towels:** The RF Tag is attached to surgical disposables (single use gauze, sponge, OR towels etc.) for detection of these items.
3. **Blair-Port Wand®:** The wand is supplied sterile for single use or when covered can be reused. Wands intended for reuse must be covered with a sterile drape after removal from the sterile pack.
4. **Radio Frequency (RF) Assure Detection Mat:** The RF Assure Detection Mat contains a radiolucent (x-ray compatible) antenna in a gel pad. The reusable mat is placed on the OR table on top of the table pad and under the sterile drapes.

Procedure

A. RF Assure Detection System (RF sponge, mat or wand, console) will be used for any case for which the potential for a retained sponge exists.
    1. Any case for which a sponge count is required, and
    2. In which RF sponges/towels are used

3. Note: Sponge/packing towel types which are stocked in our inventory and which are available with RF detection sensors will only be stocked in the RF sensor version.

B. **Use of this device will NOT replace the need for a manual count.**

C. RF Detection System will be used prior to final skin closure (Final Count).

D. The mat will be used procedures for which the area to be scanned is positioned entirely over the mat. The effective range is 16 inches from the tag to the wand or the mat. The wand will be used when the area to be scanned is not positioned over the mat (such as an extremity) or the wand can be used with the mat to expand the detection coverage for high Body Mass Index (BMI) patients. The wand will also be used to scan areas off the sterile field such as the linen or trash.

Mat Placement

A. Place the mat on top of the surgery table pad. Ensure mat is placed label-side up. Place covers, linens, sheets or other items on the mat as per standard hospital protocol. The mat is reusable. Replace if damaged or deteriorated.

1. **The mat should cover full length of the torso pad and be positioned under the surgical site.**
2. **Place other devices (patient positioning devices, gel pads, electrocautery and thermal pads etc.) above the mat.**
3. **Ensure patient is secure and stable on the surgery table in all table positions expected to be used in the surgical case.**

B. Align the red dots on the plug and the connector labeled "RF Mat" and press to insert. Ensure the plug is securely fastened in connector.

C. When connected the "RF Assure Mat" icon on the display will illuminate green to indicate a functional mat.

Wand Use

A. Remove wand from sterile package or drape the wand. Wands intended for reuse must be covered with a sterile drape after removing from the package using sterile/aseptic technique.

B. Remove the plug cover from the wand connector plug, if present.

C. Align the plug with the connector labeled "RF Wand" and turn clockwise to insert. Ensure the plug is securely fastened in connector. **Note: Connect while holding wand in the air away from metal for proper calibration.**

D. When connected the "Blair-Port Wand" icon will illuminate green to indicate a functional wand.

Prepare to Scan

A. Touch either the RF Assure Mat or Blair-Port Wand icon to begin scanning. Note: Only one device (mat or wand) at a time may be used for scanning.

B. Temporary cardiac pacers should be set to VOO or DOO (non-sensing or asynchronous) mode

during scanning to avoid interfering with sensing of cardiac leads.

C. Limit the use of electrical equipment such as RF electrosurgery instruments (Bovies) during scanning and power down unused electronic devices and instruments. If possible, be sure all electronic equipment is at least 36" from the scan site.

D. Ensure all known tagged sponges are more than 36 inches away from scan site to avoid possible false positive detections.

Mat Scanning

A. Touch the "RF Assure Mat" icon to begin scanning.

B. Verify the console is in scan mode by observing the scanning progress bar and by listening for the regular tic sound. The scan can be stopped at any time by touching the screen and returning to the main menu.

C. If a tag is detected, the display shows "DETECTION" and a solid tone is audible. Touch screen to acknowledge and stop alert.

D. If no tagged objects are detected the display shows "MAT SCAN COMPLETE".

Wand Scanning

A. Touch the "Blair-Port Wand" icon to begin scanning.

B. Verify the console is in scan mode by observing the scanning graphic and by listening for the regular tic sound. The scan can be stopped at any time by touching the screen and returning to the main menu.

C. Scan Low and Slow-The scanning procedure, which includes a vertical plus a horizontal scan (See Appendix A).

1. Vertical Scan
    a. Position wand as close as possible parallel to body. With wand remaining parallel to the body, move wand distally from head to toe.
    b. With wand parallel to the body, move wand down to left side of body and then down right side of body.
    c. Final pass will return wand from lower right of body up to head.

2. Horizontal Scan:
    a. Place wand on lateral side of torso, parallel to the body
    b. Keeping wand parallel to body, move wand in arc to opposite lateral torso (i.e. from right side of chest to left side of chest).
    c. Keeping wand parallel to body, move wand in arc to opposite side of the torso (i.e. from right abdomen to left abdomen).
    d. Keeping wand parallel to body, move wand in arc to opposite side of the torso (i.e. from right iliac region to left iliac region).

    NOTE: Each pass of wand takes approximately three seconds to complete.

Do not move at a rate of more than 6 inches per second. For horizontal scanning, make three passes over the body area involved.

D. If a tag is detected, the display shows "DETECTION" and a solid tone is audible. Touch screen to acknowledge and stop alert. Note: RF Wand scanning will automatically time out after four (4) minutes. Reinitiate the scan mode by touching the Blair-Port Wand icon on the console display.

   NOTE: The tagged item may be located anywhere in the scanned area and is not necessarily directly under the wand where the detection was made.

E. If the system signals a detection, remove the tagged object and rescan patient to ensure that all tagged objects have been removed.

Documentation

A. A Scan Confirmation number will be displayed after a scan is completed with no errors.

B. Write the scan confirmation number in the patient's medical record under comments on the Count segment to document a completed scan.

Care and Cleaning

A. Before or after use, inspect the wand and mat for damage and deterioration including abrasion, cracks, splits, punctures and loose components. Check cables for kinks or breaks in insulation and connectors for wear or damage that would prevent secure attachment.

B. The RF Assure Detection Mat should be sanitized in the same way as a typical surgical table mattress following existing OR sanitation protocols.

C. The console, mat and wand may be cleaned with an isopropyl alcohol based germicidal wipe. Avoid excessive exposure to fluids and cleaning products. Do not submerge. Avoid fluid ingress to any electrical circuitry.

Addendum

Addendum A: RF Assure Detection System Troubleshooting Guide

RF Assure Detection System Troubleshooting Guide	
Symptom	**Action**
Display does not illuminate, is non-responsive or has erratic operation.	• Check power cord connections. • Ensure power switch is in the ON position. • Verify the wall outlet is active. • Cycle power to restart console.

RF Assure Detection System Troubleshooting Guide	
RF Assure Mat icon does not illuminate green or displays MAT ERROR.	• Ensure mat connector is locked to console receptacle. • If RF Assure Mat icon remains dark or displays error replace mat.
Blair-Port Wand icon does not illuminate green or displays WAND ERROR.	• Check that wand is properly plugged in. • Wand is non-functional. Replace wand if problem persists.
"Mat Disconnected" or "Wand Disconnected" displayed.	• Mat or Wand disconnected during scan. Check mat or wand connection. • Replace if problem persists.
"Metal Near Mat" displayed.	• Large metal object in close proximity to mat during scan. Remove metal object. • Use Blair-Port Wand to scan.
"Wand Near Metal" displayed.	• Wand in prolonged proximity to metal object. Remove metal object from scan area
"Electrical Interference" displayed	• Prolonged interference ("noise") from other electrical equipment or power source. Remove or turn off equipment. • Use Blair-Port Wand to scan.

Addendum B: RF Assure Detection System Quick Start Guide

System Operation

A. The RF Assure Detection System" offers two modes of scanning for RF tagged gauze, sponges and OR towels.

B. The RF Assure Detection Mat is the primary detection method and scans the surgical site with one touch of the console display.

C. The Blair-Port® Wand adds an extra measure of assurance by scanning the patient and areas outside of the surgical site to locate tagged objects.

D. The Wand may require two people when presented into the sterile field and during scanning:

1. one person for console observation and control, and one to scan (e.g., a circulating nurse and a sterile nurse or doctor).

Quick Start

Step	Process	System Feedback & Guidelines
1	Plug in the Console power cord and turn the back panel switch to ON	After self-check, display screen shows main menu for system operation.
2	Place the mat on top of table pad under drapes and connect mat cable to console	Display shows RF Assure Mat icon green if ready to scan
3	Remove wand from package. If wand will be reused, cover with a sterile drape. Connect wand cable to console.	Circulating nurse can assist in connecting wand cable to console. Connect while holding wand in air away from metal for calibration. Wand icon shows green if ready to scan
4	Clear scan area	Remove all RF tagged items (used and unused gauze or sponges) from patient area by 36".
5	From main menu, select Setup & Reports to enter data, or touch a device icon to begin scanning	Listen for the 3 fast beeps that indicate a scan start (or stop) and an audible "tic" sound when scanning. Scanning progress is displayed.
6	With wand, scan as needed moving low and slow, close to patient's body	Refer to scanning pattern. Observe console to verify scanning progress is displayed
7	Tag detected	Display shows "DETECTION" and a solid tone is audible.
8	No tag detected	The display shows "MAT SCAN COMPLETE".

Reference

1. RF Surgical™ RF Assure Detection System Model 200 *Directions for Use*; RF Surgical Systems, Inc.

Approval Signatures

Step Description	Approver	Date
System Policy Oversight Committee	Terri Fries: Document Mgmt Spec	7/31/2023
VP and CNO Patient Care Services	Tamara Putney: VP and CNO Patient Care Services	7/28/2023
Dir Nursing Surgical Services	Amy Verburg: Dir Surgical Services	7/26/2023

Document Owner	Lisa Lord: Coord Nursing Quality	7/24/2023

Applicability

Munson Medical Center

Standards

No standards are associated with this document

Procedure: Sterile technique, basic

Checklist: Sterile technique, basic

Evaluator's Name: _____ **Examinee's Name:** _____

Evaluator's ID: _____ **Examinee's ID:** _____

Evaluator's Dept: _____ **Examinee's Dept:** _____

Date: _____ **Meets criteria/Does not meet criteria:** _____

Select Evaluation Method:

☐ Clinical Observation ☐ Documentation Review

☐ Demonstration ☐ Verbalization

Sterile technique, basic

Objective: To perform basic sterile technique according to the standard of care.

Checklist Step	Comments
Y- Meets; N- Does not meet; I- Not Applicable	
__ Review the practitioner's order.	
__ Review the patient's medical record for a history of allergies to latex or medications.	
__ If required by your facility, confirm that informed consent has been obtained and is in the patient's medical record.	
__ Gather and prepare the necessary equipment and supplies.	
__ Perform hand hygiene.	
__ Confirm the patient's identity using at least two patient identifiers.	
__ Provide privacy.	
__ Explain the procedure to the patient and family (if appropriate) according to their individual communication and learning needs.	
__ Screen for pain using facility-defined criteria that are consistent with the patient's age, condition, and ability to understand.	
__ Treat the patient’s pain, if ordered, using nonpharmacologic, pharmacologic, or a combination of approaches. Administer an analgesic	

20 to 30 minutes before the procedure if ordered following safe medication administration practices.

__ Remove your rings, watch, and bracelets.

__ Perform hand hygiene.

Opening sterile kits

__ If present, remove the outer wrapper from the procedure kit.

__ Place the inner wrapped kit on a clean, flat, dry surface.

__ Position the kit so that you can open the farthest flap first.

__ Grasp the outer portion of the flap and open the flap away from your body, keeping your arm outstretched to the side.

__ Grasp the outer surface of the first side flap using the hand on the same side as the flap. Open the flap fully.

__ Grasp the outer surface of the second side flap and open it using the hand on the same side as the flap.

__ Grasp the outer surface of the innermost flap and open it toward your body.

__ Secure the wrapper edges.

Opening wrapped sterile items

__ Grasp the wrapped sterile item in your nondominant hand.

__ Break the sterilization tape.

__ Use your dominant hand to grasp the outer surface of the top outermost flap.

__ Open the flap away from your body.

__ Grasp the outer surface of the first side flap and open it fully to the side.

__ Repeat with the other side flap.

__ Secure all flaps in your nondominant hand to avoid dangling.

__ Grasp the outer surface of the inner flap and open it toward you.

__ Place the item on the sterile field, ensuring that only sterile surfaces touch other sterile surfaces.

__ Place items at least 1″ (2.5 cm) away from the edge of the sterile field.

Opening peel-pack containers or pouches

__ Grasp the unsealed corner of the wrapper and pull it toward you.

__ Open a peel-pack pouch (such as gloves and syringes) by grasping each side of the unsealed edge with the thumb side of each hand parallel to the seal and pulling it apart gently.

__ Hold the sides back so that the wrap covers your hands and exposes the sterile item.

__ Drop light items onto the sterile field without letting them slide across the package sides. Give heavy items to a scrubbed person or open them on a separate surface.

Pouring sterile solutions

__ Open the wrapped package containing the sterile bowl. Label the bowl with the name of the solution to be poured into it.

__ Place the bowl on the edge of the sterile field but inside the 1″ (2.5 cm) safety margin.

__ Visually inspect the solution container. Don't use the solution if it's expired or compromised.

__ Unwrap the seal on the sterile solution bottle.

__ Unscrew the cap without touching the edges of the bottle.

__ Pour the solution into the labeled bowl without reaching over the sterile field.

__ Pour the solution slowly.

__ Discard any unused solution.

Opening and putting on sterile gloves

__ Open the package containing the gloves, maintaining sterility.

__ Place the paper glove wrapper on a clean, dry, flat surface.

__ Open the inner package, touching only the outer edges of the wrapper.

__ Use the thumb and fingers of your nondominant hand to grasp the folded inner surface of the glove for the dominant hand.

__ Insert your dominant hand into the glove, palm side up.

__ Pull down the cuff, touching only the inner surface of the glove.

__ Insert the four fingers of your gloved dominant hand into the sterile outer cuff of the other glove.

__ Lift the glove and insert your nondominant hand into it. Allow the cuff to come uncuffed as you finish putting it on without touching the skin of your arm.

__ Adjust the fingers of the gloves.

__ Keep your hands above waist level.

Status Active PolicyStat ID 18339201

MUNSON MEDICAL CENTER
MUNSON HEALTHCARE

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Next Review	7/15/2028
Owner	Sandra Cranson: Coord Nursing Quality
Area/ Department	Surgical Services - Operating Room
Applicability	MMC, KMHC, POMH
Tags	Procedure

Surgical Handwashing Procedure

Purpose

To provide a process for surgical handwashing.

Procedure

A. Skin is a major potential source of microbial contamination in the surgical environment. Although scrubbed members of the surgical team wear sterile gloves, the skin of their hands and forearms should be cleaned pre-operatively to reduce the number of microorganisms in the event of glove tears. The purpose of the surgical hand scrub is to:

1. Remove debris and transient microorganisms from the nails, hands, and forearms
2. Reduce the residual microbial count to a minimum
3. Inhibit rapid rebound growth of microorganisms

B. Follow the Centers for Disease Control and Prevention (CDC) guidelines for Hand Hygiene for Surgery: Surgical Hand Antisepsis

1. Remove rings, watches, and bracelets before beginning the surgical hand scrub
2. Remove debris from underneath fingernails using a nail cleaner under running water
3. Performing surgical hand antisepsis using either an antimicrobial soap or an alcohol-based hand sanitizer with persistent activity is recommended before donning sterile gloves when performing surgical procedures
4. When performing surgical hand antisepsis using an antimicrobial soap, scrub hands and forearms for the length of time recommended by the manufacturer, usually 2–6 minutes.

5. Long scrub times (e.g., 10 minutes) are not necessary
6. When using an alcohol-based surgical hand-scrub product with persistent activity, follow the manufacturer's instructions
7. Before applying the alcohol solution, pre wash hands and forearms with a non-antimicrobial soap and dry hands and forearms completely
8. After application of the alcohol-based product as recommended, allow hands and forearms to dry thoroughly before donning sterile gloves

Initial Scrub of the Day (Water Method)

Note: All circulating nurses should do a mechanical scrub prior to start of shift.

A. Inspect hands to ensure that nails are short and free of polish, cuticles in good condition and that no cuts or skin problems exist.

B. Put on safety glasses with side shields or fresh mask with shield.

C. Adjust cap or hood to contain and cover all hair.

D. Apply a fresh mask to cover mouth and nose at beginning of each scrub.

E. Wet hands and forearms.

F. If hands or arms are visibly soiled pre wash with a non-anrimicrobial soap: Dispense cleaning agent into the palms - make a lather with water.

G. Wash the hands and forearms to level well above the elbow. Rinse.

H. Open scrub brush. If brush is impregnated with antimicrobial agent, moisten it and begin scrub. If brush is not impregnated with soap, apply antimicrobial soap to brush and hands. Utilize nail file to clean underneath fingernails then discard nail file.

I. A traditional standardized anatomical timed scrub or a counted stroke method may be used for surgical hand scrub.

    1. A **Counted Stroke Method**: Starting at fingertips, scrub the nails while holding the brush perpendicular to them. Give 30 strokes to the nails. Using only the sponge side, scrub all sides of each digit, including web spaces. Proceed to scrub palm and back of hand. Give 20 strokes to each area of skin scrubbed on hand and fingers. Next, proceed to scrub arm from wrist to 2 inches above elbow by dividing arm in half or two-thirds and give a set of 10 strokes to each portion of arm progressing upwards to 2 inches above elbow. Transfer brush to opposite hand and repeat scrub on other hand.
    2. An **Anatomical Timed Scrub** of 3-4 minutes is acceptable if all surfaces are exposed to mechanical cleaning and chemical antisepsis. Follow the same scrub sequence as indicated above in letter "a".

J. Rinse hands and arms thoroughly, being careful to hold the hands higher than the elbows. Avoid splashing water onto the scrub suit.

Subsequent Scrubs

A. Use procedure as written above (water method) **or**

B. Use waterless, brush-less hand antiseptic (follow procedure below):

1. **Prior to Application**:
    a. Hands and nails should be clean and dry.
    b. Inspect hands, nails and arms, if necessary, clean under fingernails with a nail cleaner.
2. **Application**:
    a. Cup hand and hold 1-2 inches from the nozzle. Depress foot pump completely to dispense one pump (2 ml) of antiseptic hand prep into the palm of one hand.
    b. Dip the fingertips of the opposite hand into the hand prep and work it under the nails.
    c. Spread the remaining hand prep over the hand and up to just above the elbow covering all surfaces.
    d. Dispense another pump of hand prep into the palm of the other hand. Dip the fingertips of the opposite hand into the hand prep and work it under the nails.
    e. Spread the remaining hand prep over the hand and up to just above the elbow covering all surfaces.
    f. Dispense a final pump of the hand prep into the palm of either hand and reapply to all aspects of both hands up to the wrist. Allow to dry before donning gloves. Do not towel dry. (NOTE: To facilitate drying, continue rubbing hand prep into hands until dry).
3. **Use of Hand Lotions**:
    a. Only chlorhexidine gluconate (CHG) hand lotions should be used with any scrub products. All lotions in the dispenser provided by Munson are CHG compatible.

