Critical Care Services (CCS) & Intermediate Care Unit (IMCU) Addendum

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Temporary Pacemakers and Epicardial Pacemakers

For additional information refer to full Policy: *Temporary Pacemakers Transvenous and Epicardial Pacemakers* in PolicyStat

RN RESPONSIBILITIES:

A. Patient with temporary pacing wires connected to a pacemaker generator may not shower. If the generator is not attached to the pacing wires, they may shower if the wires are covered with an aqua guard.
B. All temporary epicardial pacing wires must be insulated and always dressed. *Dressing will be changed per central line standards.*
C. When epicardial wires are not in use, the wires should be secured in 4x4 gauze and loosely taped to the patient's chest wall
D. Epicardial wires must be easily retrieved and not taped occlusively
E. Exposed epicardial wires should be secured in insulated material (e.g., finger cots, glove, plastic needle cap, ear plugs).
F. Gloves must be worn when handling the pacer wires.
G. Patients with temporary pacemakers in use should have pacing thresholds assessed and documented every 24 hours in Epic (preferably on dayshift) or per unit protocol (e.g., once per shift). Verify temporary pacemaker settings are ordered by LIP.
H. Patients with temporary pacemakers applied and in use will have the battery changed daily by the nurse caring for the patient. The change will be documented in the patient record and a piece of tape placed on the pack of the pacemaker with the nurse's initials, date, and time of battery change and will document in Epic (located under *Pacer Interventions*)
I. Pacemaker settings will be documented in Epic at change of shift and with any changes. Settings shall include the mode, rate, mA's, and mV's if indicated.
J. Pacemaker dependent patients will have a second temporary pacing generator readily available in the patient's room (CICU only)
K. A provider order is required before turning off the pulse generator
    1. Temporary pacing generators are to remain attached to the pacing wires until they have not been required for the past 24 hours
    2. Temporary pacing generators and extension cables are to remain the room, with the patient until the wires have been discontinued. At which time, the generator will be cleaned, removed from the room, and placed back in the designated storage area.
L. Patients with femoral transvenous pacemakers will remain on bedrest (CICU only)
M. Transvenous pacing wires will be always connected to a temporary pacer box even when the pacemaker is not in operation and power is off.
N. Epicardial pacing wires are to be removed by the surgeon or surgical assistant

TRANSFER CRITERIA TO CARDIOLOGY:

A. Temporary pacemaker with an underlying rhythm that is life-sustaining

Must be transferred to a monitored cardiology unit (Cardiology A or Cardiology B only)

SAFEGUARD FOCUS Cool™ Compression Device Management

For additional information refer to full Policy: *SAFEGUARD FOCUS Cool™Compression Device Management* in PolicyStat

PURPOSE:

To provide guidelines for use of the SAFEGUARD FOCUS Cool™ Compression Device.

DESCRIPTION:

The SAFEGUARD FOCUS Cool™ Compression Device is a sterile, single use disposable device that has a clear window over a saline-filled compression balloon. It provides compression over closed surgical sites to achieve targeted hemostasis to pacemaker and ICD pockets in the immediate post-operative period.

INDICATIONS FOR USE:

The SAFEGUARD FOCUS Cool™ Compression Device is used for patients requiring targeted hemostasis to pacemaker and ICD pockets in the immediate post-operative period.

RESPONSIBLE PERSON:

Application of Device: Trained Registered Nurses (RN), Advanced Practice Providers (APP), Physicians, and procedural technicians can apply the SAFEGUARD FOCUS Cool™ Compression Device

Removal of Device: Trained Registered Nurses (RN), Advanced Practice Providers (APP), and Physicians can remove the SAFEGUARD FOCUS Cool™ Compression Device

SPECIAL CONSIDERATIONS:

A. Standard deflation (removal of saline) timing is outlined in this procedure. Any frequency listed outside this procedure standard must be written out by the provider in a separate order (see **Addendum A**).

B. Do not leave the SAFEGUARD FOCUS Cool™ Compression Device on for greater than 24 hours with > 30mL in the compression balloon as tissue damage may occur.

C. Over-instillation of fluid (greater than 60mL), the balloon may burst, detach, or compromise the adhesive or fastening properties of the device.

D. Do not attempt to reposition adhesive once applied. Adhesive only sticks properly on first application.

Bleeding Risk	Recommended SAFEGUARD FOCUS Cool™ Compression Device Deflation Timing	Total Time (estimated)
Low	Starting ***60 minutes (1-hour)*** after bandage placed, ***remove 20mL**** of fluid from the compression device ***every hour*** until all fluid is removed ***Standard Order – Per Protocol***	3 hours (180 minutes)
Medium	Starting at ***120 minutes (2-hours)*** after bandage is placed, ***remove 20mL**** of fluid from the compression device ***every hour*** until all the fluid is removed	4 hours (240 minutes)
High	Starting at ***120 minutes (2-hours)*** after bandage is placed, ***remove 20mL**** of fluid from the compression device ***every 2 hours*** until all the fluid is removed	6 hours (360 minutes)
Severe	Starting at ***240 minutes (4-hours)*** after bandage is placed, ***remove 20mL**** of fluid from the compression device. After ***480 minutes (8-hours)*** after the bandage is placed, ***remove 10mL of fluid (leaving 30mL in the balloon).*** At ***24-hours*** from application, assess the incision and if appropriate, gradually ***remove the remainder of the 30ml fluid.***	24 hours (1440 minutes)

*If oozing/bleeding persists, add increments of 5mL of saline every 1-2 minutes until oozing/bleeding stops, up to a maximum of 60mL in device

Vascular Sheath Management and Post Procedural Care

For additional information refer to full Policy: *PSVMC: Vascular Sheath Management and Post-Procedural Care for a Patient with a Femoral Sheath, Arterial and Venous, and Use of Compression Devices (Adult)* in PolicyStat

Sheath removal must be performed by clinical caregivers that have demonstrated competency. Sheath maintenance and post-removal care will be performed by Registered Nurses (RN). Do not perform unless you have a documented competency on file

1. IF catheter exit site is bleeding, THEN apply pressure for 5 minutes and notify LIP
2. IF there is a change in assessment, THEN notify LIP, restart neurovascular checks from beginning and maintain bedrest/limb precautions
    a. NOTE: To prevent limb ischemia, do not leave the artery blocked for more than 3 minutes
3. IF the patient is obese or has large hips, THEN consider the use of manual pressure
    a. NOTE: Placement of the system may not be suitable on large patients or patients with very wide hips as the belt may be too short
4. IF hematoma (e.g. pain or tenderness and swelling at the access site) develops, THEN apply firm pressure to site and hold or the originally estimated time (start over), follow the same steps and reassess for hemostasis, notify LIP, mark area and continue to monitor site
5. IF femoral compression device needed for long periods of time, THEN a brief interruption using manual compression is completed at least every 3 hours
6. IF retroperitoneal hematoma is suspected (e.g. hypotension, tachycardia, pallor, lower abdominal pain, back pain, significantly decreased hematocrit or neurovascular changes in the leg with the puncture), THEN notify LIP
7. IF pseudoaneurysm is suspected (e.g. painful palpable pulsatile mass and positive bruit), THEN apply manual pressure and notify the LIP
8. IF vessel occlusion is suspected (e.g. sudden onset of pain, possible paresthesia, limb is cyanotic and cool to touch, diminished or absent pulses), THEN notify the LIP
    a. NOTE: If compression device in place, remove device and hold manual pressure while assessing limb for return of circulation
9. IF the patient has a vasovagal response (e.g. pallor, bradycardia, hypotension or emesis), THEN place the patient in Trendelenburg and notify the LIP
10. IF arteriovenous fistula is suspected (e.g. swelling of extremity and continuous bruit at the access site), THEN apply manual pressure and notify the LIP
11. IF access site infection (e.g. high fever, femoral abscess), THEN notify the LIP