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Approval Signatures

Step Description	Approver	Date
System Policy Oversight Committee	Terri Fries: Document Mgmt Spec	7/16/2025

Dir Nursing Surgical Services	Amy Verburg: Dir Surgical Services	7/16/2025
Svc Line Mgr Surg Svcs	Adam Mervau: Dir Surgical Services	7/15/2025
Document Owner	Sandra Cranson: Coord Nursing Quality	7/15/2025

Applicability

Kalkaska Memorial Health Center, Munson Medical Center, Paul Oliver Memorial Hospital

Standards

No standards are associated with this document

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Owner	Joseph Santangelo: Chief Medical Quality & Safety Officer
Area/ Department	Medical Staff
Applicability	Munson Healthcare Systemwide
Tags	Policy

Universal Protocol: For Surgical and Non-Surgical Invasive Procedures

Purpose

To provide a policy for surgical and non-surgical invasive procedures.

Policy

A. The Universal Protocol is a multi-disciplinary process encompassing the multiple phases of pre-surgical/procedural preparation to improve patient safety and prevent procedural errors.

B. The Universal Protocol consists of three components, a pre-procedure verification process, marking of the surgical/procedural site and the time out just before starting the procedure.

C. The protocol applies to all surgical and non-surgical invasive procedures. These procedures may occur in settings other than the Operating Room (OR), i.e. medical procedure room (MPR), emergency department (ED), radiology, cardiac diagnostic unit, nursing units, or ambulatory setting. Invasive procedures are procedures involving a puncture or incision to the skin, insertion of an instrument, or insertion of foreign material into the body. PICC lines, central line insertions, chest tube insertion, and other similar procedures are within the scope of the protocol.

D. Refer to Addendum A for invasive procedures specific to the protocol. Minimal risk procedures such as venipuncture, peripheral line placement, NG tube insertions, or urinary bladder catheters are not part of the protocol.

Pre-Procedure Verification Process

A. **Purpose**

1. To ensure that all of the relevant documents, related information and/or equipment are:
    a. Available prior to the start of the procedure
    b. Have been correctly identified, labeled, and matched to the patient's identifiers
    c. Have been reviewed and are consistent with the patient's expectations and with the team's understanding of the intended patient, procedure, and site. The patient (or guardian if the patient is a minor or incompetent) is involved in the verification process when possible.

B. **Process**

1. An ongoing process of information gathering and verification, beginning with the decision to perform a procedure, continuing through all settings and interventions involved in the pre-procedure preparation of the patient, up to and including the "**time out**" just before starting the procedure. Missing information or discrepancies are addressed before starting the procedure. Pre-procedure verification is required for elective and emergent cases.

Detailed Requirements

A. Verification of the correct person, procedure, and site occurs:
    1. At the time the procedure is scheduled.
    2. At the time of preadmission testing and assessment.
    3. At the time of admission or entry into the facility for a procedure whether elective or emergent.
    4. Before the patient leaves the pre-procedure area or enters the procedure room.
    5. Anytime the responsibility of care is transferred to another member of the procedural care team, (including the anesthesia providers) at the time of and during the procedure.

B. Verification of the correct person, procedure, and site should occur as the final step in preparing the patient for an invasive procedure, prior to when the time-out occurs. When possible, the patient (or guardian if the patient is a minor or incompetent) should be involved in the process. Each department will determine the location where the verification process will occur (i.e., prior to the patient leaving the pre-procedure area or entering the procedure room).

C. A standardized list will be used in the verification process to validate the correct patient, procedure, and site and to ensure all relevant items are available for the procedure.
    1. At minimum, the list must include:
        a. Patient identified using 2 patient identifiers
        b. Validation of the correct procedure(s)

c. Validation of the correct site(s)

d. Validation of the physicians order(s)

e. A valid consent form(s) that has been signed by the patient (or guardian if the patient is a minor or incompetent) and witnessed.

f. Relevant documentation, (i.e. a valid, relevant, updated H&P, consultation, or handwritten progress notes; nursing and pre-anesthesia/sedation assessment).

g. Correct diagnostic and radiology test results that are properly labeled, if applicable.

h. Require d blood products, implants, devices, and/or special equipment available prior to start of the procedure, if applicable.

2. Each area may add additional items to the list, as applicable.
3. Each area will be responsible to ensure the list is available and consistently used as a reference during the verification process.
4. It is not necessary to document that a standardized list was used for each patient.

Marking the Operative/Procedure Site

A. For patient safety, regulations require uniformity in site marking practices to prevent errors. The method of marking the site and the type of mark is to be unambiguous and be used consistently throughout the organization. **The approved site marking is the initials of the person performing the procedure.**

1. ***The person performing the procedure must do the site marking, this cannot be delegated. This individual must be directly involved and present at the time the procedure is performed.***
2. Marking should take place with the patient involved, awake and aware, if possible.
3. The mark is made at or near the procedure or the incision site. Do **NOT** mark any non-procedure site(s) unless necessary for some other aspect of care.

    a. The mark must be visible after the patient's skin is prepped, the patient is in their final position and sterile draping is completed.

    b. The mark must be made using a marker that is sufficiently permanent to remain visible after completion of the skin prep and sterile draping. Adhesive site markers are not used as the sole means of marking the site.

    c. The procedural physician may elect to write certain aspects of the procedure with the site marking, such as the vertebral level.?

4. Site marking is required for the following procedures involving incisions or percutaneous puncture or insertion of foreign material into the body.

    a. Marking includes laterality, surface (flexor, extensor), the level (spine), specific lesion or digit to be treated.

    b. For midline incision approach for organs of laterality, the site is still

marked and the laterality noted.

c. A wrist/ankle band labeled "Operative or Procedural Side" (written with an indelible marker) will be placed on the limb of the correct side for identifying laterality for a natural orifice or perineum approach.?

d. Spinal procedures require a two stage marking process, marking of the site and identification of the vertebral level(s).

    i. Marking of the skin at the general spinal region.

    ii. The use of radiographic intraoperative techniques is required to mark the exact vertebral level.

e. Interventional radiology cases where the side or individual structure is identified by imaging guidance during the procedure.

5. For cases involving more than one procedure and different providers who are not involved in the previous procedure, site marking will occur when he/she enters the case, whether the patient is re-draped or not.
6. Final verification of the site mark should take place during the "time out".

Exemptions from Site Marking

A. Interventional procedure cases in which the catheter/instrument insertion site is not predetermined (i.e. pacemaker insertions and cardiac catheterizations).

B. Midline, single organ procedures and endoscopies without intended laterality.

C. Interventional radiology cases where

1. The site has been identified during intra-procedural imaging
2. Routine nephrostomy tube exchange

Alternate Marking Conditions

A. An alternate marking process will be used for cases in which it is technically or anatomically impossible or impractical to mark the site (mucosal surfaces, perineum, premature infants) or for patients who refuse site marking.

1. Premature infants for whom the mark may cause a permanent tattoo. For side identification, a wrist/ankle band labeled "Operative or Procedural Side" (written with an indelible marker) will be placed on the limb of the correct side.
2. Minimal access procedures: Minimal access procedures intended to treat a lateralization of an internal organ (percutaneous approach or through a natural orifice), initial the intended site at or near the insertion site. The marked site must remain visible after completion of the skin prep and sterile draping.
3. Teeth: Indicate the operative tooth name(s) and number on documentation **or** mark the operative tooth (teeth) on the dental radiographs or dental diagram. The documentation, images, and or diagrams are available in the procedure room before the start of the procedure.

4. Lesions and wounds: Site marking is not required if there is an obvious wound or lesion that is the site of the intended procedure. However, if there are multiple wounds or lesions and only some of them are to be treated, and the decision and direction for which ones are to be treated is determined prior to the procedure itself, then the sites to be treated should be marked as soon as possible after the decision is made.

Site Marking Refusal by the Patient

A. If a patient refuses the surgical/procedural site marking, the proceduralist will provide the patient with information on why site marking is appropriate and desirable for his/her safety. This allows the patient to make an informed decision.
    1. The proceduralist will validate the surgical/procedural site with the patient and another member of the surgical/procedural team
        a. For side identification, a wrist/ankle band labeled "Operative or Procedural Side" (written with an indelible marker) will be placed on the limb of the correct side.
    2. The proceduralist will document in the patient's medical record the intended site and the reason why the patient refused site marking.

Time Out Process

A. **Purpose**
    1. To conduct a final assessment validating the correct patient, correct procedure, and correct procedural or operative site immediately before starting the invasive procedure or making an incision.

B. **Process**
    1. Active communication among all relevant members of the surgical/procedure team during the time out. The process is consistently initiated by a designated member of the team and the procedure is not started until all questions or concerns are resolved. See Attachment 1. AORN Comprehensive Surgical Checklist.

Detailed Requirements

A. *During the time out, the operative or procedural team must agree, at a minimum, the correct patient, correct procedure, and correct site. Areas may elect to add more elements to the time-out as deemed appropriate by that unit.*

B. The time-out process will be standardized throughout the organization and will be conducted prior to starting the procedure or making an incision.

C. The time-out applies to all procedural cases, including cases where the procedural physician is present at the time of the decision to perform the procedure and remains with the patient to the start of the procedure.

D. There will be a separate time out performed prior to any regional anesthetic involving laterality.

E. When more than one consent form is completed for more than one procedure being performed on the same patient, a time out will be completed to confirm each subsequent procedure before it is initiated.

F. For cases involving more than one procedure and different providers, who are not involved in the previous procedure, site marking will occur when he/she enters the case, whether the patient is re-draped or not.

G. All activities will be suspended (an actual pause), to the extent possible without compromising patient safety, allowing all members to focus on active confirmation of the correct patient, procedure, site, and other critical elements.

H. A pre-designated member of the team will initiate the time out.

    1. All immediate members of the team who will be participating in the procedure at its inception will participate in the time-out (i.e. physicians, anesthesia providers, nurses, technicians, etc.).

    2. Interactive verbal communication is expected of all team members. All team members will be allowed to express concerns about the procedure. Concerns will be addressed prior to proceeding with the procedure.

I. Completion of the time-out must be documented in the patient record validating the correct patient, procedure, and site.

Compliance Monitoring

A. All hospital staff and physicians involved in the validation process have the responsibility to ensure patient safety. Failure to follow the Universal Protocol or to resolve issues regarding the performance of the verification, site marking, and the time out must be reported using the appropriate chain of command.

B. Physicians and hospital staff should follow the department and/or Medical Staff Section chain-of-command for assistance in resolving discrepancies. Refer to the Chain of Command: Paging Response Time and Resolving Questions of Care and or Safety policy.

C. Non-compliance or resistance to this policy will be reported through the electronic occurrence reporting system for review. All actual and "near miss" situations, where any of the steps of this procedure is not followed or is performed incorrectly, should be reported.

D. Individual occurrences and aggregate occurrence data will be reviewed by Risk Management and referred to the appropriate Medical Staff and/or Nursing Administration leadership and peer review committee.

References

1. Joint Commission. (2019). *Hospital Accreditation Program. Chapter: National Patient Safety Goals.* Effective January 2019.? Retrieved from the Joint Commission Website https://www.jointcommission.org/hap_2017_npsgs

Addendum A

Invasive Procedures Specific to the Universal Protocol

A. The Universal Protocol applies to the following invasive procedures according to the Universal Protocol: For Surgical and Non-surgical Invasive Procedures policy.

B. **This list is not all-inclusive:**

1. All taps (i.e., thoracentesis, amniocentesis, paracentesis, pericardiocentesis, pleuracentesis, arthrocentesis, and lumbar puncture).
2. Invasive pain control procedures (i.e., diagnostic or therapeutic blocks, epidural analgesia).
3. Invasive radiological procedures (i.e., angiography, arthrogram, biopsy, lymphangiogram, myelogram, splenogram, ventriculogram, Whitaker test).
4. Endoscopy procedures (i.e., bronchoscopy, colonoscopy, gastroscopy, sigmoidoscopy bronchoscopy, colonoscopy, gastroscopy, sigmoidoscopy, esophageal dilation, ERCP).
5. Invasive cardio/thoracic procedures. (i.e., angioplasty, cardiac catheterization, implantation of pacer or cardioverter, intra-aortic balloon pump, stent placement, intravascular ultrasound, athrectomy).
6. Biopsy/excision and drainage or aspiration (i.e., bone marrow, cisternal puncture, breast biopsy).
7. Chest tube insertions
8. Central line placement (i.e., CVP, Swan-Ganz).
9. Peritoneal dialysis catheter insertion
10. Percutaneous nephrostomy.
11. IVC (inferior vena cava) filter placement.
12. Embolization.

Document ID: 019.066

Attachments

AORN-Comprehensive-Surgical-Check-2019.pdf

Approval Signatures

Step Description	Approver	Date

System Policy Overnight Committee	Terri Fries: Document Mgmt Spec	8/14/2024
PLC	Joseph Santangelo: Chief Medical, Quality & Safety Officer [AM]	8/2/2024
Med Staff Leads (MEC)	Heather Flint: Sr Spec Lead, Med Staff Services SNE - South Regio	12/28/2023
Med Staff Leads (MEC)	Katryna Glettler: Sr Spec Lead, Med Staff Services SNE - Central Reg	10/6/2023
Med Staff Leads (MEC)	Angela Gee: Sr Spec Lead, Med Staff Services SNE - East Region	10/5/2023
Med Staff Leads (MEC)	Teresa Smith: Executive Office Coordinator	9/26/2023
Document Owner	Joseph Santangelo: Chief Medical, Quality & Safety Officer [AM]	9/26/2023

Applicability

Cadillac Hospital, Charlevoix Hospital, Grayling Hospital, Kalkaska Memorial Health Center, MHC Corporate (Home Health, Dialysis, NMSA, etc.), Manistee Hospital, Munson Medical Center, Otsego Memorial Hospital, Paul Oliver Memorial Hospital

Standards

No standards are associated with this document

Status Active PolicyStat ID 18339357

MUNSON MEDICAL CENTER
MUNSON HEALTHCARE

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Area/ Department	Surgical Services - Operating Room
Applicability	MMC
Tags	Procedure

Autotransfusion

Purpose

To provide a process for intraoperative autotransfusion in which shed blood is collected and returned to the patient.

Procedure

A. The set-up and monitoring of an autotransfusion occurs by the perfusionist, registered nurse (RN), or a trained staff member.

B. Autotransfusion may be utilized for any surgical case where there may be an expected blood loss from the patient of one or more units of homologous blood products or at the request of the attending physician/surgeon.

C. Autotransfusion may also be utilized outside the perioperative setting in emergent situations, as directed by the physician.

D. Contraindications for use of the autotransfusion device are as defined by the manufacturer.

E. **Contraindications including but not limited to**:

1. **Microfibrillar products**: Avitene, Helitene, Oxycel, Gelfoam power, Instat, MCH
2. **Sponge/fabric materials**: Surgicel, Surgicel Nu-Knit, Gelfoam sponge, Helistat, Hemopad, Superstat, HemoFoam
3. **Topical liquids**: Thrombin-JMI, Thrombostat, Thrombogen
4. **Methyl Methacrylate**: Hardened, liquid, powdered
5. Alcohol
6. Antibiotics: Bacitracin, Neomycin, Polymyxin

7. Betadine
8. Hypertonic solution: 3% NaCl, 7.5% NaCl, dextrose solution
9. Hypotonic solution: Sterile water, glycine
10. Lactated Ringers (in presence of Citrate anticoagulant)
11. Amniotic fluid
12. Tumor Cells

F. **Recommended Action**:
    1. Avoid aspiration in the presence of the above items.
    2. *Antibiotics increase wash by 500 mL of saline.
    3. If items aspirated, irrigate with copious irrigation 0.9% sodium chloride.
    4. For tumor cells, avoid aspiration at tumor site except at the discretion of the physician.

Quality Control (QC)

A. Instrument function, preventive maintenance and repairs are documented and reviewed by the Bio-Med department.
B. All QCs/checks will be performed, documented, and reports generated and reviewed with operating room (OR) management.
C. A policy/procedure/guidelines manual will be available through the Education Coordinator.

Procedure Specific Information

A. Primarily, anticoagulant is prepared by Pharmacy and has directives to support this.
B. Also regarding anticoagulant, it is important to know if patient has heparin/porline allergy, if so, use ACD-A (premixed IL bags in pharmacy).

Platelet Poor Plasma (PPP) and Platelet Rich Plasma (PRP)

A. PRP therapy is the process of withdrawing whole blood to produce PRP and PPP. Blood is obtained from a venipuncture site and is centrifuged. The separated components are returned to the patient at the surgical site. The goal of PRP is to enhance handling characteristics of bone grafts and be an autologous source of growth factors in the clotting cascade. The PPP is used as a hemostatic agent.

Personnel

A. **RN:** Delivers medication to surgical field.
B. **Scrub Person:** Set up disposable products on sterile field.
C. **Trained Surgical Staff:** Processes the blood using the machine.

D. Contraindications for use of PRP and PPP device are as defined by the manufacturer.

QC

A. Instrument function, preventative maintenance and repairs are documented and reviewed by the Bio-Med department.

Approval Signatures

Step Description	Approver	Date
System Policy Oversight Committee	Terri Fries: Document Mgmt Spec	1/6/2026
Interim CNO Patient Care Services	Shari Wilson: President Post-Acute Care	1/5/2026
P&T Committee	Heather Tolfree: Mgr Pharmacy - CPS	1/5/2026
Dir Nursing Surgical Services	Amy Verburg: Dir Surgical Services	12/2/2025
Document Owner	Sandra Cranson: Coord Nursing Quality	12/1/2025

Applicability

Munson Medical Center

Standards

No standards are associated with this document

Status Active PolicyStat ID 17948440

MUNSON MEDICAL CENTER
MUNSON HEALTHCARE

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Effective	6/3/2025
Last Revised	6/3/2025
Next Review	6/2/2028
Owner	Jennifer Standfest: CNO
Area/ Department	Nursing
Applicability	MMC, Cadillac, Charlevoix, Grayling, Otsego

Cardiac Telemetry Monitoring

Purpose

To enhance patient safety and clinical consistency by outlining continuous cardiac monitoring guidelines, arrhythmia detections and overall alarm management.

Definitions

1. **Cardiac Monitoring/Telemetry Monitoring:** Continuous cardiac rhythm display at the bedside and/or transmitted to a central monitoring console that can provide alarms or print/save rhythm strips.
2. **Telemetry Technician:** Licensed or unlicensed staff member with training and competency in electrocardiogram (ECG) rhythm interpretation.
3. **Telemetry Observer:** An individual assigned to listen for and/or observe specific visual cues with the intention of escalating information to a resource trained to assess and/or intervene in a specific situation.

Policy

A. An order is needed to initiate and discontinue cardiac monitoring. Orders should specify any parameters and any circumstances in which the patient can be temporarily or permanently removed from monitoring.

B. When initiating cardiac monitoring, the following identifiers are used:
    1. 10-digit account number
    2. Last Name, First Name (NOTE: This will automatically pull through ADT feed if 10-digit account number is entered correctly)

C. The Registered Nurse (RN) is responsible to:

1. Initiate and maintain continuous monitoring and to perform initial review and adjustment of settings and alarm parameters.
2. Regularly review and interpret cardiac rhythm and document findings in the chart.
3. Assess need for continued cardiac monitoring daily, using provider orders or protocol, where applicable.
4. Report clinically relevant abnormalities identified on review or by alarm/event review to the provider. Abnormalities include but are not limited to:
    a. Any new dysrhythmia (i.e., tachy or brady arrhythmia exceeding alarm)
    b. Heart block
    c. New atrial fibrillation or flutter or inadequate rate control of these rhythms
    d. Ventricular tachycardia/fibrillation
    e. Supra-ventricular tachycardia
    f. Any symptomatic patient with a dysrhythmia
    g. Any dysrhythmia requiring immediate treatment
5. Initiate code response or other facility specific rapid response protocols or appropriate emergency interventions
6. The RN may delegate tasks to appropriately trained support personnel. These may include, but are not limited to: equipment preparation, skin preparation, electrode application/reapplication, application of monitoring equipment.

D. Where present, telemetry technicians may review and adjust specific settings and alarm parameters and may interpret cardiac rhythms, complete specific documentation, and shall report abnormalities to the RN.

1. The technician will monitor each telemetry unit for ventricular tachycardia, ventricular fibrillation, asystole, tachycardia and bradycardia, low battery and lack of rhythm. The telemetry technician will contact the nurse with findings.
2. A telemetry log may be kept on each unit with pertinent info such as the patient's name, dominant rhythm, assigned nurse and the direct phone number(s) for the assigned care team.

E. A telemetry technician and/or any RN not directly responsible for the patient's care who observes events or responds to alarms at the bedside or central monitoring station will notify the primary nurse of any changes in the patient's condition, monitor settings, or alarm parameters.

F. Where present, telemetry observers are identified 24 hours a day. The telemetry observer may perform other clerical duties that do not remove them from direct view or audio of the monitor. The observer will arrange for another trained observer or nurse to fill the role temporarily if needed for breaks or to perform other job duties away from the area.

G. Any support personnel should consult with/notify the appropriate individual (eg., telemetry observer or technician, RN, etc.) prior to removing a patient from monitoring for showering,

procedures/testing or discharge.

Electrode and Lead Placement, Battery Replacement

A. Electrodes are applied according to Lippincott Procedures - Cardiac monitoring (lww.com) instructions found online. Electrodes shall be changed daily and as needed (PRN) or in accordance with manufacturer recommendations.

B. Lead placement should be confirmed at the beginning of each shift, along with verification the monitor / transmitter is functioning properly and that suitable battery life remains.

C. Battery change should occur minimally when “low battery” signal appears, or with approximately 25% battery life remaining.

Lead Selection

A. Lead II is generally selected as the standard monitoring lead.

B. For a standard 5 lead system, V1 is commonly selected as the second lead. An alternate lead may be selected based on which provides a clearer trace, more prominent or upright waves, or by which a particular area of the heart can be better monitored.

Cleaning

A. Upon discontinuation of telemetry monitoring, the telemetry unit and electrodes are cleaned per manufacturer instructions.

Cardiac Rhythm Waveforms and Documentation

A. A rhythm strip will be measured, interpreted, and documented per the following guidelines:

1. Rhythm interpretation is ongoing and documented as part of the nursing assessment
2. Inpatient care (critical, intermediate, or telemetry care departments) at admission, each shift with initial RN assessment, and with any significant change in rhythm or significant symptoms
3. Emergency Department (ED) at admission and with any life-threatening rhythms or significant changes in patient condition
4. Rhythm waveform documentation should include the name of identified rhythm, heart rate, PR/QRS/QT intervals where applicable, and the name of the RN or Telemetry Technician performing the documentation.

Monitoring Guidelines

A. HR alarms will be set appropriately to the patient's baseline HR, rhythm, clinical condition or treatment plan by an RN or Telemetry Technician.

B. If a monitored patient has a pacemaker, the pacemaker detection function of the cardiac monitor must be turned ON

Refer to Munson Healthcare (MHC) entity specific intravenous (IV) Medication Guidelines and/or consult with pharmacy for information related to risk of prolonged QT interval and for IV medication administration and required monitoring.

C. QT interval monitoring functions of the cardiac monitors may be utilized by the RN/Tele Tech as an adjunct to patient / rhythm assessment. A patient with a baseline prolonged QT or on a medication that has the potential of prolonging the QT interval may have orders for more frequent QT measurements.

D. ST segment monitoring and ST mapping functions of the cardiac monitors may be utilized by the RN/Tele Tech as an adjunct to patient assessment. (Note: some clinical conditions make it difficult to achieve accurate ST monitoring i.e., atrial fib or flutter with an irregular baseline, ventricular pacing, left bundle branch block. Consider turning ST monitoring off in these conditions).

E. Silencing Alarms:

    1. A trained telemetry observer or technician or a registered nurse may silence clearly erratic/false alarms such as those caused by motion or artifact while requesting evaluation by clinical personnel.

    2. A lethal rhythm alarm may be silenced by a Telemetry Technician or RN after the RN evaluates the rhythm and/or patient condition.

Alarm Settings and Clinical Management

A. The Clinical Engineering department has oversight for the testing and maintenance of clinical devices to ensure accurate settings, proper operation, and detectability of alarms.

B. Monitor settings are configured according to manufacturer recommendations to enhance patient safety. A copy of all configuration settings is maintained by the Clinical Engineering department. These settings may only be changed with approval of the Cardiac Monitoring Steering Committee or the Cardiac Monitoring Alarm Committee, with the endorsement of the Clinical Leadership Council.

C. Arrhythmia monitoring will be on and audible for all monitored patients, with the exception of patients who are receiving end of life care, where death is anticipated and an order for comfort care is present.

D. Alarm volume should be set audibly so that nursing staff is able to hear and respond appropriately to non-critical and critical alarms. It is the responsibility of the bedside nurses, the unit coordinator, and other clinical staff to maintain the appropriate alarm volume which decreases noise pollution for patients and visitors, while ensuring prompt staff notification of alarm situations.

E. Select alarm parameters are unlocked and able to be adjusted on an individual basis by the RN, Telemetry Technician, or other licensed clinician within their scope of service.

F. All monitor alarm settings should be adjusted to reflect patient or condition specific values and should be reviewed and adjusted (if indicated) at admission, each shift, and as needed by the RN and/or Telemetry Technician.

    1. The nursing staff member will determine the appropriate response to the alarm; however, the nurse is responsible to confirm findings, verify patterns, and evaluate

interpretations through patient assessment. The response to an alarm may include but is not limited to silencing the alarm, recording the strip, and/or initiating emergency interventions.

2. In the event of a Code Blue or Cardioversion, an event strip will be documented containing the initiation of the event and documentation of changes in rhythm continuing through termination of efforts. As an alternative, a strip from the defibrillator may be used to record the events of the Code Blue.

G. Patient care staff are familiar with alarm settings, policies and procedures.

Transfer/Discharge Procedure

A. At the time of transfer/discharge, the patient MUST be discharged from the bedside and/or central monitoring console, and when applicable, have their encounter be dissociated from the electronic health record (EHR).

B. Refer to manufacturer instructions for use for specific steps to transfer or discharge patient.

Transport Monitoring

A. An RN (or in some cases, a paramedic) shall accompany the patient for transport if the patient is in critical condition, hemodynamically unstable and/or on continuous vasoactive infusions.

B. Other monitored patients transported by unlicensed staff will be monitored remotely by the telemetry technician, telemetry observer, or RN. A portable phone will be assigned and in the possession of the staff member closest to/responsible for the patient at all times. Monitoring staff will use this phone to communicate emergency conditions and request immediate assistance for the patient.

Reference

1. Wiegand, D. L. (Ed.). (2017). AACN Procedure Manual for High Acuity, Progressive, and Critical Care (7th ed., pp. 467-476). St. Louis, MO: Elsevier.

Keywords

Cardiac, Telemetry, Monitoring, Tele Tech

Approval Signatures

Step Description	Approver	Date
System Policy Oversight Committee	Terri Fries: Document Mgmt Spec	6/3/2025
CNO Council	Jennifer Standfest: CNO [AM]	6/2/2025

Document Owner	Jennifer Standfest: CNO [AM]	6/2/2025

Applicability

Cadillac Hospital, Charlevoix Hospital, Grayling Hospital, Munson Medical Center, Otsego Memorial Hospital

Standards

No standards are associated with this document

Status Active PolicyStat ID 19625184

MUNSON MEDICAL CENTER
MUNSON HEALTHCARE

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Last Revised	1/12/2026
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Owner	Sandra Cranson: Coord Nursing Quality
Area/ Department	Surgical Services
Applicability	MMC
Tags	Policy

Laser Use in the Operating Room

Purpose

To ensure the safety of patients and personnel during laser use.

Definitions

1. **Laser Safety Officer (LSO):** The individual designated to evaluate and classify laser hazards; implement, monitor, and enforce appropriate control measures; ensure compliance with applicable laser safety standards; and oversee training, procedures, and safe operation of all laser systems within their scope of authority.
2. **Laser Operator:** An individual who has been trained, authorized, and designated to operate a specific laser or laser system.
3. **Nominal Hazard Zone (NHZ):** The area within which the level of direct, reflected, or scattered laser radiation exceeds the Maximum Permissible Exposure (MPE) during normal operation, maintenance, or alignment. Appropriate personal protection must be implemented within the NHZ to prevent injury.

Policy

Education and Training

A. The LSO shall successfully complete a recognized LSO training course and obtain and maintain current LSO certification as required by organizational policy and applicable standards.

B. Operating Room (OR) staff will complete laser safety awareness training and hands-on training that corresponds with their job description.

C. Upon hire, new staff will complete a laser competency checklist, when applicable.

Management of Laser-Generated Airborne Contaminates

A. To effectively remove the biohazard of plume from the laser energy impact site, and to reduce the risk of occupational exposure to vaporized tissue, a smoke evacuation system shall be used whenever the potential for producing smoke accompanies a laser procedure. (Note: The Holmium laser & Diode 532 eye laser plume is self-contained and a smoke evacuator is not needed).

1. Install a new smoke evacuation filter when needed according to manufacturer instructions for use (IFU).
2. The smoke evacuator suction tip should be held close to the surgical site, ideally no further than two inches away.

Documentation

A. Document in the perioperative document:

- Laser Data:
  - Procedure
  - Laser Type
  - Serial Number
  - Pulses
  - Laser Mode
  - Watts
  - Joules
  - Microscope Used
  - Total Minutes
- Laser Safety:
  - Laser Precautions Utilized
- Comments:
  - Laser Operator

Ocular Safety

A. Laser goggles will be worn in the NHZ when there is a risk of exposure from a laser beam.

1. The LSO shall ensure laser safety goggles meets criteria for use on each laser.

2. Individual users should inspect the laser goggles before donning for coating damage, pitting, cracking, discoloration, frame integrity, and light leaks. If damaged, do not wear, and send to the LSO for replacement or repair.
3. For patients that will remain awake during the laser procedure (e.g. local or regional anesthesia) provide laser goggles.
4. For patients who will NOT be awake during the laser procedure (e.g. general anesthesia) place wet gauze over the eyes in addition to laser goggles.

Controlled Access

A. Operate the laser in areas where traffic flow can be monitored and access can be limited.
B. DANGER signs specific to the type of laser being used shall be placed in visible locations at all entrances to a room when lasers are being used.
C. Laser goggles will be placed at the entrances to rooms where a laser is in use.
D. The laser keys shall be kept in the PYXIS machine.
E. Place the laser in STANDBY mode when the delivery system is not aimed at target tissue.

Fire Safety

A. Fire prevention measures will be taken to protect the patient during laser use.
    1. Decrease the percentage of oxygen to the lowest tolerable level before activating the laser near the patient's head or neck.
    2. Use non-alcohol-based skin preparation agents, allow them to dry thoroughly, and prevent pooling.
    3. Minimize the use of reflective surfaces during laser surgery. Use anodized, dull, non-reflective or matte-finished instruments near the laser site.
    4. Protect exposed tissue around the surgical site with moist material when applicable.
    5. Use moistened radiopaque sponges or towels for rectal packing or for covering the anus during perineal surgery.
    6. Use a laser-retardant endotracheal (ET) tube during laser procedures involving the airway.
    7. Inflate the ET tube cuff with sterile water of saline during procedures involving treatment of the airway or aerodigestive tract. Methylene blue may be added to the sterile water or saline.
    8. Place moistened packs around the ET tube when possible and keep them continuously moist during procedures involving the airway or aerodigestive tract.
B. Extinguishing a fire
    1. The laser operator will know the location and use of the nearest fire extinguisher.
    2. A basin of water or saline shall be available within the NHZ to control a non-electrical fire.

Electrical Safety

A. All lasers (hospital-owned and/or loaners) will be checked for electrical leakage and safe use by the Biomedical department and labeled accordingly.

B. The laser operator, or their qualified designee, shall inspect the foot switch connectors, power cords, and associated accessories prior to each use to ensure they are intact, secure, and free of damage.

C. Liquids shall not be placed on or near the laser.

D. The laser operator will report defects or damage to the LSO. The laser and all accessory equipment shall be isolated and given to the Biomedical Engineering department for inspection and approval for use.

References

1. AORN 2025 Guidelines for Perioperative Use. Laser Safety chapter.
2. Villa, L., Cloutier, J., Comperat, E., Kronemberg, P., Charlotte, F., Berthe, L., ... Montorsi, F. (2016). Do we really need to wear proper eye protection when using Holmium: YAG Laser during endourologic procedures? *Journal of Endourology* Mar 30(3), pg 332-337. Do We Really Need to Wear Proper Eye Protection When Using Holmium:YAG Laser During Endourologic Procedures? Results from an Ex Vivo Animal Model on Pig Eyes - PubMed (nih.gov)

Approval Signatures

Step Description	Approver	Date
System Policy Oversight Committee	Terri Fries: Document Mgmt Spec	1/12/2026
Interim CNO Patient Care Services	Shari Wilson: President Post-Acute Care	1/12/2026
Dir Nursing Surgical Services	Amy Verburg: Dir Surgical Services	1/12/2026
Document Owner	Sandra Cranson: Coord Nursing Quality	1/7/2026

Applicability

Munson Medical Center

Standards

No standards are associated with this document

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Last Revised	10/4/2023
Next Review	10/3/2026

Owner	Jeannette Reynolds: Resource Clinician
Area/ Department	Surgical Services
Applicability	MHC Hospital System w/KMHC (MMC, Cadillac, Charlevoix, Grayling, KMHC, Otsego, Manistee, POMH)
Tags	Guideline

MUNSON MEDICAL CENTER
MUNSON HEALTHCARE

Malignant Hyperthermia Guidelines

Purpose

To outline the steps for recognition and management of a Malignant Hyperthermia (MH) crisis. MH is a dominantly inherited disorder of skeletal muscle that predisposes susceptible individuals to a life-threatening adverse reaction upon exposure to some anesthetic agents.

Scope

Munson Healthcare (MHC) has adopted this policy for all of its subsidiaries.

Guidelines

Screening

A. Scheduled cases will be screened prior to surgery.

B. Emergent cases will be screened prior to induction when patient condition or family presence allows.

C. Screening should include family or personal history of MH and/or complications from anesthesia.

Triggers

A. Inhaled general anesthetics (e.g. desflurane, enflurane, halothane, isoflurane, sevoflurane)
B. Succinylcholine
C. Exertional heat or exercise (rare)

Clinical Features (Adults)

A. The sequence and timing of clinical manifestations may vary from patient to patient.
    1. Unexplained increase in end-tidal carbon dioxide (EtCO2)
    2. Tachypnea or breathing over the ventilator
    3. Sinus tachycardia
    4. Masseter muscle or generalized muscle rigidity
    5. Electrocardiogram (ECG) changes (peaked T waves, widening QRS, PVCs, VT)
    6. Hyperthermia
    7. Myoglobinuria
    8. Rhabdomyolysis
    9. Hyperkalemia
    10. Mixed metabolic/respiratory acidosis
    11. Disseminated intravascular coagulation (DIC)

Pediatric Patients Clinical Features

A. Sinus tachycardia, hypercarbia, rapid temperature increase, and skin mottling.
B. May not see muscle rigidity in pediatrics.

Management

A. If MH crisis is suspected, take the following steps:
    1. Call/page anesthesia provider STAT if not present.
    2. Discontinue volatile agents and succinylcholine.
    3. Obtain the MH cart or bag and dantrolene (Ryanodex® or Dantrium®).
    4. Follow the MH crisis checklist (on the MH cart or bag) as a guide for patient management.
    5. Contact pharmacy & phlebotomy to assist as needed.
    6. Additional emergency advice may be obtained by calling the Malignant Hyperthermia Association of the United States (MHAUS) hotline at 1-800-644-9737.