Documentation

1. Vascular Sheath LDA
2. Time hemostasis achieved
3. Groin site assessment
4. Vital signs prior, during and post-sheath removal
5. Neurovascular and peripheral vascular status of the affected extremity every 15 minutes x 4, every 30 minutes x 2, every hour x 4, then per LIP order
6. Discontinuation of vascular sheath
    a. Method used (e.g., Manual compression vs. Femoral Compression Device)
    b. Date and time of initial application of device
    c. Patient tolerance of procedure
    d. Record VS, cardiac rhythm, puncture site assessments, distal pulses, neurovascular assessments, periodic deflation and any repositioning of the device
    e. Length of time the device was in place and the appearance of the site after removal
7. Occurrence of unexpected outcomes

Universal Protocol for Invasive Procedures

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

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

Consent and Refusal of Consent for Procedures

For additional information (including age of consent, competence, and allowed disclosures refer to full Policy: *Consent and Refusal of Consent for Procedures* in PolicyStat

Medical Center Staff Responsibility

1. Informed Consent (PARQ) is the responsibility of the provider.
2. Informed Consent (PARQ) must occur before the hospital consent form is signed.
3. The initial Informed Consent, at times, may not be done by the actual performing proceduralist (i.e., OB Informed Consents may be done in the physician's office, but an on-call physician does the procedure).
4. The actual performing proceduralist, if different from the initial physician that provided the PARQ, must re-PARQ prior to the commencement of the procedure.
5. The Informed Consent must be documented prior to the commencement of the procedure but not necessarily prior to signing the consent form.
   G. Documentation on the hospital consent form will include:
    1. The name of the procedure(s) is/are entered on the consent form by the RN or provider.
    2. The only acceptable source for transcribing the procedure is the provider order.
    3. The procedure(s) shall be entered without using abbreviations.
    4. Careful attention must be given to laterality; "right" and "left".
    5. All physicians/proceduralists and LIPs performing significant procedures, as defined in the Professional Staff Bylaws, will have their name listed.
    6. There must be a separate consent form signed EACH time a procedure is done.

EVD & Lumbar Drain Management

For additional information refer to full Policy: *External Cerebrospinal Fluid (CSF) Drain (Ventriculostomy, Lumbar Drain) Management* in PolicyStat

SPECIAL CONSIDERATIONS:

1. Drainage System – the entire drainage system is a closed drainage system, avoid breaking the sterile system to prevent infection. Opening should only occur when zeroing the transducer or when the replacement drainage bag is changed. Any time the drain is opened, strict sterile technique and face mask must be worn. Opening the system increases the chances of infection.
    a. Notify the LIP ANYTIME the catheter tubing becomes contaminated, including when the entire drainage system is required to be changed from contamination.
2. Patients with Multiple EVDs – each catheter should be transduced for ICP monitoring, unless otherwise ordered by the LIP. Document the highest ICP with the most accurate waveform in EPIC as ICP1, this will be used for Cerebral Perfusion Pressure (CPP). Document the ICP from each ventriculostomy
    a. Label bedside monitor "ICP1" for EVD #1, and "IPC2" for EVD #2
    b. EPIC only allows for 2 ICP numbers to be charted, please chart more ICPs in "other"
    c. Ensure each value is documented with the corresponding insertion site
    d. Label the EVD to correlate with the site documented in EPIC
3. Patients with orders for the EVD to be clamped – the ICP and waveform must be transduced continuously. Assess the insertion site for leakage. If the waveform becomes dampened, evaluate for possible causes and notify LIP. Drain may need to be opened to assess for patency and tidaling of CSF. If LDD is clamped, assess insertion site for leakage.
4. Instillation of Medications and Flushing of the Ventricles – medications that are given via intrathecal route (into the EVD or LDD) are to be done only by the LIP
    a. Installation of medications or flushing into the ventricles can increase ICP and complications of herniation. Follow the LIP orders after medication is instilled. Continuous ICP monitoring should be performed while the drain is clamped (for EVD).
5. Dressing Changes – change the dressing only if directed by the LIP or if the dressing is wet, loose, or contaminated. Use aseptic technique.
    a. EVD catheters are usually open to air with no dressing, depending on provider preference.
    b. Lumbar drain dressings can be reinforced, but NOT changed without an order
6. Lumbar Drainage Device
    a. Lumbar drains using the *intermittent drainage technique only* may be used in:
        a. PPMC, PSVMC, and PMMC critical care areas, PSVMC IMCU, PPMC 8 South (8S)
    b. Procedure: unclamp the drain every hour, slowly drain the prescribed amount with direct visual monitoring of CSF, then clamp off to the patient. Repeat hourly, as ordered by LIP.
7. Continuous Drainage Technique
    a. May only be performed in Critical Care areas
        a. Excludes PSVMC IMCU & PPMC 8S
    b. Procedure: drain remains open, and the level of the drip collection chamber or CSF mount is manipulated (raised or lowered) throughout the hour to facilitate the ordered amount of hourly drainage.
8. Draining at a Specific Level – The transducer stopcock (zero-reference point) is secured to the CSF mount and leveled to a landmark (e.g., external auditory meatus, tragus, iliac crest, phlebostatic axis). The drip collection chamber is set to the prescribed height (cmH2O) on the CSF mount, which will allow CSF to drain when the pressure in the ventricular space exceeds the pressure set by the height of the drip collection chamber.
9. Draining at a Specific Intraspinal Pressure – A transducer must be sterilely primed and attached to the drainage system. Once the transducer is attached, leveled, and zeroed, the pressure can be measured.
10. After removal of CSF drainage device by LIP – assess site for ongoing CSF leak. Inform provider if CSF leak is noted. Lumbar drain removal patient may need to lie flat for up to 6 hours after removal, as directed by LIP.

Breast Flap Reconstruction

For additional informaino refer to full Policy: *Breast Flap Reconstruction* in PolicyStat

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The Breast Flap Reconstruction patient is admitted to critical care for observation of the flap. Due to the small blood vessels (2-4mm), there is concern for clot formation at blood vessel connections; hematoma pressing against blood supply, kinking of blood supply or anything that may impede either the venous or arterial blood supply to the flap. The sooner the intervention, the greater likelihood for salvage of the flap.

VITAL SIGNS

- Routine vital signs (ECG monitoring optional. Pulse oximetry is acceptable.)

ASSESSMENTS

- Assess and document marked doppler site on breast every hour for 48 hours, then every 2-4 hours as ordered. If implantable doppler is used, keep volume on low level for continuous monitoring 1st 48 hours. Notify surgeon immediately if pulse is absent.
- Assess and document the color, temperature, and appearance of flap (use similar lighting each assessment). Notify surgeon if present:
    - Blue or purplish = venous insufficiency
    - Pale and/or cool = arterial insufficiency
    - Tense/swelling = hematoma
    - Suspicion of venous thromb = characterized by having a congested warm mottled flap that continuously oozes dark blood.
- Assess for bleeding, increase in drainage in the JP bulbs.
- Assess for signs and symptoms of surgical site infection

DOCUMENTATION

- Document both venous and arterial assessments, JP bulb drainage amount and characteristics
- Document Flap temperature, appearance, observation of surrounding tissue, and dressing appearance.
- Care plan documentation per appropriate CPG for patient condition (See "Breast Surgery" in Care Plan Guide)

ADLS

- **Keep the room warm,** approximately 78 degrees. Preheat room before patient admitted. Keep the door closed.
- **Absolutely no Bair-Hugger warmer.**
- **No dressing on flap.** Cover lightly with blue towel drape.
- May use "heart" or regular pillow for splinting with N/V. **Nothing heavy over flap.**
- **Activity as ordered**: Activity is typically bed rest first day. HOB 20-60 degrees or 'lawn chair' position with 1-2 pillows under knees for comfort. May turn slightly toward unaffected breast side only. Out of bed with assistance ***when ordered by surgeon***. This is individualized to the patient.
- **Encourage incentive spirometer use**
- **CHG bath daily or as ordered by provider**

MEDICATIONS

- DVT prophylaxis as ordered. SCDs typically ordered.
- Subcutaneous low molecular weight heparin as ordered (usually starts 12 hours post op), **not to be administered in the abdomen** due to muscle flap site. Use thigh for LMWH doses.
- No ephedrine, no caffeine, no chocolate, or other vasoconstrictors unless approved by surgeon.