Initial Treatment

A. As outlined on facility specific MH crisis checklist (see attached)
    1. Hyperventilate with 100% oxygen at flows of 10L/min to flush volatile anesthetic agents and lower ETCO2.
    2. If available, insert activated charcoal filters into the anesthesia breathing circuit.
    3. Continuous patient monitoring of ECG, pulse oximetry, capnometry, and core body temperature is recommended.
    4. Establish large bore IV access (avoid hands), infuse Dextrose 5% (D5W) or 0.9% sodium chloride. Lactated ringers and Normasol-R are contraindicated because of electrolyte (calcium) content.
    5. Administer initial dose of dantrolene (Ryanodex® or Dantrium®) at 2.5mg/kg IVP.

Supportive Therapy

A. Cool patient as needed based on body temperature using ice packs to neck, axilla or groin, cooling blankets, chilled intravenous solution, or lavage.
B. Obtain lab work including blood gas.
C. Re-dose dantrolene based on patient response.
D. Treat respiratory and metabolic acidosis, hyperkalemia, and dysrhythmias as needed (avoid calcium channel blockers).
E. Monitor renal function & treat myoglobinuria if needed.
F. Provider should consider insertion of an arterial line, central venous catheter, and/or a pulmonary artery catheter.

Transferring Patient with Suspected or Confirmed MH

A. The anesthesia provider will determine the location to best manage patient care during the acute phase (e.g. inpatient facility Post Anesthesia Care Unit (PACU) or critical care unit (CCU)).
B. Notify house supervisor/admitting for bed placement needs (as applicable).
C. The anesthesia provider will arrange the transfer and accompany the patient as needed.

Post MH Crisis

A. Observe the patient for at least 24 hours on a critical care unit.
B. Monitor ABGs, electrolytes, calcium, clotting studies, myoglobin, urine output and color, and other studies as ordered.
C. Key indicators of stability include:
    1. ETCO2 is declining or normal
    2. Heart rate is stable

3. Hyperthermia is resolving
4. Generalized muscle rigidity has resolved.

D. Restock MH cart or bag.

Reporting

A. Notify the unit manager and director of the event.

B. Complete a facility occurrence report (e.g. VOICE) under "adverse medication event".

C. Anesthesia Services should review each case and consider contributing information to the MHAUS.

MH Cart/Bag

A. The cart and/or bag is kept secured.

B. The contents are checked monthly or after use (including expiration dates).

C. MMC & Manistee: checklist is initialed daily to validate lock is intact on cart.

References

1. Malignant Hyperthermia Association of the United States (MHAUS). *Managing a Crisis.* Retrieved March 1, 2022 from https://www.mhaus.org/healthcare-professionals/managing-a-crisis.
2. UpToDate. Malignant Hyperthermia: Diagnosis and management of acute crisis. Retrieved March 25, 2022 from Malignant hyperthermia: Diagnosis and management of acute crisis - UpToDate.

Hospital Specific Resources

Hospital	Link
Munson Healthcare Cadillac	Malignant Hyperthermia Checklist
Munson Healthcare Charlevoix	Malignant Hyperthermia Checklist
Munson Healthcare Grayling	Malignant Hyperthermia Checklist
Munson Medical Center	Malignant Hyperthermia Checklist
Munson Healthcare Otsego	Malignant Hyperthermia Checklist

Attachments

Malignant Hyperthermia Checklist - Cadillac.docx

Malignant Hyperthermia Checklist - Charlevoix

Malignant Hyperthermia Checklist - Grayling

Malignant Hyperthermia Checklist - MMC

Malignant Hyperthermia Checklist - Otsego

Approval Signatures

Step Description	Approver	Date
System Policy Oversight Committee	Terri Fries: Document Mgmt Spec	10/4/2023
VP and CNO Patient Care Services	Tamara Putney: VP and CNO Patient Care Services	10/3/2023
Dir Nursing Surgical Services	Amy Verburg: Dir Surgical Services	10/3/2023
Svc Line Mgr Surg Svcs	Jeremy Cannon: VP Nursing Services	10/2/2023
Document Owner	Jeannette Reynolds: Resource Clinician	7/20/2023

Applicability

Cadillac Hospital, Charlevoix Hospital, Grayling Hospital, Kalkaska Memorial Health Center, Manistee Hospital, Munson Medical Center, Otsego Memorial Hospital, Paul Oliver Memorial Hospital

Standards

No standards are associated with this document

Massive Transfusion Protocol

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May 2023

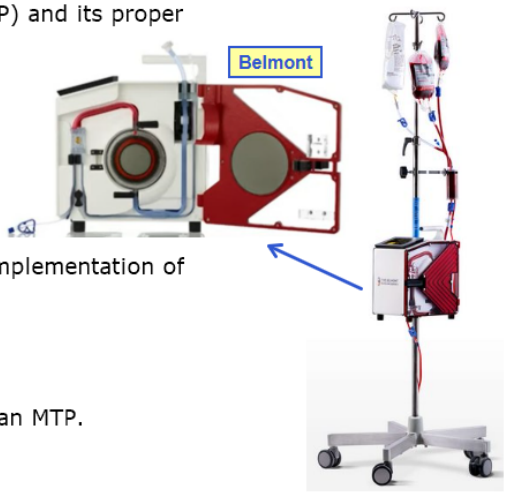
MUNSON HEALTHCARE

Goal

This course will familiarize the learner with the indications for the initiation of the Massive Transfusion Protocol (MTP) and its proper implementation.

Objectives

1. State indications for initiation of the MTP.
2. State the process to initiate MTP.
3. Identify the members of the MTP team.
4. State each MTP team member's role during implementation of the MTP.
5. Verbalize how Trauma Packs are obtained.
6. Identify end points of the MTP.
7. State the process and rationale for canceling an MTP.

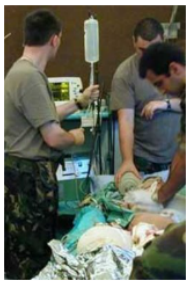


Indications for Initiation

A. Massive blood loss with profound hemorrhagic/hypovolemic shock.

B. Triggers:

1. Greater than 6 units packed red blood cells (PRBC's) transfused within 2 hours.
2. Hemodynamically unstable patient with identified or suspected coagulopathy of trauma or disseminated intravascular coagulopathy (DIC).
3. Any time at the discretion of the trauma surgeon/intensivist.
4. Assessment of blood consumption (ABC) score of greater than or equal to 3 (total possible score 4).
   a. Penetrating mechanism (no=0; yes=1)
   b. Emergency department systolic blood pressure less than 90 mmHG (no=0; yes=1)
   c. Emergency department heart rate greater than 120 bpm (no=0; yes=1)
   d. Positive ultrasound FAST exam (no=0; yes=1)
5. Trauma patient who requires more than 1 liter crystalloid to maintain systolic blood pressure greater than 90 mmHG.



MTP Team

Click each button to identify the MTP team members.

MTP Team Leaders

- Trauma surgeon
- Intensivist
- Emergency department (ED) physician
- Anesthesiologist [in OR or Post Anesthesia Care Unit (PACU)]
- Trauma advance practice providers (APP)
- Obstetrician (OB)
- Hospitalist

MTP Clinical Team

MTP Team

Exit

Click each button to identify the MTP team members.

MTP Team Leaders

MTP Clinical Team

- Clinical team:
  - Trauma physician assistant (PA)/nurse practition (NP)
  - ED nurse/ED tech
  - ICU RN
- Clinical pathologist
- Lab blood bank/laboratory personnel
- Pharmacy
- Nursing supervisor/charge nurse
- Vascular Access

How to Initiate the Massive Transfusion Protocol

Exit

Please click each step below:

1. The Team Leader initiates the Massive Transfusion Protocol.
2. A designated staff member calls **55555** to page out MTP overhead and to all responsible parties.
3. A designated staff member enters an order for Massive Transfusion in Cerner.
   - Initiates *Lab - Q 30 min.* immediately
4. A designated staff member locates the MTP supplies. The MTP packet contains MTP specific blood slips and the MTP policy.
5. A designated staff member locates the Belmont. If the MTP is in Maternity, an ED nurse will bring the Belmont.

Responsibilities

Exit

There are 3 areas of responsibility. Please click each area.

General Nursing | **Clinical Pathologist (or Designee)** | **Laboratory Personnel**

- Coordinates Trauma Packs from the Blood Bank at regular intervals and infuse per MTP flowsheet.
- Maintains documentation of transfusions, using the MTP form #10104.
- **Designates one staff member** to maintain communication with Blood Bank personnel during initiation and maintenance of the MTP.

Responsibilities

Exit

There are 3 areas of responsibility. Please click each area.

General Nursing | **Clinical Pathologist (or Designee)** | **Laboratory Personnel**

- Tracks the use and available supply of blood products.
- Advises the clinical team on the use of blood products and pro-coagulants.
- Assists with interpretation of thromboelastography (ROTEM).

Responsibilities

Exit

There are 3 areas of responsibility. Please click each area.

General Nursing | **Clinical Pathologist (or Designee)** | **Laboratory Personnel**

- Confirms patient identity, using two patient identifiers (name, date of birth, or medical record number), before drawing labs.
- If the patient's identity is not known, they will be a John/Jane Doe until the patient's identity is established.
- Labs are repeated every 30 minutes until discontinued by the Clinical Team Leader.

Labs Drawn

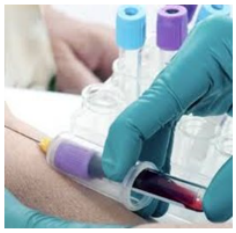
Exit

Click each button below:

Labs Drawn upon Initiation of the MTP

- Type and cross (GTAB)
- STAT coagulation profile (PT INR, PTT, fibrinogen, hemoglobin, platelet count)
- STAT Quantitative D-Dimer (requires special tube only be obtained from the lab)
- STAT Basic metabolic profile
- POC ABG's*
- STAT Lactate

***Can be done at the bedside, with the I-STAT.**



Labs Drawn Every Half Hour

Labs Drawn

Exit

Click each button below:

Labs Drawn upon Initiation of the MTP

Labs Drawn Every Half Hour

These labs are drawn every half hour and sent to the lab:

- CBC
- PT, PTT
- Fibrinogen
- Basic metabolic profile
- Ionized calcium
- Lactate

Nursing Roles While Caring for the MTP Patient

Exit

There are 2 roles for the RN while caring for the patient on the MTP.
Click each button to find out more.

MTP Nurse 1 **MTP Nurse 2**

Responsibilities of MTP Nurse 1:

- Document on the MTP Flowsheet: Massive Transfusion Protocol Documentation form #10104.
- Ensure Trauma Pack Blood Slips are filled out.
  - If uncrossmatched unit, provider must sign the form.
- **Designate one person** to communicate with the Blood Bank.

Nursing Roles While Caring for the MTP Patient

There are 2 roles for the RN while caring for the patient on the MTP.
Click each button to find out more.

MTP Nurse 1 **MTP Nurse 2**

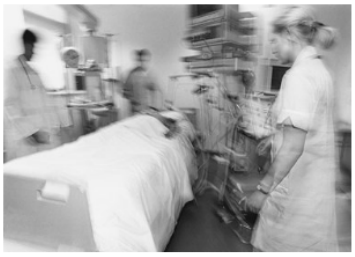
Responsibilities of MTP Nurse 2:

- Maintain transfusions with the Belmont.
- Troubleshoot problems with the Belmont.
- Maintain goal transfusion of 1:1 PRBC to Plasma.
- Clearly communicate time up and time down of each blood product to the documenting nurse.

Transferring the Patient Undergoing MTP to the Next Level of Care

Responsibilities of the MTP team:

- Accompany the patient to the OR or ICU.
- Maintain documentation on the MTP flowsheet or assist with the Belmont.
- Continue with patient care in the ICU or provide hand-off to the next caregiver.
- Remain with the patient until the MTP is canceled.



Cryoprecipitate is available with Pack 1:

Trauma Pack	Products
1	5 u PRBCs, 5 u plasma, OPTION for cryo (5 u for fibrinogen <150, 10 u for <100)
2	5 u PRBCs, 5 u plasma, 5-pk platelets, OPTION for cryo (5 u for fibrinogen <150, 10 u for <100)
3	5 u PRBCs, 5 u plasma, OPTION for cryo (5 u for fibrinogen <150, 10 u for <100)
4	5 u PRBCs, 5 u plasma, 5-pk platelets, OPTION for cryo (5 u for fibrinogen <150, 10 u for <100)
5	5 u PRBCs, 5 u plasma, OPTION for cryo (5 u for fibrinogen <150, 10 u for <100)
6	5 u PRBCs, 5 u plasma, 5-pk platelets, OPTION for cryo (5 u for fibrinogen <150, 10 u for <100)
7	5 u PRBCs, 5 u plasma, OPTION for cryo (5 u for fibrinogen <150, 10 u for <100)
8	5 u PRBCs, 5 u plasma, 5-pk platelets, OPTION for cryo (5 u for fibrinogen <150, 10 u for <100)
9	5 u PRBCs, 5 u plasma, OPTION for cryo (5 u for fibrinogen <150, 10 u for <100)
10	5 u PRBCs, 5 u plasma, 5-pk platelets, OPTION for cryo (5 u for fibrinogen <150, 10 u for <100)

* For OB: 10 unites cryoprecipitate (for fibrinogen <200) is available for order on every trauma pack.

Lethal Trauma Triad

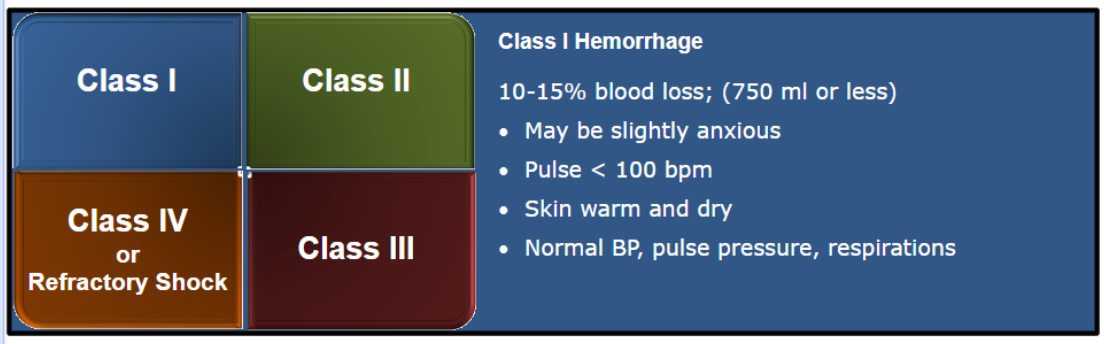
Hypothermia	Coagulopathy	Acidosis
• Reduces enzymatic activity of plasma coagulation proteins, preventing activation of platelets; disrupts coagulation cascade [1] • Onset at core temp of 34°C (93.2°F) and below [1]	• May occur due to activation and consumption of coagulation factors (acute DIC) [1] • Secondary to hemodilution from red cell & crystalloid infusions [1]	• Interferes with assembly of coagulation factor complexes involving calcium & negatively charged phospholipids [1] • Delayed thrombin production → delayed fibrin production → increased risk of fibrinolysis → increased bleeding [1]

1. Cohen, M. & Kutcher, M. (2021, May 28). Coagulopathy associated with trauma. UpToDate. Waltham, MA. Retrieved May 3, 2023, from https://www.uptodate.com/contents/coagulopathy-in-trauma-patients

Classes of Hemorrhagic Shock

Exit

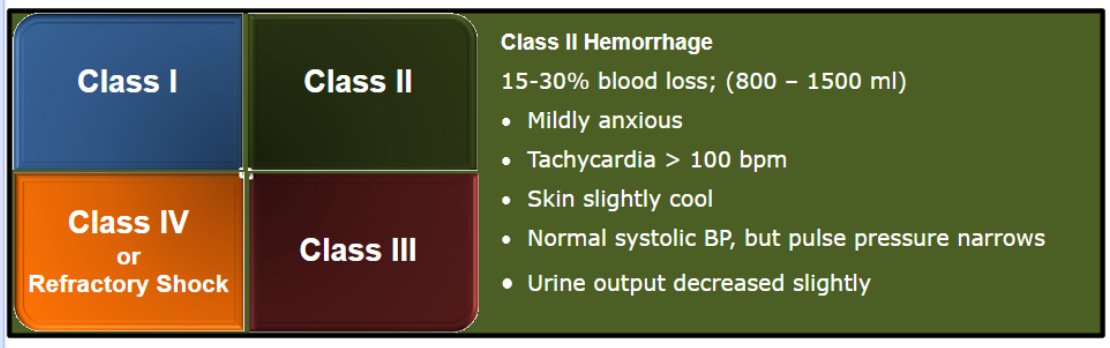
There are 4 classes of hemorrhagic shock.
Please click the button for each class below:



Classes of Hemorrhagic Shock

Exit

There are 4 classes of hemorrhagic shock.
Please click the button for each class below:



Classes of Hemorrhagic Shock

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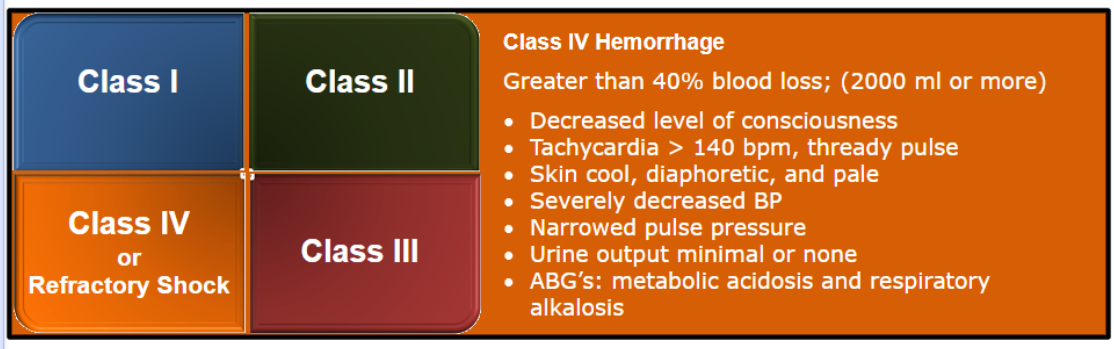
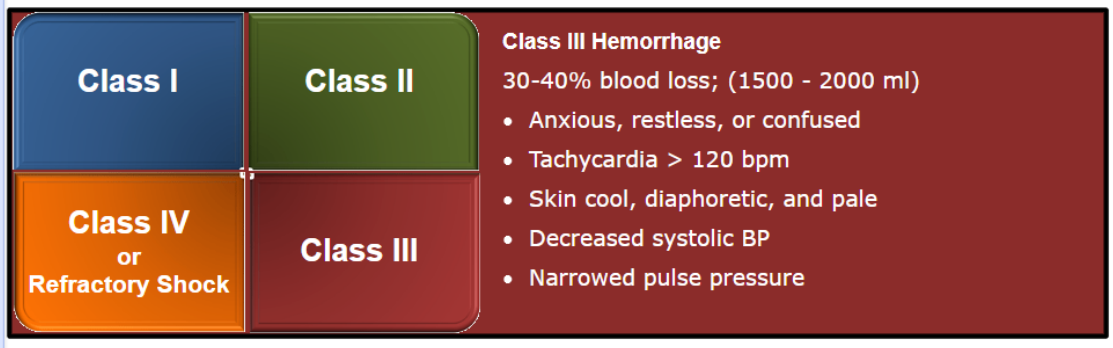
Please click the button for each class below:



Classes of Hemorrhagic Shock

Exit

There are 4 classes of hemorrhagic shock.
Please click the button for each class below:



Termination of the Massive Transfusion Protocol

The Physician Team Leader is the only one who can make the decision to terminate the Massive Transfusion Protocol.

Endpoints for termination include:

- Normalization of vital signs
- Normalization/improvement of coagulopathy
- Termination of bleeding
- Failure/futility

When the MTP is terminated, it is essential to call 55555 to announce the status change.

- Various providers and staff are involved, and vital blood products are being prepared and delivered. This announcement is essential for proper allocation and workflow.

Review and Debriefing

- All MTP cases will be reviewed and data collected.
- In certain situations, a follow-up debriefing may occur.
  - Staff can also request a debriefing.
- All staff involved with the case should attend this debriefing.

Cosgriff, N., Moore, E.E., Sauia, A., et al. Predicting life-threatening coagulopathy in the massively transfused trauma patient: hypothermia and acidoses revisited. *J Trauma* 1997; 42: 857-61.

Hess, J.R., Lawson, J.H. The coagulopathy of trauma vs. disseminated intravascular coagulation. *J Trauma* 2006; 60: S12-S19.

Hirshberg, A., Dugas, M., Banez, E., et al. Minimizing dilutional coagulopathy in exsanguinating hemorrhage: a computer simulation. *J Trauma* 2003; 54: 454-61.

Malone, D.L., Hess, J.R., Fingerhut, A. Massive transfusion practices around the globe and a suggestion for a common massive transfusion protocol. *J Trauma* 2006; 60: S91-S96.

Munson Medical Center Policies and Procedures. (2022, November). *Massive Transfusion Protocol.* PolicyStat.

Munson Medical Center
Competency Verification Tool—Perioperative Services
Practice: Malignant Hyperthermia – RN

Name:_____ **Date:** _____

Competency Statement: The perioperative RN has completed facility- or health care organization-required education and competency verification activities related to responding to a malignant hyperthermia (MH) crisis in any type of facility or health care organization where MH triggering agents are used.[1]

1. Malignant Hyperthermia Association of the United States. http://www.mhaus.org. Accessed October 21, 2015.

Outcome Statement: The patient is at or returning to normothermia at the conclusion of the immediate postoperative period.[2]

2. Petersen C, ed. Normothermia. In: *Perioperative Nursing Data Set*. 3rd ed. Denver, CO: AORN, Inc; 2011:277-283.

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
1. Recognizes that MH is a biochemical chain reaction response that is triggered by commonly used general anesthetics and the paralyzing agent succinylcholine within the skeletal muscles of susceptible individuals.							
2. Lists the signs of an impending MH crisis, including a. sudden unexplained tachycardia (often a first sign);							
b. rise in end-tidal carbon dioxide (CO_2) production (often a first sign);							
c. localized muscle rigidity (e.g. masseter muscle spasm/rigidity resulting in a difficult intubation) progressing to total body rigidity;							
d. increased body metabolism;							
e. changes in blood chemistry (eg, metabolic acidosis, respiratory acidosis);							
f. extremely high body temperature (rapidly rising core temperature); and							
g. muscle breakdown (eg, rhabdomyolysis, myoglobinuria).							
4. Identifies triggering agents for susceptible MH patients (ie, succinylcholine, halogenated anesthetics).							

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Munson Medical Center

Competency Verification Tool—Perioperative Services

Practice: Malignant Hyperthermia – RN

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
5. Identifies the location of the facility MH cart. a. Locates crisis checklist							
6. Describes the purpose of the Malignant Hyperthermia Association of the United States (MHAUS) (ie, the agency formed to provide a central clearinghouse to collect data and to provide education and information to the public on MH).							
7. Immediately locates the emergency hotline phone number for MHAUS (800-644-9737; 800-MH-HYPER).							
8. Identifies the location of cooling supplies and equipment (eg, cold irrigation solutions, cold IV saline, cooling blankets, ice).							
9. Describes the roles and responsibilities of the scrubbed personel during an MH crisis: a. Continue to assist the surgeon in completing the procedure as quickly and proficiently as possible							
b. Continue to preserve the sterility of the back table and mayo stand							
c. Do not transfer care "break scrub" of the patient to another scrubbed person and remain during the entire procedure							
d. May assist in providing and administering irrigation that has been cooled							
e. After sterile dressings have been applied, do not break down the back table and mayo stand until the patient has been transported out of the OR.							
10. Participates actively in simulated MH crisis drills.							
11. Verbalizes a review of facility or health care organization policies and procedures related to MH.							
12. Participates in quality improvement activities related to MH.							

Concurrent competency verification of the following is recommended

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Munson Medical Center

Competency Verification Tool—Perioperative Services

Practice: Malignant Hyperthermia – RN

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
•		•					
•		•					
•		•					

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Munson Medical Center
Competency Verification Tool—Perioperative Services
Role: Laser Safety – Laser Operator

Name:_____ **Date:** _____

Competency Statement: The laser operator has completed facility- or health care organization–required education and competency verification activities related to the role of laser operator.[1]

1. Guideline for laser safety. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2020.

Outcome Statement: The patient is free from injury related to a perioperative laser source.[2]

2. AORN Syntegrity® Solution. AORN Syntegrity® On-line Companion Guide; 2020.

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
1. Describes the laser safety program for any owned, leased, or borrowed laser equipment for the applicable laser.	x	x					
2. Participates in the laser time-out process.	x	x					
3. Identifies the nominal hazard zone applicable to the laser in use.	x	x					
4. Identifies the laser treatment area for applicable laser.	x	x					
5. Controls access to the laser treatment area by placing clearly marked laser signs at all entrances when lasers are in use.	x	x					
6. Covers windows with a barrier that blocks transmission of a beam as applicable to the type of laser being used.	x	x					
7. Reports malfunctioning laser equipment and accessories according to the facility or health care organization policies and procedures.	x	x					
8. Implements procedures to prevent accidental activation or misdirection of the laser beams that include a. restricting access to laser keys to authorized personnel who are skilled in laser operation,	x	x					
b. monitoring that the laser user is the only person activating the foot pedal of the laser,	x	x					
c. placing lasers in stand-by mode when not in active use, and	x	x					
d. keeping the laser fiber in view during active use.	x	x					

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Munson Medical Center
Competency Verification Tool—Perioperative Services
Role: Laser Safety – Laser Operator

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
9. Confirms the power settings with the laser user before laser is activated.	x	x					
10. Only operates the console under the direction of the laser user.	x	x					
11. Assists in the documentation of the laser parameters and safety controls as defined by facility policy and procedure.	x	x					
12. Ensures that appropriate personal protective equipment is used during the procedure.	x	x					
13. Oversees the safety hazard controls during operation.	x	x					
14. Cleans laser equipment according to the health care organization's cleaning practices and manufacturer's instructions for use (IFU).	x	x					
15. Verifies that perioperative team members in the nominal hazard zone wear protective eyewear or use filters of the specific wavelength and optical density for the laser in use.	x	x					
16. Places correct laser wavelength and optical density eye protection at the entrance to a room where a laser is in use.	x	x					
17. Inspects the laser eyewear for damage before use and removes damaged eyewear from use.	x	x					
18. Verifies patients' eyes and eyelids are protected from the laser beam.	x	x					
19. Verifies the location and availability of the fire extinguisher.	x	x					
20. Identifies the location of the emergency shut off for the laser.	x	x					
21. Keeps laser equipment free from liquids, including by not placing liquids on the laser equipment.	x	x					
22. Handles electrical cords and plugs of the laser in a manner that minimize the potential for damage.	x	x					
23. Inspects the cords and plugs for damage and removes damaged equipment from use.	x	x					

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Munson Medical Center
Competency Verification Tool—Perioperative Services
Role: Laser Safety – Laser Operator

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
24. Verifies that preventive maintenance indicators are present and current.	x	x					
25. Monitors the laser and the security of the laser by a. never leaving the laser unattended during activation,	x	x					
b. removing keys to the laser after use and placing them in a designated location for storage, and	x	x					
c. returning the laser to a designated storage location after use.	x	x					
26. Verifies that any flammable solutions used for preoperative patient skin antisepsis are dry and the fumes have dissipated before activation of the laser.	x	x					
27. Verifies saline or sterile water is present on the sterile field.	x	x					
28. Verifies moistened materials (eg, radiopaque sponges, towels) are placed around the surgical site and remoistened periodically to prevent them from drying and becoming an ignition source.	x	x					
29. Verifies that moist packs are used in the anus for rectal or perineal procedures.	x	x					
30. Communicates the location of the foot pedal to the operating physician.	x	x					
31. Wears correct laser protective eyewear that is specific to the type of laser being used.	x	x					
32. Observes safe laser signage.	x	x					
33. Removes laser signage from the procedure room doors when the laser procedure is completed.	x	x					
34. Keeps windows covered with a suitable barrier and doors closed to block laser beam transmission, as applicable.	x	x					
35. Performs a laser self-test according to the manufacturer's IFU if required.	x	x					
36. Calibrates the laser according to the manufacturer's IFU if required.	x	x					

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Munson Medical Center
Competency Verification Tool—Perioperative Services
Role: Laser Safety – Laser Operator

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
37. Test-fires the laser according to the manufacturer's IFU if required.	x	x					
38. Notifies the team members that the laser has been tested, inspected, and is functioning correctly.	x	x					
39. Notifies the team when the laser is about to be fired.	x	x					
40. Reports accidents or injuries related to laser procedures according to facility or health care organization policies and procedures.	x	x					
41. Verbalizes a review of facility or health care organization policies and procedures related to laser safety.	x	x					
42. Participates in quality improvement programs related to laser safety.	x	x					

Concurrent competency verification of the following is recommended	
•	•
•	•
•	•

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Munson Medical Center
Competency Verification Tool—Perioperative Services
Practice: Stryker Neptune Use and Risk Mitigation – RN or Non-RN

Name:_____ **Date:** _____

Competency Statement: The perioperative RN or non-RN team member has completed facility- or health care organization–required education and competency verification activities related to Neptune Suction Use and Risk Mitigation.

1. Guideline for Surgical Smoke Safety

Outcome Statement: Able to set up and maintain the Neptune system to collect and dispose of surgical fluid waste as well as collect smoke generated from electrocautery or laser devices

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
1. **Prior to Use**							
a. Wipe rover with approved cleaner prior to bringing into OR suite							
b. Units of Measure have been verified to be in mmHg							
b. The level of suction has been checked and is appropriate for the planned procedure							
d. The surgeon of record has requested to use the product							
e. Ensure an alternate source of low-level suction is available for use in low-level suction applications (e.g. suctioning airway, procedures near vital organs or anatomic structures)							
f. Ensure device control unit/screen can be clearly seen by everyone in the OR and is not covered by drapes or other objects.							
2. Set Up							
a. Plugs rover into red emergency outlet							
b. Turns main power switch on c. Reads and acknowledges Safety Information Screens							

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Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
d. While aligning the tabs, insert a new manifold(s) into the manifold receptacle(s)							
e. Fully rotate the manifold(s) clockwise to lock into the. manifold receptacles							
f. Attach the fluid suction tubing to the port(s) of the installed manifold(s).							
g. ALWAYS close unused manifold ports.							
3. Settings (Fluid)							
a. Touch the RESET VOLUME button to reset the fluid volume value of each canister to zero millimeters.							
b. ALWAYS use the minimum suction limit range required to achieve the desired clinical outcome							
c. Independently adjusts suction limit range for each canister							
4. Operation (Fluid)							
a. Once suction limit ranges are set, touch START SUCTION button to start fluid suction							
b. Observe Control Screen for notifications							
c. Prepare to empty 4L canister when nearing capacity after ensuring 20L canister can accommodate contents and 30 second loss of suction will not compromise patient safety							
d. Prepare additional rover once the upper canister has been emptied 4 times or when lower chamber nears capacity							
5. After the Procedure (Fluid)							
a. Although the disposable, single use manifold(s) and suction							

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Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
tubing must be replaced between patients, it may not be necessary to empty the contents of the rover's collection canisters.							
b. If sufficient fluid volume capacity exists in one of both canisters, the rover may be used for additional surgical procedures.							
b. With suction active, gather the suction tubing toward the manifold port to purge the tubing of fluid waste.							
c. From the control panel, turn the suction control dial to zero for the canister with the manifold to be removed.							
d. From the control screen, touch the STOP SUCTION button to stop fluid suction							
e. Rotate the manifold counterclockwise until it is unlocked then pull the manifold and attached suction tubing out of the receptacle and properly dispose of.							
6. Smoke Evacuation Preparation							
a. Make sure smoke evacuator filter is installed in the rover							
b. Install the smoke evacuator tubing to the smoke evacuator filter							
c. Adjust smoke evacuator power as required							
7. Operation (Smoke)							
a. DO NOT use the smoke evacuator to evacuate or suction							

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Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
surgical fluid. Excessive amounts of fluid pulled into the smoke evacuator may cause equipment damage							
b. Touch the EVACUATE SMOKE button							
c. While in the ON mode, touch the UP or DOWN buttons as required							
d. Touch the OFF button to turn off the smoke evacuator,							
8. Docking							
a. Close the canister viewing doors to conceal the canister contents							
b. ALWAYS wipe down the rover between each surgical use							
c. Using the handle relocate the rover to the docking station							
c. Dock the rover for waste disposal as soon as possible typically within two hours of the last use to preclude extended wash cycles.							
d. DO NOT lock the rover casters while the rover in connected to the docker.							
e. After the cycle is complete, touch the RELEASE FROM DOCK button to release the rover from the docker.							

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Philips Monitoring System (MUNSON)

Philips Monitoring System (MUNSON)

Introduction

Central Monitoring System

The Philips Patient Information Center is a regulated medical IT system that:

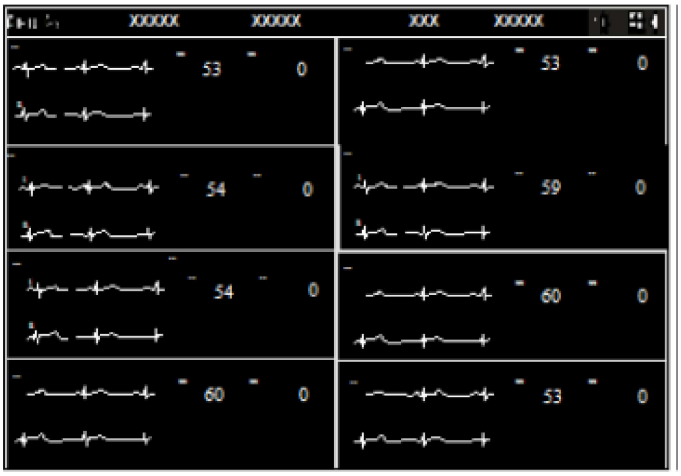
- Provides continuous monitoring of patient vital signs from admission to discharge.
- Consolidates and communicates vital signs data from monitors and third-party devices to caregivers and to the Electronic Medical Record (EMR) for a complete patient record.
- Supports industry standard interfaces to integrate into existing hospital IT infrastructure and EMR systems while meeting requirements for manageability, serviceability, and security.
- Meets the needs of caregivers on the go by means of remote access to patient vital signs for information anywhere.

Through a combination of advanced alarm management, mobility, and clinical decision support, Philips Patient Monitoring Systems enable reduction of non-actionable alarms, improve workflow efficiency, and facilitate early intervention of patient deterioration to improve patient care and outcomes.

The Information Center software runs on a PC workstation with one or two displays for viewing patient data and accessing clinical applications. A mouse and keyboard are provided for entering and changing patient data and other information. If you position the cursor on a labeled application button and click, the application is immediately displayed on the screen. Note that an on-screen keyboard is not available.

With a touchscreen, you can access patient data by either using the mouse or by touching the item on the screen with your finger or a stylus. The mouse is best for making precise selections and measurements, such as using calipers. The touchscreen is best for actions such as acknowledging alarms, accessing application windows, or recording strips. When using a touchscreen, keep the area free of items that can inadvertently touch the screen. If the touchscreen becomes unavailable for any reason, you can access patient data by using the mouse and keyboard.

The Main Screen displays real-time waves, numerics, and alarms from multiple patients. It can be configured to show up to 64 waves, and contains the following elements:



1 Caption Bar

2 Patient Sectors

 Select the Patient Window button to open the Patient window to Display a real-time view of the current patient's data. You also can choose to do an ECG analysis to view all available ECG leads. The Patient Window provides a real-time view of the patient's waves and numerics. You can view patient data and perform all tasks in the Patient Window. In addition to the waves and numerics, the Patient Window contains the following items:

- The Bed Label Pane - Displays the bed label and ID for the currently selected patient. Select the down arrow to select another patient to view.
- The Print Icon to start a printout of the Patient summary report.
- The Help Icon.
- Alarm message areas – All active alarms and technical alarms display on the top right of the patient window. Status messages are color-coded to indicate the message severity. Orange background indicates high severity. Black background indicates low severity. Select the status message to open System Help in the application window. The Help contains a list of status messages with the possible causes and recommended actions for each message.
- Patient Name - Displays the patient's name. Depending on the length of the complete string and the amount of available space, a minimum number of characters is shown, ending with an ellipsis (...). Three question marks (???) precede the patient's name when there is a problem identifying the patient. For example: Patient data between the Information Center and the bedside does not match. All required information was not entered when the patient was admitted.

Buttons in the sector become visible when you move the cursor into the sector or, if using a touch screen display, when you first touch the sector with a stylus or the tip of your finger. When you place the cursor inside a patient sector, the sector is outlined in an orange border. You can minimize the buttons by moving the cursor into the sector and holding down the **Ctrl** key. While the cursor is inside the sector, the buttons remain minimized until you press the **Ctrl** key again. If you move the cursor out of the active sector and move it back in, the buttons become visible.