PSYCHOSOCIAL

- Provide patient and family-centered care with ongoing support and education including outcomes and goals.

EQUIPMENT

- Transport Cook-Swartz Doppler or other hospital approved doppler equipment in transport box with patient from OR, CRU, & 8W.
- Use a hand-held doppler to assess arterial flow
- Standard ICU vital sign equipment
- When patient is discharged, wipe down Cook Medical doppler, AC cord, pole mount, and Channel verifier with Saniwipes, place in dedicated transport box, and return to Main OR front desk.

Massive Transfusion

For additional information refer to full Policy: *Massive Transfusion of Blood and Blood Products in Adult* in PolicyStat

Hemostasis goals while using this guideline:
1. INR < 1.5, PTT < 45 seconds
2. Fibrinogen > 100 mg/dL
3. Platelet count > 100,000/mL
4. HCT > 24%

Resuscitation Goals while using this guideline:

1. Temp > 36° C
2. SBP > 100 mmHg
3. HR < 110 BPM
4. Ionized Calcium > 1 mmol/L
5. Urine Output > 0.5 ml/kg/hr

PROCEDURE Copy Link

Upon recognition of acute, massive, uncontrolled bleed:

A. **Physician verbal order is required to initiate massive transfusion protocol (MTP)**

B. **Circulating Nursing Responsibilities:**

1. Notify Team Leader, Charge RN for additional help.
2. Notify blood bank (x67806) of initiation of this guideline. Use the SBAR-R format:

SBAR-R Format

S (situation)	Give your name and location. State that you are initiating the Massive Transfusion Protocol.
B (background)	Provide patient name, medical record number, patient location, name of contact person on unit during "Massive" and phone extension.
A (assessment)	Give information regarding source(s) of bleeding (i.e. surgical, coagulopathy, etc.), anticipated blood product needs and the most recent hematocrit, if known.
R (request)	Request Massive Blood Pack
R (repeat back)	Blood bank technologist should repeat back the request for Massive Transfusion Pack, patient name, medical record number, unit contact person and phone extension. The technologist will give an estimate of when products will be available.

C. **Transfusion Nurse will communicate with Blood Bank:**

1. Enter order for :
    a. Massive Blood Pack STAT. These and all additional labs should be designated "STAT" and "massive transfusion" should be entered on comments line.(These initial lab studies, especially for Type and Cross which is ordered in the blood pack, should be collected before any blood products are transfused, but transfusion will not be held up pending lab results).
    b. Massive Lab Panel and obtain specimens (Order includes hemogram with platelets (HGM), PT/INR, PTT, fibrinogen, D-Dimer and basic metabolic panel.
2. Assure that blood products will be obtained from blood bank via the designated runner. (Avoid utilizing the tube system during a massive transfusion.)
3. Verify all blood products prior to administration per Oregon Nursing Policy PO-022-10-V1
4. Confirm that products should remain in Blood Storage Transport cooler at the patient's bedside until use. (Unused products that have the potential to remain in the cooler for >30 minutes should be moved to the blood refrigerator).
5. If products are not used, they need to be returned to the blood bank.
6. Discard all empty blood and blood component bags into one spot in the room in which the patient is receiving care. This helps to make sure that all units transfused were documented. The empty bags can be discarded 1-2 hours after protocol is discontinued).
7. Notify blood bank when use of Massive Transfusion Protocol has been discontinued.
8. Notify blood bank when patient location changes.

Pre-Op Decolonization for High-Risk Surgical Procedures Policy

For additional information refer to full Policy: *Pre-Op Decolonization for High Risk Surgical Patients* in PolicyStat

Protocol Element	Patients without povidone iodine allergy (default pathway)	Patients with povidone iodine allergy
Nares screen for S. aureus (MRSA and/or MSSA)	Required MRSA only. If patient has a history of MRSA within the last 5 years, treat as positive for MRSA (do not need to swab again) Test must be within 30 days of surgery date. Inpatients: will be ordered by provider. For outpatients: Will be ordered in Preadmit clinic prior to admission if not ordered by surgeon. See "Nursing Protocol for Pre-Admission Testing of Adult Surgical Patients"	Required combo MRSA/MSSA Test must be within 30 days of surgery date.
CHG (Chlorhexidine gluconate) shower for 5 days prior to surgery, including night before and morning of surgery.	Required *unless timing of surgery due to clinical need does not allow time for showers. (i.e., fracture, etc.)*	Required *unless timing of surgery due to clinical need does not allow time for showers. (i.e., fracture, etc.)*
CHG (Chlorhexidine gluconate) cloths applied in pre-operative area ***(wipes do not require provider order)*** Wipes may be applied in the most appropriate setting for the patient, based on condition and workflow. This may be either the inpatient floor or the SSU pre-op area.	Required	Required
Mupirocin 2% antibiotic ointment applied to both nares BID for 5 days prior to surgery	No	Order required. To be ordered by patient's surgeon if needed for individuals with positive nares screen, history of MRSA, or unknown status[1]
Povidone/iodine nasal antiseptic	Order required. To be ordered by SSU RN and applied per manufacturer's instructions.	No
CHG oral care in pre-operative area	No	No
Standard antibiotic prophylaxis	Required - see surgeon order.	Required - see surgeon order.
Standard antibiotic prophylaxis PLUS Vancomycin	Required for all individuals with MRSA positive nares screen, history of MRSA	Required for all individuals with MRSA positive nares screen, history of MRSA

Verbal and Telephone Orders

For additional information refer to full Policy: *Verbal and Telephone Orders* in PolicyStat

A. To ensure patient safety, verbal and telephone orders are not to be used as routine methods of communication.
B. Verbal orders:
    1. Are not appropriate when the prescriber is present or has access to the patient's EHR
    2. May be acceptable in urgent clinical situations or when functioning in a sterile environment.
C. Telephone orders shall be limited to urgent clinical situations in which it is impossible or impractical for the prescriber to access the patient's EHR or to fax the order.

Procedure

A. The prescriber identifies self, specifies the correct patient using 2 patient identifiers (per policy *Patient Identification and Verification*), and communicates the order.
B. The receiver of a verbal/telephone order will immediately enter the order in the patient's EHR.
    1. If the patient's EHR is not available (e.g. during EHR downtime), the order is to be written on a blank provider order form that is identified with the patient's name and an additional patient identifier.
C. The prescriber must wait until the order is entered into the patient's EHR.
D. The patient's name, additional identifier, and the order are read back by the receiver from the EHR or paper order form during downtime.
E. Following the read back, the prescriber will give verbal confirmation that the complete order is correct as read back.
F. In emergency situations where the order cannot be immediately entered or written, the receiver will repeat the order back to the prescriber. The prescriber will acknowledge that the order is correct. The order will then be entered into the patient's chart as soon as possible.
G. The required elements of a complete written verbal/telephone order are:
    1. Patient name and an additional identifier per policy *Patient Identification and Verification*
    2. Date and time order is received
    3. Origin of order
        A. Differentiate between telephone and verbal order; "TO" and "VO" are acceptable abbreviations for this purpose.
    4. Prescriber's name and professional category (e.g. MD)
    5. Receiver's signature and professional category (e.g., RN)
    6. Medication orders require drug name (brand or generic), dose, route and frequency.
    7. PRN (or "as needed") medication orders must include an indication for use.
H. All verbal and telephone orders will be authenticated/signed electronically within 48 hours.
I. The receiver may refuse to accept or implement a verbal/telephone order, if the order is deemed incomplete or unsafe. In such cases, processes outlined in policy *Administrative Chain of Command-Acute Patient Care Issues* must be followed.