 Select the Manage Patient icon, which will allow you to:

- Admit, discharge, and transfer patients.
- Enter or update patient demographic information.
- Manage the equipment associated with the patient.
- Temporarily place the bed in standby.
- Enter a temporary transport location, and/or select the patient's equipment to place in standby.
- Export ECG waveform data to a Philips Holter system for analysis.

To Admit a Patient: Use one of the following methods:

- Manually enter new patient information in the fields in the **Patient Demographics** section by typing a 1-30 character first and last name in the appropriate fields. You can use the TAB key to move from field to field. You can also admit a new patient by entering the MRN.
- Use the **Find Patient...** option to find a patient who is being monitored in another Information center or who has been recently discharged.

You can then choose the patient's gender from a drop-down list. It will default to Male while performing a 12-lead if not assigned. It will default to Female while measuring STE if not assigned. Specify the patients birth date by entering it on the calendar. This will update the age field. Enter the patient's height in the appropriate field. This can be in inches or centimeters according to your policy. Enter the Patient's weight using pounds or kilograms according to your policy. Select "Apply" after verifying all information is correct.

Read all confirmation messages and check patient alarms, settings, and paced status when automatic admission, discharge, or transfer is complete.

Viewing and Adjusting Waves:

When the ECG measurement is on, the first wave displayed is the primary ECG wave. The primary wave is always used for ECG analysis. A rhythm status message displays in the upper right corner of the wave, and an arrhythmia status message displays above and in the center of the wave.

Pleth waves on an Efficia monitor are labeled as SpO2.

Wave Adjustments

You can adjust waves in the patient sector or Patient Window layout by selecting a wave then selecting one or more options described below.

- Change Wave – Select a wave from the list. You cannot select the primary ECG wave.
- ECG Analysis – Available if you select an ECG wave. Select to access the ECG Analysis application.
- Primary Lead – Available if you select the primary ECG wave. Select the primary led from the list.
- Size up or Size down - Select to increase or decrease the size (gain) of the wave (if available).
- Set up ECG – Available if you select an ECG wave. Select to access the **Measurements** application ECG page, where you can change heart rate limits and asystole thresholds.

Manually Transferring a Patient to a New Bed: Transfer data for a patient by performing the following steps:

- Use one of the following methods to open the **Manage Patient** In the sector for the bed that you want to transfer, select the name field or select the **Manage Patient** shortcut button. In the application window task bar, select the **Manage Patient** button.
- Select the **..** button. The **Transfer Patient** dialog box displays a list of available beds in the institutions and units.
- To transfer this patient to another bed within this unit, select the bed from the list of beds in your unit. To transfer this patient to a bed in another unit, first select the unit name, then select a bed from the list.
- Specify whether to clear the sector (remove the bed from the sector) upon transfer by selecting or clearing the **Clear Sector** check box. The system can be configured so that the check box is selected by default. Depending on your unit practices, you may want to clear the check box so the sector is not cleared and the equipment remains assigned to the sector.
- Select "OK".
- Confirm the transfer by selecting the orange "TRANSFER" button.

To Discharge a Patient: Use one of the following methods to discharge a patient.

- Manually discharge a patient in the **Manage Patient** application.
- Discharge a patient directly from the hospital information system or bed management system.

Considerations

Before discharging a patient, note the following:

- Discharging the patient at the Information Center also discharges the patient from the bedside monitor. All monitor and MMS settings (including arrhythmia settings) reset to their defaults.
- When you discharge a patient, the Information Center saves the patient data for all admitted patients. The system stores seven days of data and purges the stored data seven days after discharge.

You can search discharged patient data without readmitting for up to seven days.

- If you readmit a patient, the discharge data is overwritten by new monitoring data as it occurs, and you will only see the full disclosure amount of data.
- Monitoring devices may be set up with predefined configurations called *profiles*. When you discharge a patient, the profile reverts to the default profile configured for the device. Refer to your monitoring device documentation for details. When

you discharge an admitted patient at the Patient Monitor, the Information Center discharges the patient and saves the data.

- *Important* — For MRx monitors, turning off the bedside monitor for more than 10 seconds discharges the patient at the MRx monitor and resets defaults, but it does not discharge the patient from the Information Center; the patient is still admitted at the Information Center. It is important to discharge the patient before turning the monitor off to avoid data being associated with the wrong patient.
- Patients that are discharged while the Information Center is in Local/Disconnected mode will be synchronized upon connection to the primary server.

Warning

Read all confirmation messages and check patient alarms, settings, and paced status when automatic admission, discharge, or transfer is complete.

Measuring ECG:

The electrocardiogram (ECG) measures the electrical activity of the heart and displays it on the

Information Center as a waveform and a numeric. In order to compare measured ECG signals, the electrodes are placed in standardized positions, forming "leads". To obtain ECG signals optimized for use in diagnosis and patient management in different care environments, different lead placements can be used.

Selecting the Primary and Secondary ECG Leads

The telemetry device or patient monitor uses the primary and secondary lead selected at the

Information Center to compute HR and to analyze and detect cardiac arrhythmias.

You should choose a primary and (if using multi-lead monitoring) secondary lead that have the

following characteristics:

- the QRS complex should be either completely above or below the baseline and it should not be biphasic
- the QRS complex should be tall and narrow
- the T-wave should be less than 1/3 the R-wave height
- the P-wave should be less than 1/5 the R-wave height

Documenting Patient Events

Documentation of patient events and procedures is a necessary element of patient care. You can print reports from the PIC iX to paper, electronically via PDF, or both.

Create a Saved Strip

You can create a saved strip with the PIC iX electronic caliper (eCaliper) measurements and comments in any strip tile in Alarm Review, General Review, or specialty review applications.

Note —You must have Full Permission Access to annotate and save a strip to the database.

- Select the strip that you want to annotate.
- Select the Annotate icon. The Saved strip dialog box opens. You can move the dialog box as needed.
- Select a label from the drop-down list to add labels. This field can be customized as needed in Alarm Review.
- Enter text in the second field, up to 30 characters. This value displays in the Comment field for the strip.
- Add eCaliper measurements. Consider changing the wave speed to 50 mm/sec. (Select the speed on the bottom right of the strip, then select a speed from the list.) Click and drag in the strip to and from the desired location in the wave. The measurement is displayed between the vertical lines. In the dialog box, click the measurement label to add the measured value. *Note* — Double-click the measurement to see the caliper bars at any time.
- Select another strip and repeat these steps as needed.
- When you are done, select Save. The measurements are saved to the strip.

Reviewing ECG Waves

Depending on the number of ECG leads and licensing, 3 to 12 waves are available for review. These waves can be reviewed with the other data tiles, such as with events and alarms.

Alarms:

Quickly Viewing Target Events - When reviewing patient data, it is often helpful to quickly view specific types of alarms or events.

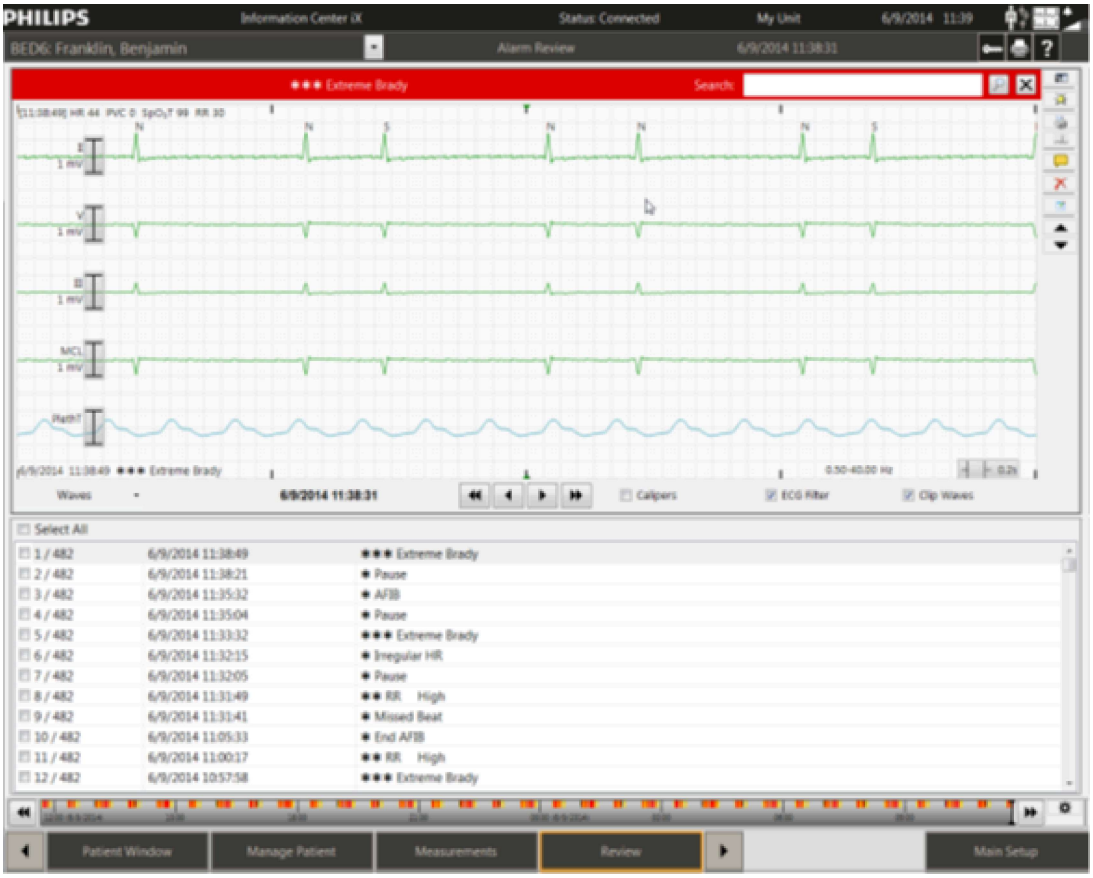
Fast Alarm Review - Select either the Acknowledge key, or the alarm banner in the sector to see alarming waves prior to being available in other applications. Alarm strips can be printed, annotated, or discarded. If you are using secondary notifications, such as with Philips CareEvent, you can manually page an alarm from this application.

Note — The Silence key is called the Acknowledge key.

Alarm Review

Alarm Review always opens with the most recent alarm strip. To review alarms, open Alarm Review from the Review sector button, if configured, or you can open Alarm Review from the main Setup menu or from the Review application menu in any open application. Use the toggle icon to switch between the three different tiles. The tile you prefer can be set up as a default on each host.

- **Tabular** tile – shows a detailed strip with multiple waves and a tabular list of alarms. Use the up and down arrow keys to quickly view alarm strips. This is the factory default tile.
- **Compressed** tile – shows 30 seconds of compressed waves for all strips.
- **Strip Window** tile – a combination of Compressed and Strip tiles.



Reviewing Alarms and Events in Other Applications

Within the factory default review applications (as well as custom applications that were created for your unit), there is a data type called the Event tile. You can use the Event tile to review alarms with other associated data, such as compressed wave storage or graphical trends. Arrhythmia events are also shown, even when a specific alarm is off, such as for yellow level ventricular alarms. The length of the colored box indicates the duration of the event.

- Open the review application. If opened from Alarm Review, the time focus is the selected alarm. If opened from another application, it opens at the current time minus the one minute for storage.
- The Event tile is highlighted below. Note the displayed number of events shown on the right. Alarms are shown with the corresponding color, and arrhythmia events are shown in cyan.

- Clear the check box next to the events you do not want to see. If licensed, specific events can be customized for each review application.
- Move the cursor over any alarm or event to see text that contains the details.
- Select the event to examine its associated waves, trends, and numerics.
- Use the arrow keys in the middle of the tile to quickly navigate to next or previous events.

 Alarms off. Displays next to the numeric when alarms are turned off for the numeric.

 Pause Alarms (Red and/or yellow). **PRESS THIS BUTTON AGAIN TO RESUME ALARMS!**

 Acknowledge/Review Button. Turns off the alarm sound and the sector background changes from blue to black.

 Volume icon. Select to adjust the alarm volume.

Physiological alarms are red and yellow alarms. A red alarm indicates a high priority patient alarm such as a potentially life-threatening situation (for example, asystole). A yellow alarm indicates a lower priority physiological alarm (for example, a respiration alarm limit violation). Additionally, there are short yellow alarms, most of which are specific to arrhythmia-related patient conditions (for example, ventricular bigeminy). Alarm message areas. All active alarms and technical alarms/INOPs display on the top right of the patient sector. A RED warning alerts you to a potential serious outcome, adverse event or safety hazard. Failure to observe a warning may result in death or serious injury to the user or patient. A YELLOW caution alerts you to where special care is necessary for the safe and effective use of the

product. Failure to observe a caution may result in minor or moderate personal injury or damage to the product or other property, and possibly in a remote risk of more serious injury. Technical alarms, or INOPs indicate that the monitoring device cannot measure or detect alarm conditions reliably. If a technical alarm interrupts monitoring and alarm detection (for example, LEADS OFF), the numeric is replaced by a question mark in the sector and Patient Window, and an audible indicator sounds. Technical alarms without this audible indicator indicate that there may be a problem with the reliability of the data, but that monitoring is not interrupted. Most technical alarms are light blue, however there are a small number of technical alarms that are always yellow or red to indicate a severity corresponding to red and yellow alarms.

There can be only one alarm sound annunciating at the Information Center at one time.

- If there is an unacknowledged red level alarm in the presence of any other level alarm, the sound for the red alarm annunciates.
- If there is no unacknowledged red level alarm condition and there is an unacknowledged long yellow alarm in the presence of any other yellow technical alarm (acknowledged or unacknowledged) the sound for the long yellow alarm annunciates.
- If there is no unacknowledged red level alarm or long yellow level alarm condition and there is an arrhythmia or nurse call event, the short yellow (*) alarm sound annunciates.
- If there are no unacknowledged red or long/short yellow alarm conditions and there is any bed with an unacknowledged technical alarm condition, the sound for the technical alarm annunciates.
- If multiple sectors are in alarm, once the highest level alarm is acknowledged in a sector the next highest alarm annunciates.
- An alarm tone indicates the alarm type. There is no sound for soft INOPs/technical alarms.

Other Buttons and Icons:

 **Battery icon.** If there is at least one battery-operated device assigned to this patient, the battery icon indicates the device with the least amount of battery strength. Move your cursor over the icon to view a list of equipment for this patient sorted from the lowest to highest battery charge. The battery icon has five levels: approximately 100% to 80%, 80% to 60%, 60% to 40%,40% to 20%, or -Replace Battery strength. The number of segments indicates the approximate power level.

 **Help icon**. Select to view the online Help application. The Help application is always available and provides context-specific information on using the Information Center applications.

 **Manage Patient icon**. Available in sectors not currently monitoring a patient. Select the icon to access the **Manage Patient** application where you can assign a monitoring device.

The Measurements Button: Provides access to the **Measurements** application, which allows you to:

- Change alarm limits for a patient.
- Turn specific alarms on or off for a patient.
- Adjust measurement settings within a profile.
- Set up telemetry devices.
- Designate which alarms will generate a recording or report or initiate a page.
- View or print an Alarm Summary.
- Configure criteria to trigger alarm advisor notifications.
- View active notifications.

Your choices in the application depend on how your unit is set up and the equipment assigned to the patient.

Paced Mode icon. Indicates the patient's current paced status.

-  On – The icon is white when **Paced Mode** is turned on.
-  Off – The icon is green with an X over it when **Paced Mode** is turned off.
-  Unconfirmed – A red question mark displays over the icon when the patient's paced mode is unknown or in conflict.

The pacer spike color is always white unless the ECG wave is white. If the ECG wave is white, then the pacer spike color is green. Pacer spikes may be configured to display with fixed amplitude for increased visibility.

Important — If **Paced Mode** is set to **Unconfirmed**, the ST/AR algorithm acts as though **Paced mode** is turned on. Select the icon to display a menu where you can turn **Paced Mode** on or off.

Warning - If the patient has a pacemaker, **Paced Mode** must be turned on, enabling the ST/AR algorithm to detect and reject pace pulses (spikes) from the HR count. Otherwise, pace pulses could be detected as beats and the monitor may not alarm for an asystole condition. If the patient does not have a pacemaker, turn **Paced Mode** off to allow the ST/AR algorithm to work most effectively.

 **Print/record Icon**. Depending on your system setup, select this icon to do the following:

- **Record All** — make a delayed recording for all sectors that currently have patient data.
- **Print All** — print a strip for all patients in the unit.
- **Save Strips —** create saved strips for all patients in the unit.

If you select this icon, a message asks you to confirm that you want to proceed with the action. Select **Yes** to confirm. Your system may be set up to just record, record and save a strip, or to just save a delayed strip.

Resuscitation Status Icons:

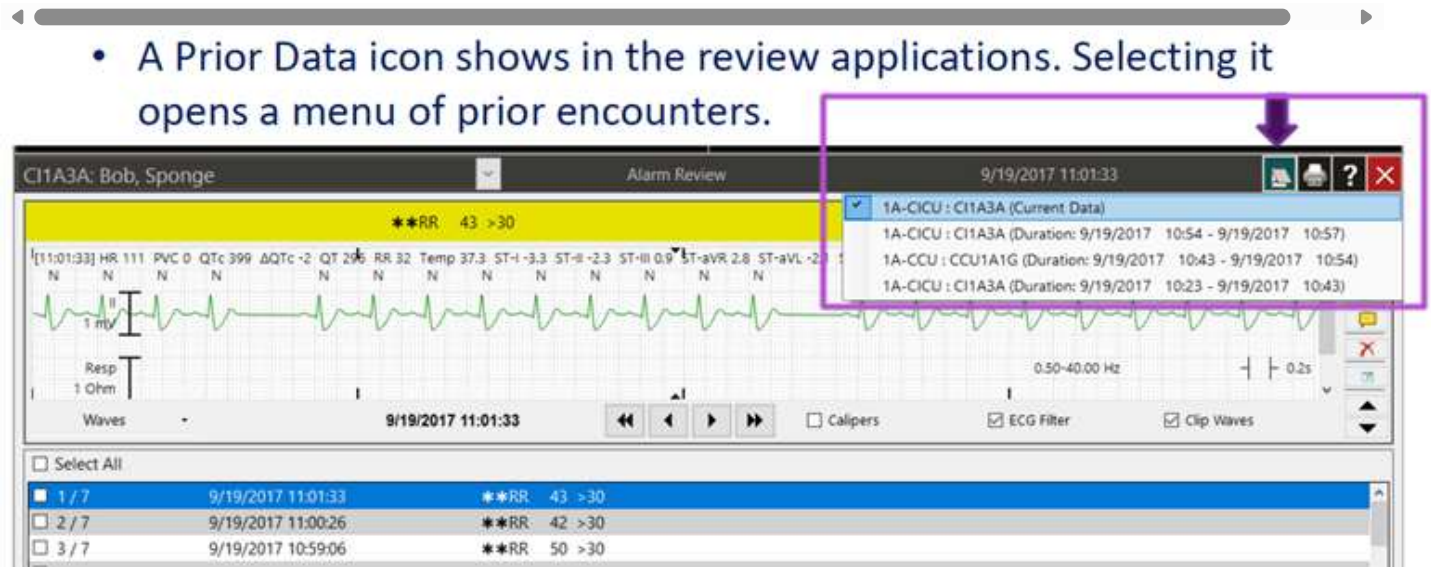
 Do Not Resuscitate. Resuscitation icon. Indicates the patient's current resuscitation status.