Spontaneous Breathing Trial Protocol for Adults on Mechanical Ventilation

For additional information refer to full Policy: *Spontaneous Breathing Trial Protocol for Adults on Mechanical Ventilation* in PolicyStat

NOTE: The ICU physician may modify this protocol at any time to meet the patient's unique needs and should be consulted prior to patient's extubation.

RESPONSIBILITY: Licensed Respiratory Care Practitioner (LRCP)

TEXT:

The Respiratory Therapist will attempt a spontaneous breathing trial (SBT) a minimum of once daily on all mechanically ventilated patients meeting appropriate SBT entry criteria unless specific alternative orders have been given In the ICU, begin routinely at the start of day shift, prioritizing ventilated patients who are likely candidates for extubation, so information about weaning readiness will be available during physician work rounds. May also be initiated any time of day by physician order or when a patient appears ready for weaning.

RT will assess patient's readiness, according to the SBT initiation criteria below and will communicate with the patient's nurse regarding readiness to wean and the plan for initiating the trial.

SBT Initiation Criteria:

1. Underlying disease process stable or improving
2. FIO2 ≤ .50 with SpO2 ≥ 90% and PEEP ≤ 8 cm H20
3. Heart Rate ≤ 120
4. RR ≤ 30
5. BP stable, > 90 or <180
6. Minimal vasoactive support, e.g. norepinephrine at 5 mcg/kg/min or less. No increase in pressors over previous 4 hours.

If SBT initiation criteria are met at baseline, place the patient on PSV 5-10 cm H2O for 2-5 minutes. If f/Vt remains <105 on PSV 5-10, decrease PSV to 5/5 or 0/5 per hospital standard and assess for SBT failure criteria (see below). Continue with SBT unless the patient exhibits SBT failure criteria. Tube compensation may be instituted during SBT per hospital standard. A PEEP of 8 cm H2O may also be used during SBT per hospital standard.

SBT Failure Criteria:

1. FIO2 ≥ 0.50 to keep SaO2 ≥90%
2. f/Vt > 105 obtained on 0-5 Pressure Support
3. Rise in HR of > 20 beats per minute.
4. RR > 35 for 5 minutes
5. Temp > 38.3
6. Cardiac arrhythmia or hemodynamic instability.
7. Signs of respiratory distress, diaphoresis, somnolence, agitation

Monitor patient closely during SBT. Reassess SBT success at 30 minutes and contact physician with update and discuss extubation. If SBT is successful at 30 minutes, obtain physician order for extubation or ABG's during SBT if clinically indicated. Continue SBT for no longer than 2 hours, keeping physician and nurse apprised of patient status. If patient fails SBT, or ABG's are unsatisfactory during SBT, assess for the following potential causes of weaning failure and document electronically.

Oxygenation failure (SpO2 ≤ 90% on FIO2 ≥ .50)

1. Return to previous ventilator settings
2. Review CXR to rule out remediable causes
3. Consider increased FIO2 or PEEP.

Apnea or hypoventilation (RR ≤ 6/minute)

1. Return to previous ventilator settings
2. Consider oversedation or neurological impairment
3. Discuss reduction in sedation with ICU nurse and physician
4. Reassess for SBT at a later time

Lung mechanics inadequate for safe extubation (RR ≥ 35, f/Vt > 105, or respiratory distress)

1. Return to previous ventilator settings
2. Review CXR to rule out remediable causes
3. Discuss alternative weaning strategy with physician (e.g.: PS or VS mode)

Cardiovascular or neurological instability

1. Return to previous ventilator settings
2. Discuss alternative weaning strategy with physician (e.g.: PS or VS mode)
3. Reassess for SBT at a later time

Exclusion criteria:

1. Recent intubation (within preceding 4-6 hours)
2. Baseline cardiovascular instability (e.g: arrhythmias, shock)
3. Baseline neurological instability (e.g.: elevated intracranial pressure, seizures)
4. Neuromuscular blocking agents within preceding 4-6 hours.

Documentation:

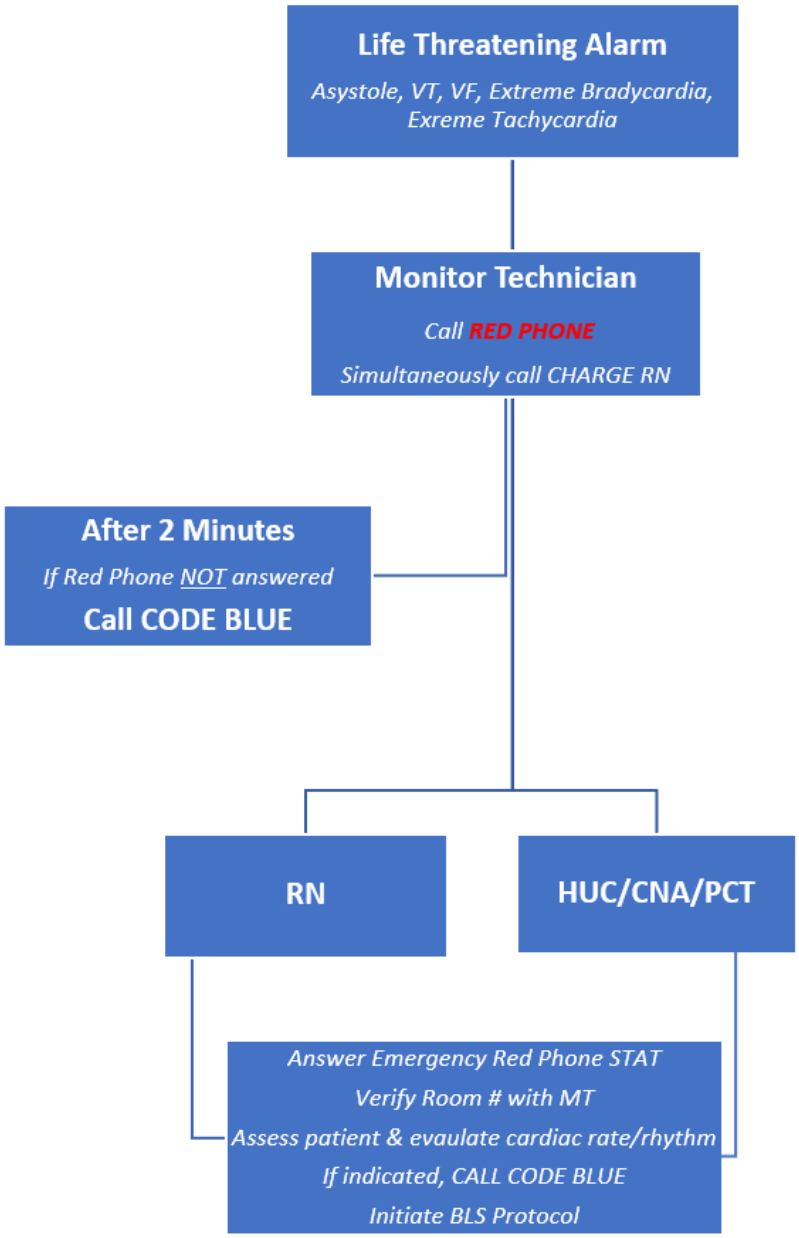
Document results of the SBT electronically per specific ministry standards.