 Modified. The icon is solid white when the patient's resuscitation status is set to **DNR** (Do Not Resuscitate). The icon is a white outline when the patient's status is set to **Modified**. The icon does not display if the patient's resuscitation status is set to **Full**. Select the icon to access the **Manage Patient** application where you can change the resuscitation status.

<u>Prior Data:</u>

Patient data can be stored up to 7 days for each patient of Retrospective Review at Central Station. Data stored upon discharge, or from another unit with a transfer, will be shown separately from current data.

« SCROLL »



Once you are into this window –

- The Information Bar at the top turns teal green (states 'Prior Data')
- The only smart key on the bottom task bar will be 'Review'
- Main Screen button becomes 'Current Unit'
- To close the application, use the red X in the upper right or choose the Current Unit button

« SCROLL »

References:

- MX Series QR Codes
- Central Monitoring Station PICiX
  - IFU_-_PIC_iX_Rel_C.03_-_English.pdf- Central station user manual
  - PIICiX Rev C.03 Patient Data Review
- MX40 Telemetry box
  - the MX40 IFU manual link
  - the MX40 quick card reference
- MX400 Large Mounted Monitor
  - IFU MX400-800_IVPM_N0x)Mar2019.pdf User manual
- Invasive pressure Guide
  - Invasive Pressure PDF
- Capnography
  - Capnography Application Guide

Notes

MX Series QR Codes

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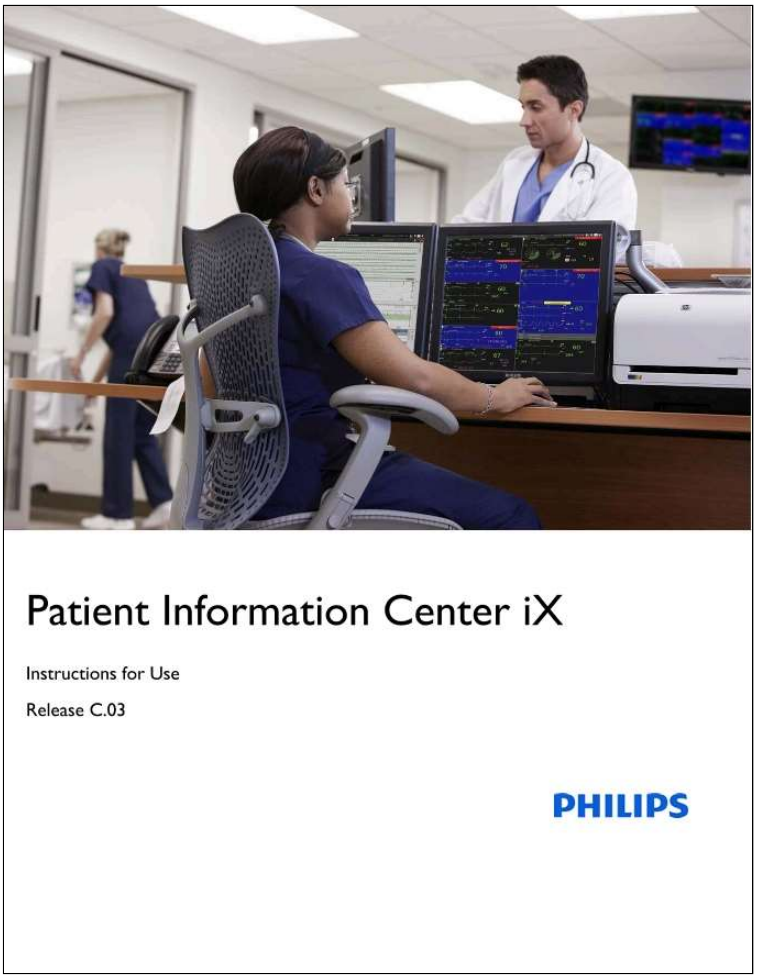

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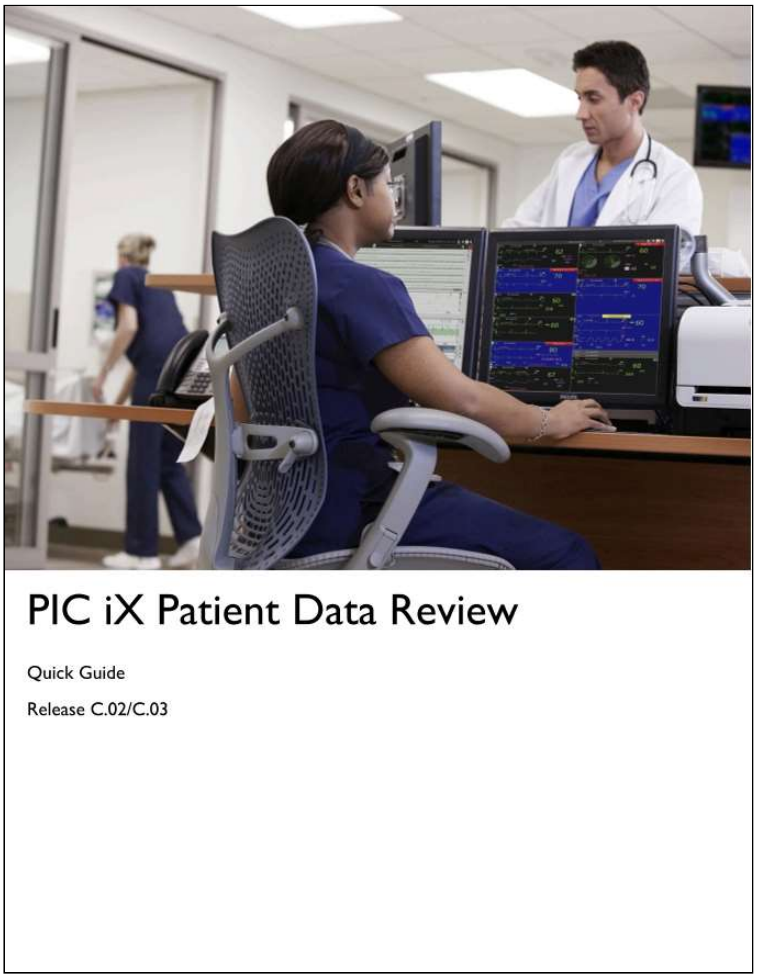

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Car Seat Quick Guide

Car Seat Assessment Record (CAR)
Quick Guide

1. Place baby in car seat.
2. Change Screen to **CAR SEAT TEST.**

3. Touch SmartKey – **START CAR.**
4. Select amount of time for Test Duration *(based on hospital protocol)*.

5. Touch **CONFIRM** key.

CAR is now in progress
Monitoring is continued during CAR.

6. If at any time during CAR you need to exit or stop – press the SmartKey **STOP CAR** and **CONFIRM**.

   At any time you can also switch back to your default monitoring screen by touching **Change Screen**, then touch the back arrow at the top of that menu. *CAR will continue to run in the back ground.*

7. When CAR is complete, the countdown timer (to the far right in the CAR Screen) will turn **RED**.

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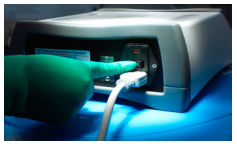
RF Assure Quick Start Guide

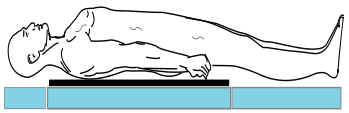
1. Plug in and power on.

Plug in the console power cord and turn the back panel switch to ON. After self-check, display screen shows main menu for system operation.



2. Place Mat.

Place mat on top of the table pad under drapes. Ensure patient is secure and stable in all table positions expected to be used.



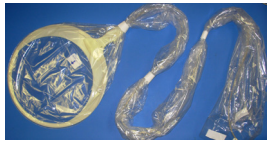
3. Plug in Mat/Wand & Prepare to Scan.

Connect Mat cable to console.

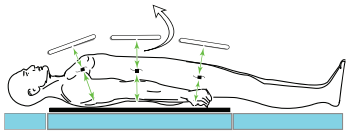
Connect Wand cable to console holding wand in the air away from metal for calibration.

Icons shows green if ready to scan.

Place a sterile drape over the wand



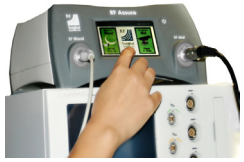
Clear scan area by removing all RF tagged items (used and unused gauze/sponges/towels) from patient area by 36".



For questions or further information, contact your RF Surgical® sales representative or visit: www.rfsurg.com

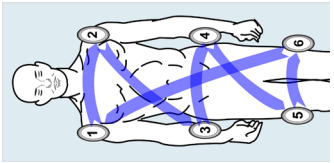
4. Start Scan - touch device icon on display screen (mat or wand) to begin scanning.

Listen for the 3 fast beeps that indicate a scan start (or stop) and an audible "tic" sound when scanning.



5. Observe scanning progress and note alerts as displayed.

With wand, scan as needed moving low and slow across the patient's body. Refer to scanning pattern.

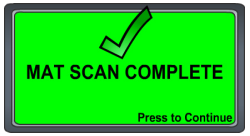


6. Detection.

Display shows "DETECTION" and a solid tone is audible. Refer to Scanning Situations and Suggested Responses.

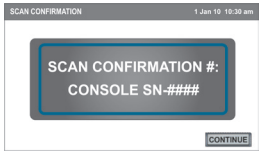
7. Mat Scan Complete.

Follow hospital protocol.



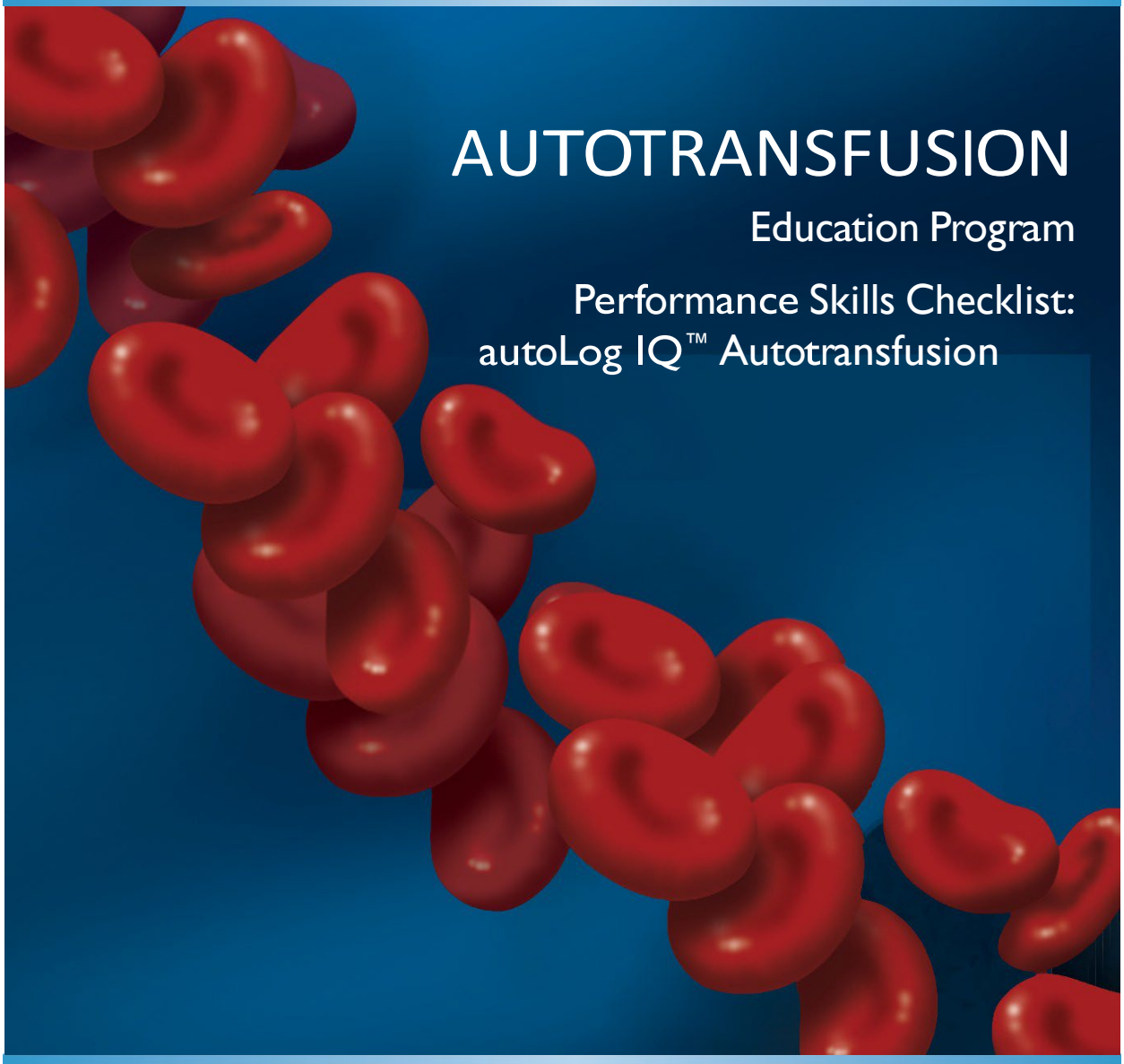
8. Scan Confirmation Number - displayed after a scan is completed with no errors.

Write the scan confirmation number in the patient's medical record to document a completed scan.



More Info?

Refer to DFU for complete info on alerts, displays, set up and patient record options.



AUTOTRANSFUSION

Education Program

Performance Skills Checklist: autoLog IQ™ Autotransfusion

Medtronic

EDGE

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Disclaimer of Responsibility

THIS COURSE IS PRESENTED FOR GENERAL INFORMATION PURPOSES ONLY AND IS NOT INTENDED TO CONSTITUTE OR REPLACE THOROUGH TRAINING BY A MEDICAL PROFESSIONAL COMPETENT IN THIS AREA.

Each autotransfusionist or other person engaged in autotransfusion must bear the responsibility for obtaining the professional training necessary to assure his or her competence in performing the procedures and operating the equipment necessary for successful autotransfusion.

The references, protocols, and courses of treatment are proposed as examples only. It is the responsibility of the end user to have protocols, forms, procedures, and other required items reviewed and approved, prior to their use, by the appropriate committees at the institution where they are intended to be used. All persons performing autotransfusion undertake such procedures at their own risk. Medtronic hereby disclaims any and all responsibility for any and all results, damages, and effects arising from the use, application, and adoption of the foregoing procedures, protocols, courses of treatment, and methods on or by anyone.

Performance Skills Checklist: autoLog IQ™ Autotransfusion

Name _____ Title _____

Validator _____ Department _____

Facility _____ Completion Date _____

Validator instructions: Place a check mark in the column next to the behavior observed — either acceptable or not acceptable — and place initials next to behavioral objective.

Notes: This checklist covers key steps in the setup and operation of the Medtronic autoLog IQ™ Autotransfusion System. For complete information please refer to the Operators Manual.

There are 2 operating modes for the system — automatic (self-start) and manual operation. Both modes are included; however, the evaluator may choose to have learners demonstrate competency with one of the modes for purposes of completing the Performance Skills Checklist.

Initial	Behavioral Objective	Accept	Not Accept	Comments
	Setup: Blood Collection System			
	1. Obtain supplies: ▪ Blood processing kit ▪ Blood collection reservoir ▪ Blood collection reservoir holder ▪ 0.9% normal saline for washing ▪ Citrate-based or heparin anticoagulant solution ▪ Blood transfer bags ▪ Suction/anticoagulant line ▪ Vacuum line			
	2. Turn power on and verify that the machine is functioning.			
	3. Attach step-down connector to the bottom of the blood collection reservoir. Close clamp tightly. Place the blood collection reservoir in the autoLog iQ™ reservoir holder.			
	4. Attach vacuum line to the yellow-capped port of the blood collection reservoir. Connect the other end of the vacuum line to the vacuum overflow trap			
	5. Open the suction/anticoagulant line pouch and aseptically pass that line into the sterile field.			
	6. Aseptically pass the end of the suction / anticoagulant line to the operator and attach to the vented blood inlet port on the blood collection reservoir.			
	7. Turn on the vacuum from 80 to 120 mm Hg.			
	8. Close the clamp on the anticoagulant drip line. If the anticoagulant solution is non-vented, open the vent cap on the drip chamber.			

Initial	Behavioral Objective	Accept	Not Accept	Comments
	9. Spike the anticoagulant solution. Open the clamp and prime the blood collection reservoir with a minimum of 100 to 200 mL of anticoagulant solution. Reduce the flow to a ratio of approximately 15 mL of solution per 100 mL blood.			
	Setup: Centrifuge Bowl and Tubing Harness			
	1. Hang the saline wash solution bags on the lower IV-pole hanger.			
	2. Open the blood processing kit and remove the waste bag. Verify that the drain valve is closed.			
	3. Install the waste bag on the posts provided at the side of the autoLog IQ™ System. Align the waste bag port with the marking on the top of the machine.			
	4. Remove autoLog IQ™ bowl (use care when handling the top of the bowl) and tubing harness from wash kit.			
	5. Place holding bag on the upper hanger of the autoLog IQ™ IV pole. Close clamps on the outside membrane ports. Verify that the luer locks on the holding bag are tightly			
	6. Place autoLog IQ™ bowl in the centrifuge chamber. The side tubing should be facing the waste bag. Align the centrifuge notches with the “wings” of the autoLog IQ™ bowl. Press down and turn clockwise to lock. Verify that an audible “click” was heard.			
	7. Machine will display INSERT KIT IN VALVE AND PUMP.			
	8. Connect the outlet tubing to the waste bag. Confirm that there are no kinks.			
	9. Open the manifold cover. Horizontally place the manifold connector and tubing into the manifold assembly. Verify that the bottom of the connector is seated in the slot opening of			
	10. Verify that each of the 3 tubes is properly aligned in its channel in the manifold assembly.			
	11. Fully insert the pump header tubing into bubble detector and push down fully into the groove.			
	12. Place thumb or finger into pump lever groove and pull toward you. Place pump header tubing between head and lever. Release the pump lever to complete the installation.			
	13. Stretch tubing over pump outlet tubing guide and into the groove to engage the pump header guide into the socket.			
	14. Press the Play key. The machine will display CONNECT SAL, HOLDING, RESERVOIR, AND WASTE LINE. **Note:** Holding and waste bags should have been connected in previous steps.			
	15. Connect saline bag(s) to kit using 1 or 2 of the spikes. **Note:** If using only 1 saline bag, verify closure of clamp on the unused spike.			
	16. Connect the blue capped manifold tubing to the step-down connector.			
	17. Select Play to confirm completion of the disposable setup. The autoLog IQ™ device will prime the system with a small amount of saline.			

Initial	Behavioral Objective	Accept	Not Accept	Comments
	Manual Operation			
	1. At this point the autoLog IQ™ System will continue to collect volume in reservoir until the Play key is selected to initiate blood processing.			
	Automatic (Self-Start) Operation			
	1. Display will read MACHINE READY. The autoLog IQ™ System will automatically start when placed into the automatic mode when 800 mL (or approximately 800 grams of total weight) is collected in the reservoir and has been detected for 5 seconds.			
	Continued Operation			
	1. After processing 7 to 12 wash cycles, the machine will have filled the holding bag to its capacity. *The number of wash cycles is determined by the incoming hematocrit of the blood. The instrument will display HOLDING BAG IS FULL. Empty the holding bag, if not already previously accomplished, and reset the display by pressing the Play button. This will initiate another series of 7 - 12 wash cycles.			
	2. Blood Processing Final Cycle If there is not enough blood in the reservoir to fill the bowl completely, the machine will stop during the Fill phase and display the message AIR IN RESERVOIR LINE. At this point, there are 4 options: a. Do nothing: The centrifuge will continue to rotate for 1 minute, then it will stop. The contents of the bowl will automatically be returned to the reservoir and the machine will start again when the blood volume is again 800 mL. b. Continue normally: This option is usually used to restart the fill phase when there is a false air detect. When the Play key is pressed, another Fill cycle is attempted. c. Return function: Pressing the Return key will stop the centrifuge and return the fluid in the centrifuge bowl back to the collection reservoir. Concentrate function. Pressing the Concentrate key will then finish filling a partially filled bowl by drawing previously washed red blood cells from the holding bag and starting the wash phase of the cycle. d. Wash function: The operator can manually initiate the washing of a partial bowl.			

Initial	Behavioral Objective	Accept	Not Accept	Comments
	3. Press the air removal function key to remove any air remaining in the holding. Press and hold the Play key until all of the air is removed from the holding bag.			
	4. The blood can be transferred from the holding bag to a blood transfer bag. The red blood cells should be administered to the patient using a filtered IV transfusion set. **Do not reinfuse the blood back into the patient directly from the autoLog IQ™ System.**			

Medtronic

Alleviating Pain · Restoring Health · Extending Life

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95264

Name:_____Date:_____

Cell Saver Set Up and Operation

Competency Task/Procedure: Cell Saver Set Up and Operation	Operating Room	Page 1 of 1
Criteria used to assess individual's ability to perform task/procedure:		
Objectives: 1. To identify the key steps in the set up and operation of the Medtronic autoLog IQ Autotransfusion System		
1. The learner will verbalize/demonstrate the key steps in the setup and operation of the Medtronic auto log IQ Autotransfusions System as indicated in the *Medtronic Autotransfusion Education Program's Performance Skills Checklist: auto Log IQ.*		

Name:_____Date:_____

Laser Safety Competency Assessment Criteria

Competency Task/Procedure: **Laser Safety**	Operating Room	Page 1 of 1

Criteria used to assess individual's ability to perform task/procedure:

Objectives:

1. To provide a safe environment for staff and patients exposed to laser radiation
2. To identify potential safety hazards during laser use

To identify protocol for the safe use of lasers in the surgical environment

1. Review AORN guideline on Laser Safety

2. View Lasers in the OR AORN video 1856

3. Complete Laser Safety in Surgery HealthStream

4. Laser Biophysics

Able to discuss the principles of Laser Biophysics

- **a. Laser light wavelength properties**
- **b. Laser light generating systems**
- **c. Laser light delivery systems**
- **d. Laser and tissue interaction**

5. Policy and Procedures

Able to discuss the Laser Safety policy

- a. Safe Laser operation-signage, protective eyewear, use of wet draping, non-reflective instrumentation
- b. Management of Airborne Contaminates
- c. Documentation
- d. Ocular Safety
- e. Controlled Access
- f. Fire Safety
- g. Electrical Safety

Name:_____Date:_____

6. Laser Preparation

a. Able to verbalize the establishment of a Laser safe environment within the Nominal Hazard Zone for each wavelength Laser
b. Able to assemble the delivery systems for each wavelength Laser
c. Able to test fire each wavelength laser where applicable and discuss troubleshooting
   - ☐ Carbon Dioxide
   - ☐ Holmium Yag
   - ☐ Diode

7. Documentation

Able to discuss document of the Laser Log for each wavelength Laser

a. Patient and Safety documentation
b. Laser delivery system
c. Safety Checklist
d. Dosimetry
e. Terminally cleaned and stored
f. Documentation of Laser malfunction or deviation from safety checklist

Annual 20
Initial/Orientation Date

Munson Healthcare Competency Assessment

Name:	**Employee ID:**				**Job Classification:**	**Department:** Operating Room 2410
	Competency Assessment				**Validation Signature & Date**	**If not met, specify a plan on how competency will be achieved**
Competency (Task/Procedure)	Method of Validation	Met	Not Met	N/A		
The learner will verbalize/demonstrate the key steps in the setup and operation of the Medtronic autoLog IQ Autotransfusion System as indicated in the Medtronic Autotransfusion Education Program's Performance Skills Checklist: autoLog IQ.	CR					

Please retain in department for 7 years and assure availability if requested.

Method of Validation:
DO – Direct Observation
CR – Classroom/Return Demonstration

Annual 20
Initial/Orientation Date

SA – Survey/Audit
CS – Case Study/Discussion
T – Test
O – Other _____

Competency Verification Tool
Flexible Endoscopes, Point of Care

Name:	Position Title:

Element	Verification Method	Date Complete
1. *Point-of-use treatment* is performed immediately after completion of endoscope use in accordance with the manufacturer's instructions for use (IFU). a. Visually inspects the endoscope for damage. b. Discards single-use items, cleaning solution, and sponge after use.		
2. *Transports* contaminated endoscopes and accessories to the decontamination area immediately after point-of-use treatment is complete. (6.1) a. Keeps the contaminated endoscope moist but not submerged in liquid during transport. (6.2) b. Uses a transport container that is sufficient size when the endoscope is coiled in large loops. (6.4) c. Labels the cart or container with a biohazard legend. d. Provides hand-over communication to decontamination personnel, including the time that point-of-use treatment was completed. (6.7)		
3. Maintains records for a time period specified by the health care organization. (8.12)		
4. Locates, reviews, and asks clarifying questions on the policy and procedure for flexible endoscope processing.		
Competency verification should be role-specific for every type and model of endoscope that the individual will be responsible for handling or processing.		
<u>This section to be completed by Nurse Manager or Educator</u>: With consideration of the employee's performance and competency assessment, this employee is competent to perform as a/an: **Job Role (RN/ST): _____ in Perioperative Services YES or NO (not yet deemed competent)**		
Action Plan:		
Employee Signature:		
Nurse Manager or Educator Signature:		

Competency Verification Tool
Flexible Endoscopes, Point of Care

Element	Verification Method	Date Complete

<u>This section to be completed by Nurse Manager or Educator</u>: With consideration of the employee's performance and competency assessment, this employee is competent to perform as a/an: **Job Role (RN/ST): _____ in Perioperative Services YES or NO (not yet deemed competent)**	
Action Plan:	
Employee Signature:	**Date:**
Nurse Manager or Educator Signature:	**Date:**

Competency Verification Methods		
Demonstration	Case study	Peer review
Evidence of daily work	Exemplar	Self-assessment
Mock events (eg, simulation, survey)	Discussion or reflection group	Verbalization
Quality improvement monitoring (eg, audit)	Presentation	Review of written materials
	Test or examination	

Resources

- Guideline for flexible endoscopes. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc.
- Perioperative Nursing: Scope and Standards of Practice. AORN, Inc. Updated 2021. Accessed June 24, 2022. https://www.aorn.org/guidelines/clinical-resources/standards-of-practice
- AORN's Perioperative Explications for the ANA Code of Ethics for Nurses with Interpretive Statements. AORN, Inc. Updated 2017. Accessed June 24, 2022. https://www.aorn.org/guidelines/clinical-resources/code-of-ethics
- Wright D. *The Ultimate Guide to Competency Assessment in Health Care.* 3rd ed. Minneapolis, MN: Creative Health Care Management, Inc; 2012.

Munson Medical Center
Competency Verification Tool—Perioperative Services
Practice: Medtronic Radio Frequency Sponge Detection System – RN or Non-RN

Name:_____ **Date:** _____

Competency Statement: The perioperative RN or non-RN team member has completed facility- or health care organization–required education and competency verification activities related to Radio Frequency Sponge Detection.[1]

1. Guideline for medical device and product evaluation. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc.

Outcome Statement: The patient is free from injury related to perioperative equipment, medical supplies, or instrumentation.[2]

2. AORN Syntegrity Solution. AORN Syntegrity On-line Companion Guide; 2022.

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
1. Verbalizes that radiofrequency scanner only works with sponges with RFID chips							
2. Verbalizes that scanner works with both/either under patient mat and scanning wand							
3. Verbalizes that confirmation of scan outcome must be recorded on OR record							
4. Demonstrates proper set up and use of RF scanner according to Medtronic Quick Guide Set Up							

Concurrent competency verification of the following is recommended	
•	•
•	•

DEM/DO/DA = Demonstration/Direct Observation/Documentation Audit
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O = Other: _____

Munson Medical Center
Competency Verification Tool—Perioperative Services
Role: Laser Safety – RN

Name:_____ **Date:** _____

Competency Statement: The perioperative RN has completed facility- or health care organization–required education and competency verification activities related to the role of laser operator.[1]

1. Guideline for laser safety. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2020.

Outcome Statement: The patient is free from injury related to a perioperative laser source.[2]

2. AORN Syntegrity® Solution. AORN Syntegrity® On-line Companion Guide; 2020.

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
1. Describes the laser safety program for any owned, leased, or borrowed laser equipment with which he or she works.							
2. Identifies the nominal hazard zone applicable to the laser in use.							
3. Leads or participates in the laser time out.							
4. Implements procedures to prevent accidental activation or misdirection of the laser beams that include a. restricting access to laser keys or laser combination code to authorized personnel who are skilled in laser operation and							
b. monitoring that the laser user is the only person activating the foot pedal of the laser.							
5. Follows the facility's cleaning practices and manufacturer's instructions for use when cleaning laser equipment.							
6. Protects patients' eyes and eyelids from the laser beam by							

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Munson Medical Center
Competency Verification Tool—Perioperative Services
Role: Laser Safety – RN

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
a. placing the correct laser goggles or glasses on the awake patient,							
b. placing wet eye pads, laser-specific eye shields, or other items approved by the laser safety officer over the patient's eyes and eyelids when the patient is receiving general anesthesia, or							
c. placing metal corneal eye shields that are US Food and Drug Administration–approved over the patient's eyes when the patient is undergoing treatments on or around the eyelids.							
7. Keeps the laser equipment free from liquids, including by not placing liquids on the laser equipment.							
8. Identifies the location of the emergency shut off for the laser.							
9. Handles electrical cords and plugs of the laser in a manner that minimizes the potential for damage.							
10. Inspects the cords and plugs for damage and removes damaged equipment from use.							
11. Verifies that preventive maintenance indicators are current and present.							
12. Includes use of a laser in the fire safety assessment.							
13. Places the foot pedal near the laser user.							
14. Communicates the location of the foot pedal to the laser user.							
15. Encases the foot pedal in a fluid-resistant cover when there is potential for fluid spills.							

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Munson Medical Center
Competency Verification Tool—Perioperative Services
Role: Laser Safety – RN

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
16. Wears correct laser protective eyewear that is specific to the type of laser being used.							
17. Observes laser-related signage.							
18. Keeps windows covered with a suitable barrier and doors closed to block laser beam transmission when applicable.							
19. When wearing laser goggles, verifies the contents of medication vials with another person.							
20. Documents the following on the patient's medical record a. laser device identification (eg, wavelength, serial or biomedical number),							
b. patient protection (eg, type of eyewear, eye shield),							
c. wavelength used,							
d. safety measures implemented during laser use,							
e. total energy used if available on the laser if applicable,							
f. total activation time if available on the laser, and							
g. on and off time for head and neck procedures.							
21. Cleans, disinfects, and stores protective eyewear according to manufacturer's written instructions for use.							
22. Reports malfunctioning laser equipment and accessories according to the facility or health care organization policies and procedures.							
23. Reports accidents or injuries related to laser procedures according to facility or health care organization policies and procedures.							

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Munson Medical Center
Competency Verification Tool—Perioperative Services
Role: Laser Safety – RN

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
24. Verbalizes a review of facility or health care organization policies and procedures related to laser safety.							
25. Participates in quality improvement programs related to laser safety.							

Concurrent competency verification of the following is recommended	
• **Laser Operator**	•
•	•
•	•

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Munson Medical Center

Competency Verification Tool—Perioperative Services

Practice: Laser Safety – Scrub Person

Name:_____ **Date:** _____

Competency Statement: The scrub person has completed facility- or health care organization–required education and competency verification activities related to laser safety.[1]

1. Guideline for laser safety. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2020.

Outcome Statement: The patient is free from injury related to a perioperative laser source.[2]

2. AORN Syntegrity® Solution. AORN Syntegrity® On-line Companion Guide; 2020.

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS	V	RWM/ P&P	O	
1. Describes the laser safety program for any owned, leased, or borrowed laser equipment as applicable to the lasers with which he or she works.							
2. Identifies the nominal hazard zone applicable to the laser in use.							
3. Participates in the laser time out.							
4. Reports malfunctioning laser equipment and accessories according to the facility or health care organization policies and procedures.							
5. Follows the facility's cleaning practices and manufacturer's instructions for use when cleaning laser equipment.							
6. Verifies the patients' eyes and eyelids are protected from the laser beam.							
7. Identifies the location of the emergency shut off for the laser.							
8. Uses only anodized, dull-, non-reflective-, or matte-finished instruments near the laser site when applicable.							

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Munson Medical Center

Competency Verification Tool—Perioperative Services

Practice: Laser Safety – Scrub Person

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS/	V	RWM/ P&P	O	
9. Covers reflective instruments that cannot be anodized with materials that will not reflect and will not ignite when exposed to the laser beam.							
10. Inspects instruments that have been coated (ie, ebonized) for damage to the integrity of the coating before and after use.							
11. Protects exposed tissues around the surgical site with saline-saturated materials.							
12. Uses a back stop or guard on the carbon dioxide laser to protect normal tissues.							
13. Handles the electrical cords and plugs of the laser and laser accessories in a manner that minimizes the potential for damage, including avoiding kinks, knots, and bends in the cords.							
14. Inspects cords and plugs for damage and removes damaged equipment from use.							
15. Keeps the laser equipment free from liquids, including by not placing liquids on the laser equipment.							
16. Follows fire prevention precautions and verifies that a. any flammable solutions used for preoperative patient skin antisepsis are dry and the fumes have dissipated before draping and activation of the laser and							
b. the sponges and drapes near the surgical site are kept moist.							
17. Keeps saline or sterile water on the sterile field.							
18. During head and neck procedures, verifies that moist packs are used around the endotracheal tube.							

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Munson Medical Center

Competency Verification Tool—Perioperative Services

Practice: Laser Safety – Scrub Person

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS/	V	RWM/ P&P	O	
19. During perineal surgery uses moistened radiopaque sponges for rectal packing or covering the anus.							
20. Wears correct laser protective eyewear that is specific to the type of laser being used.							
21. Observes laser-related signage.							
22. Covers the end of the laser fiber with a moist sponge or towel when the laser is not in use.							
23. Does not lean against the laser fiber.							
24. Does not clamp the laser fiber.							
25. Does not place stress on or bend the fiber beyond what is specified as acceptable in the manufacturer's instructions for use (IFU).							
26. Inspects the laser catheter sheaths and laser fibers for damage before and after the procedure.							
27. Confirms before the procedure that the catheter sheath meets the manufacturer's labeled length and the laser fiber is of sufficient length to extend beyond the catheter.							
28. Confirms that the catheter sheath and the laser fiber are intact and complete after each removal from the patient.							
29. If the catheter or sheath fails inspection, the scrub person a. removes the sheath and catheter from service,							
b. implements the policy for retained surgical items, and							
c. makes the surgical team aware of the missing fiber or fiber portion before the patient leaves the surgical suite.							

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Munson Medical Center

Competency Verification Tool—Perioperative Services

Practice: Laser Safety – Scrub Person

Competency Statements/Performance Criteria	Verification Method [Select applicable code from legend at bottom of page]						Not Met (Explain why)
	DEM/ DO/DA	KAT	S/SBT/ CS/	V	RWM/ P&P	O	
30. Cleans, disinfects, and stores protective eyewear according to the manufacturer's written IFU.							
31. Reports accidents or injuries related to laser procedures according to facility or health care organization policies and procedures.							
32. Verbalizes a review of facility or health care organization policies and procedures related to laser safety.							
33. Participates in quality improvement activities related to laser safety.							

Concurrent competency verification of the following is recommended	
•	•
•	•
•	•

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