Remote Telemetry Monitoring for Adult Patients at PSVMC

For additional information refer to full Policy: *Remote Telemetry Monitoring for Adult Patients at PSVMC* in PolicyStat

A. RN Responsibilities
    1. Verify Provider order for telemetry monitoring
    2. Obtain and assemble monitoring equipment
    3. Notify MT of patient admission to telemetry and provide information:
        a. Sends Admission paperwork to MT (e.g., telemetry box number, patient name, room number, medical record number (MRN), code status, cardiac history, and admission diagnosis)
        b. Places patient on Telemetry Box and calls MT to confirm that patient is seen on nursing central monitor with correct patient name and room number
        c. Confirms with MT they have the Primary RN's phone extension and name
    4. The Primary RN is accountable to inform/call the MT <u>at the time</u> of:
        a. Patient admission, transfer, or discharge
        b. Telemetry is interrupted (e.g., bathing, off-unit for procedure)
            i.
                a. NOTE: Telemetry may be interrupted for baths or when leaving the floor for procedures, and when patient resumes telemetry. MTs will call the RN caring for the patient if the telemetry has not been restored at the following intervals: Bath/Hygiene – 30 minutes, Diagnostics (e.g., Radiology) – 60 minutes, and every 30 minutes thereafter
        c. Telemetry is restored
        d. Patient room location is changed
            i.
                a. NOTE: The MT must be notified for room changes to reassign room number in central monitor
        e. Administration of IV push cardiac medication or initiation of cardiac continuous infusion (e.g., Amiodarone, Dobutamine, Milrinone)
        f. Changes in notification parameters outside the pre-set adult monitoring parameters per Provider order
    5. Explain procedure to patient. Prepare skin and attach telemetry monitoring equipment to patient with proper placement of electrodes and new battery.
        a. NOTE: Ensure that electrodes are placed in the correct area on the patient's torso. RNs responsible for verifying patient on monitor at Nursing Station. Notify MT with problems
    6. Assigned RNs will place rhythm strips from MT in the respective patient folder every shift. MT will be provided and RN assignment sheet with respective RN telephone numbers on a shift-to-shift basis. RNs caring for patients will verify accuracy of the interpretation and measurements
    7. When telemetry is discontinued, the monitor tech will be notified.
        a. NOTE: Telemetry boxes must be returned to the MT room or removed from the patient room at the time of patient discharge. DO NOT PLACE A USED TELEMETRY BOX ON A NEW PATIENT.

Attachment A: Emergency Red Phone Call Tree for Life-Threatening Arrhythmias



Adult Code Blue Procedure

For additional information refer to full Policy: *Code Blue Emergency Adult & Pediatric* in PolicyStat

A. Any patient, unless specifically ordered to be a "DNR" or Physician Orders for Life Sustaining Treatment (POLST) stating "DNR" (GOP 298.00) is to be resuscitated per the following procedures at each site. Any variation in the following procedures should be written in a specific manner in the physician's orders (e.g. DO NOT INTUBATE).

B. Family presence during resuscitation is encouraged to support their psychosocial, emotional, and spiritual concerns.

DEFINITION

A. CODE BLUE is the immediate application of life support measures to the victim of cardiac and/or respiratory arrest.

B. FAMILY PRESENCE DURING RESUSCITATION: The attendance of one or more family member/significant other during the code blue. The family member(s) may have visual and/or physical contact with the patient assuming their presence is safe for both the patient and the family member. A family facilitator is to be assigned for the event.

C. FAMILY FACILITATOR: A healthcare team member (e.g. chaplain, nursing supervisor, case manager, etc.) whose sole responsibility is to assist the family member by providing emotional and spiritual support during and after the event.

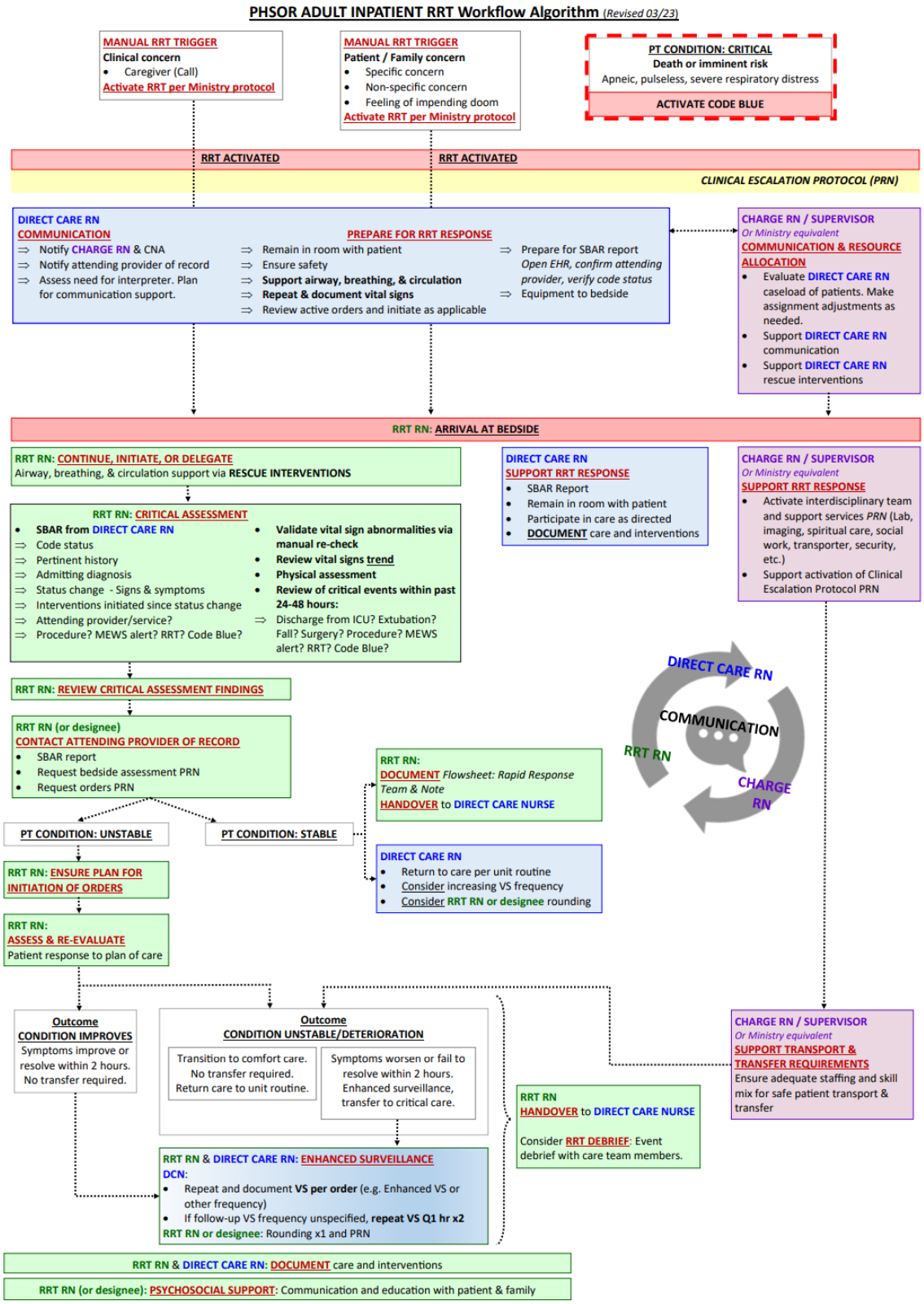
SPECIAL CONSIDERATIONS

A. SUITABILITY OF FAMILY PRESENCE DURING A CODE BLUE: Occasionally, it is not appropriate for a family member to be present during the code. The Family Facilitator, in consultation with the code team, will assess the appropriateness of the presence of the family member(s). Indications for the family to not be present include inappropriate levels of coping, combative behavior, emotional instability, and behaviors consistent with altered mental status or intoxication.

B. FAMILY CHOICE FOR NOT ATTENDING: A family member may choose not to be present for the code. A family facilitator should still be assigned.

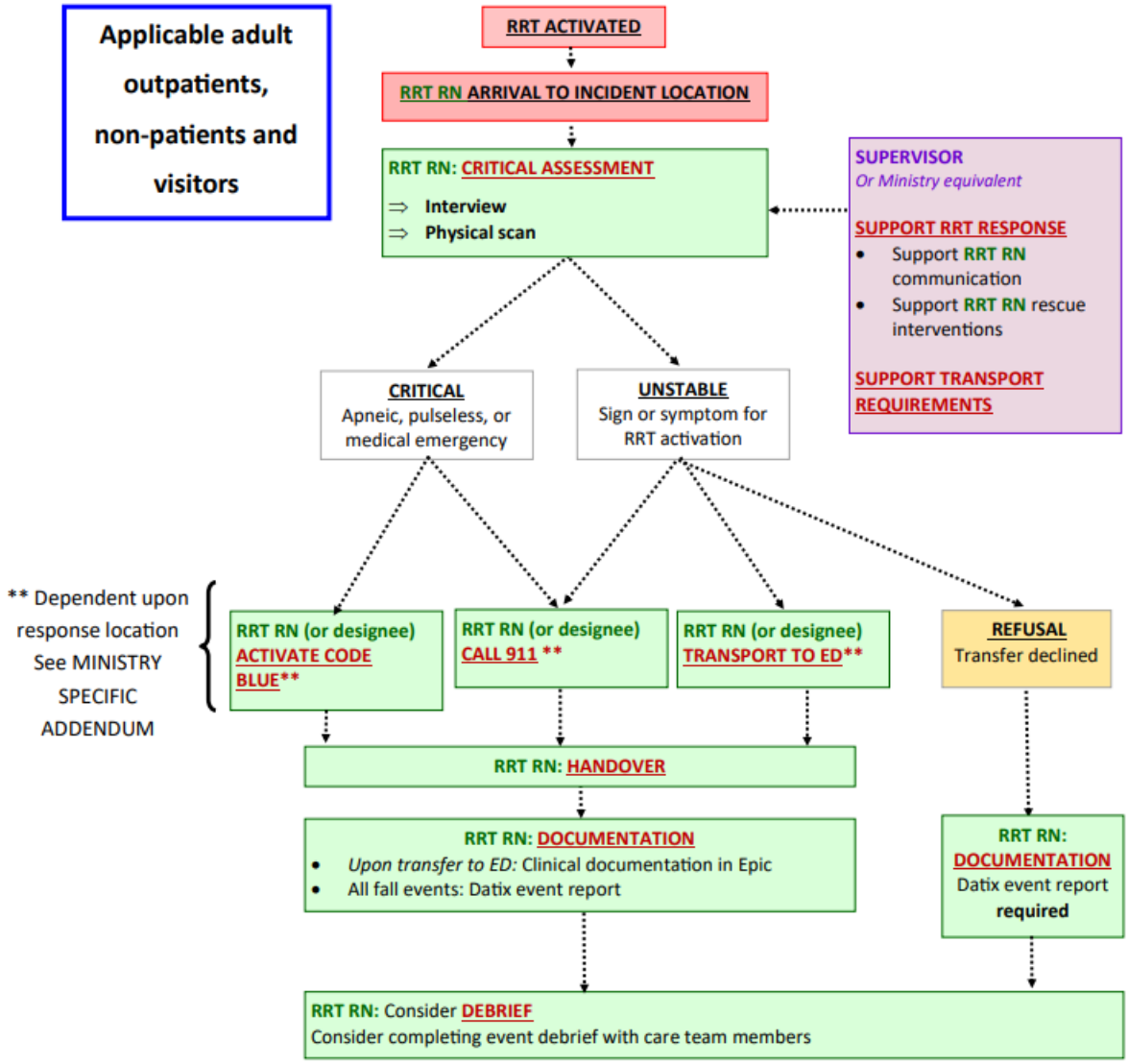
Rapid Response Team

For additional information refer to full Policy: *PHS-OR ADULT Rapid Response Team Practice Guideline* in PolicyStat



PHSOR Adult OUTPATIENT/NON-PATIENT/VISITOR RRT Workflow Algorithm

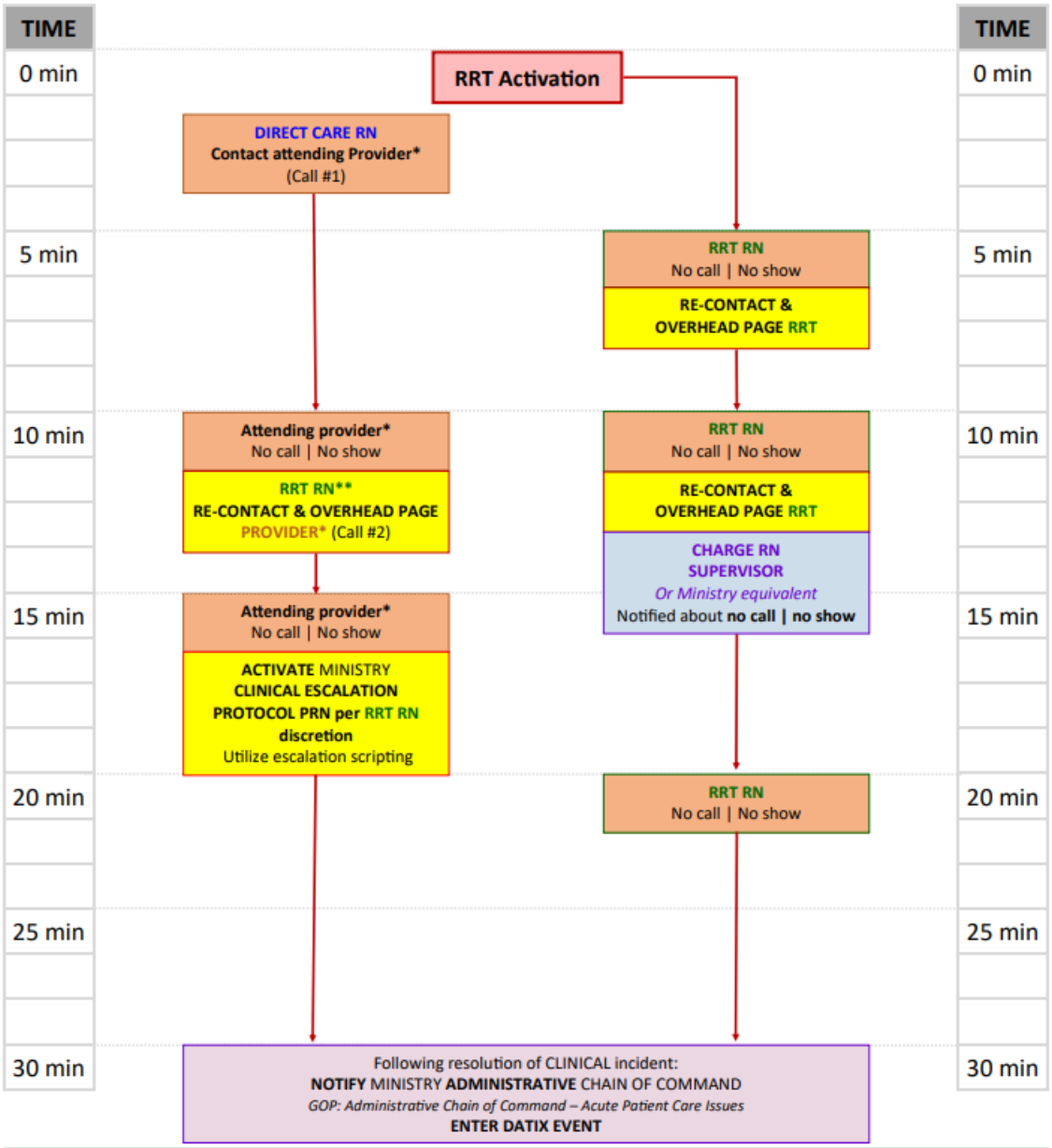
Revised 03/23



PHS-OR RRT ADULT INPATIENT Clinical Escalation Protocol

This protocol is a guideline

Special circumstances and clinical judgment may supersede this protocol



HRO Tones & Tools

Communicate clearly: SBAR: **S**ituation, **B**ackground, **A**ssessment, **R**ecommendation; Ask clarifying questions

Speak up for safety: Escalate using CUS (**C**oncerned, **U**ncomfortable, **S**top) and chain of command

Have a questioning attitude: Validate and verify

Operate as a team: Brief, execute, and debrief

Escalation Scripting

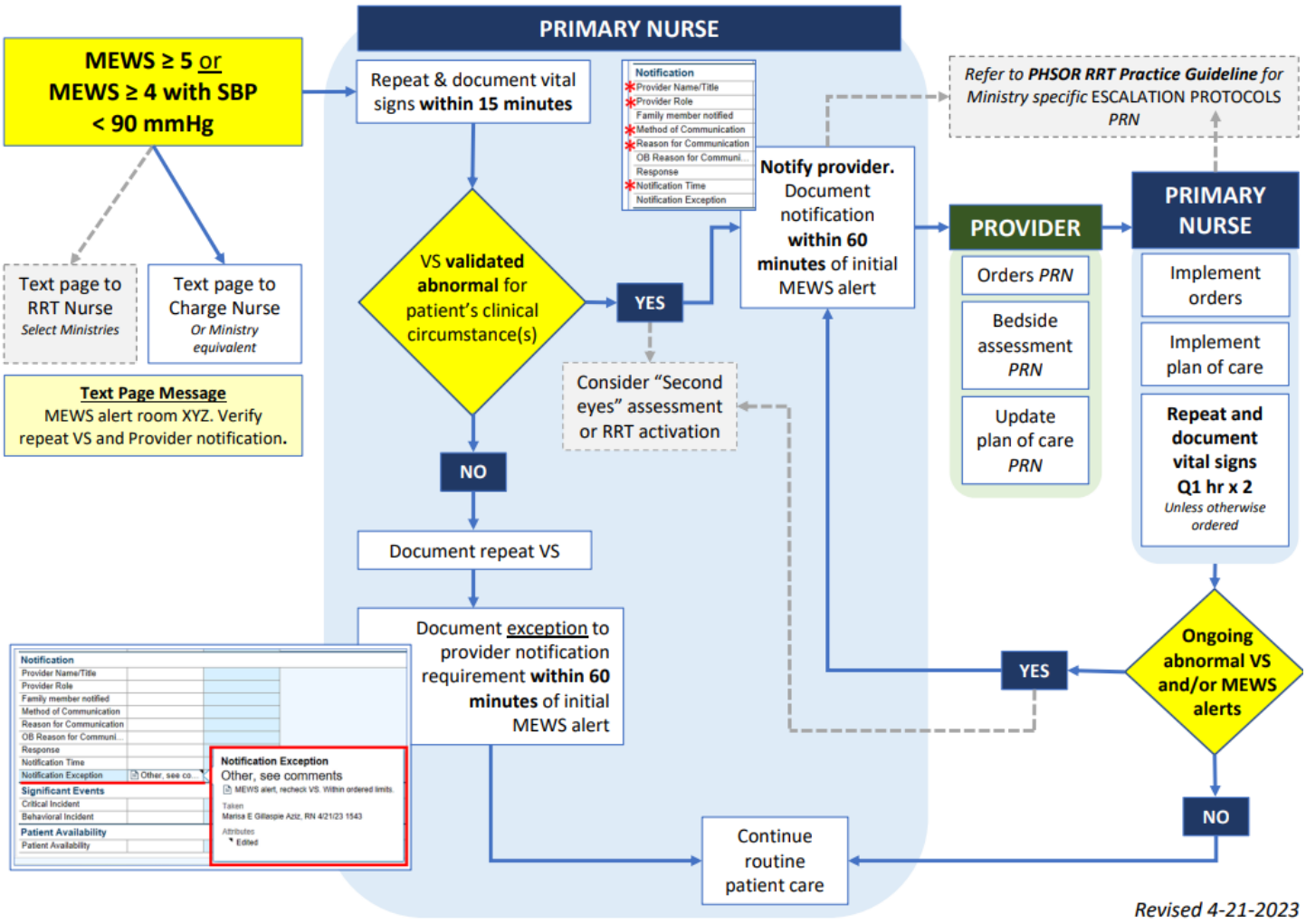
Dr. ____, this is _____, RRT RN. I'm calling to activate the Rapid Response escalation protocol for _____ in Room ____. I was notified at _____ (time). It is now _____ (time). I've attempted to contact the patient's attending provider, Dr. _____, per RRT policy and have not received a response. The patient has _____ (SBAR including critical findings, VS). I need a provider at the bedside now.

Revised 02/23

*Attending Provider of record or Provider designee

**RRT RN or designee

PHSOR MEWS Algorithm



Revised 4-21-2023

Activation of Rapid Response Team for Suspected Stroke

For additional information refer to full Policy: *Nursing Activation of Rapid Response Team for Suspected Code Stroke - Inpatient* in PolicyStat

RESPONSIBLE PERSONS:

Nursing Personnel, Rapid Response Team (RRT)

EXCLUSIONS:

None

ESSENTIAL STEPS IN NURSING PROCESS/ KEY POINTS / OUTCOMES: Copy Link

A. If the bedside nurse discovers new stroke-like symptoms then the bedside nurse will do the following regardless of the time of the last known normal:

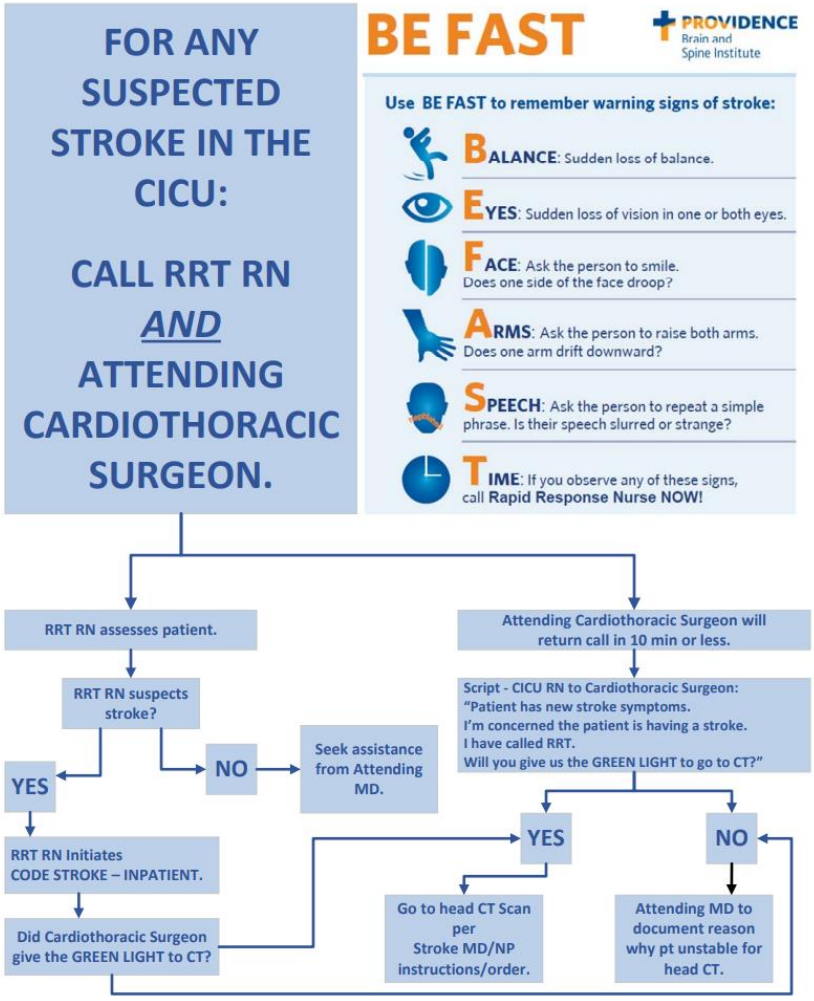
1. Call the Rapid Response Team.
2. Call the attending physician.
3. Important: For patients in CICU with suspected stroke symptoms the bedside nurse will contact the Attending Cardiothoracic Surgeon. The Cardiothoracic Surgeons may elect to cancel neuroimaging in deference to patient safety when indicated following their discussion.

B. If the RRT nurse confirms suspicion of stroke then the RRT nurse will do the following:

1. Call 88 and request "Code Stroke - Inpatient".
2. The RRT nurse will assist in evaluating symptoms and perform an NIHSS. The RRT RN may elect to perform full NIHSS in route to head CT or after head CT in the event of obvious measurable neurological deficit.
3. For patients in CICU the patient will not physically leave the CICU until the Attending Cardiothoracic Surgeon and the Stroke MD/NP have discussed the plan for imaging. If 10 minutes have passed without callback from the Attending Cardiothoracic Surgeon then the patient may leave CICU for imaging if recommended and approved by the Stroke MD/NP.

C. The Acute Stroke Neurologist or NP will be responsible for ordering acute neuroimaging unless logistically unable and in that case will give verbal orders to RRT RN, or other available and qualified individual.

D. Activation of "Code Stroke-Inpatient" does not automatically generate a formal stroke neurology consultation. If full stroke neurology consult is needed it should be ordered through EPIC.



CICU Post-Operative Cardiothoracic Surgery Early Extubation Protocol

For additional information refer to full Policy: *CICU Post-Operative Cardiothoracic Surgery Early Extubation Protocol* in PolicyStat

NURSING PROCESS:

A. Upon Admission to CICU:

1. Discontinue continuous intravenous (IV) anesthetic medication within one hour of arrival
2. Treat pain prior to using sedatives
3. Utilize Fentanyl for pain as first line analgesic
4. RN/LIP/RT will define and communicate goal extubation time

B. Criteria to Initiate Spontaneous Breathing Trial (SBT):

1. Assess for residual neuromuscular blockade by Train-of-Four (TOF) or clinical exam (sustained head lift)
2. Patient is easily arousable with goal RASS -1 to +1
3. Hemodynamically stable or responding appropriately to medical management
4. Chest tube output ≤ 150 mL/hr.
5. Chest X-Ray reviewed by LIP and bilateral breath sounds present
6. FiO2 ≤ 50% and PEEP ≤ 5 cmH2O with stable SpO2 ≥ 92%, if outside parameters, notify LIP
7. Rapid Shallow Breathing Index (RSBI) < 80
    a. RSBI = Respiratory Rate (RR)/Tidal Volume (TV)

C. Criteria for Extubation:

1. Maintains spontaneous TV ≥ 5 cc/Kg (ideal body weight) on PSV +5
2. RR (≥ 10, but ≤ 30 breaths per minute) and SpO2 (≥ 92%) stable
3. Chest tube drainage ≤ 100 mL/hr.
4. Hemodynamics within ordered parameters
5. Alert, follows commands, exhibits effective cough
6. Extubation can be performed in one of the following ways:
    a. One RT and one RN
    b. One RN and CICU Intensivist – if RT is unavailable
    c. Two RNs – if RT and CICU Intensivist are unavailable

D. SBT Failure Criteria:

1. Apnea
2. Spontaneous RR ≤ 8 or ≥ 30 breaths per minute
3. Increasing FiO2 requirements to maintain SpO2 ≥ 92%
4. Spontaneous tidal volumes ≤ 4 cc/Kg
5. Hemodynamic instability not responding to medical therapy
6. Marked distress or dyspnea
7. Significant ECG changes

E. If Patient Fails to Successfully SBT:

1. RT will place patient on previous settings, documented prior to SBT
2. If clinically necessary to restart sedation agents for patient safety, CICU Intensivist or Surgical PA must be notified
3. Attempt trial again in 30-60 minutes or when criteria for failure has resolved
4. Notify CICU Intensivist or Surgical PA if not extubated within 4 hours post-operatively **OR** if failed SBT on 3 separate attem
    a. 0700-1900: Notify CICU Intensivist
    b. 1900-0700: Notify Surgical PA

Open Chest Code

For additional information refer to full Policy: *CC: Open Chest Code* in PolicyStat

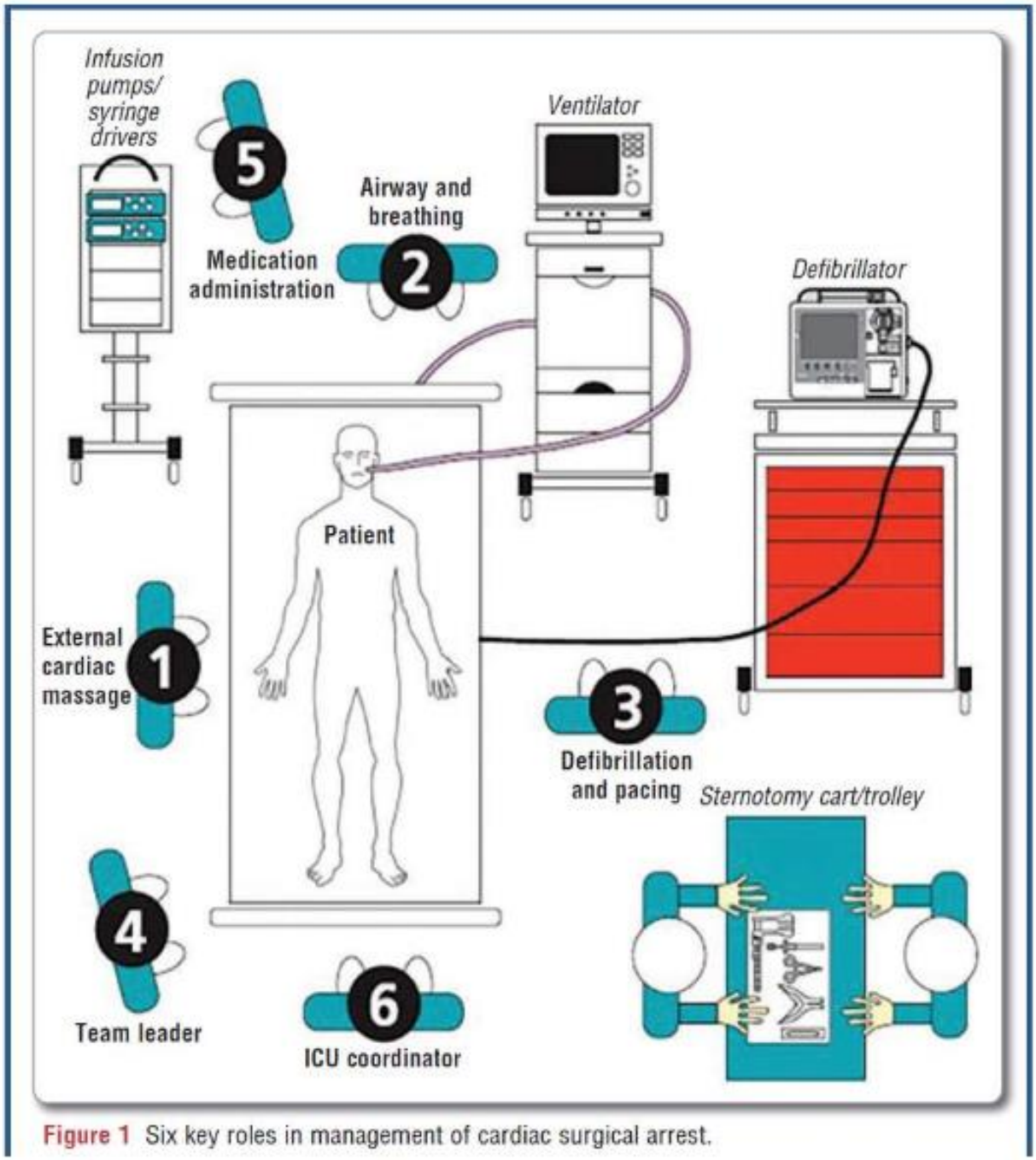
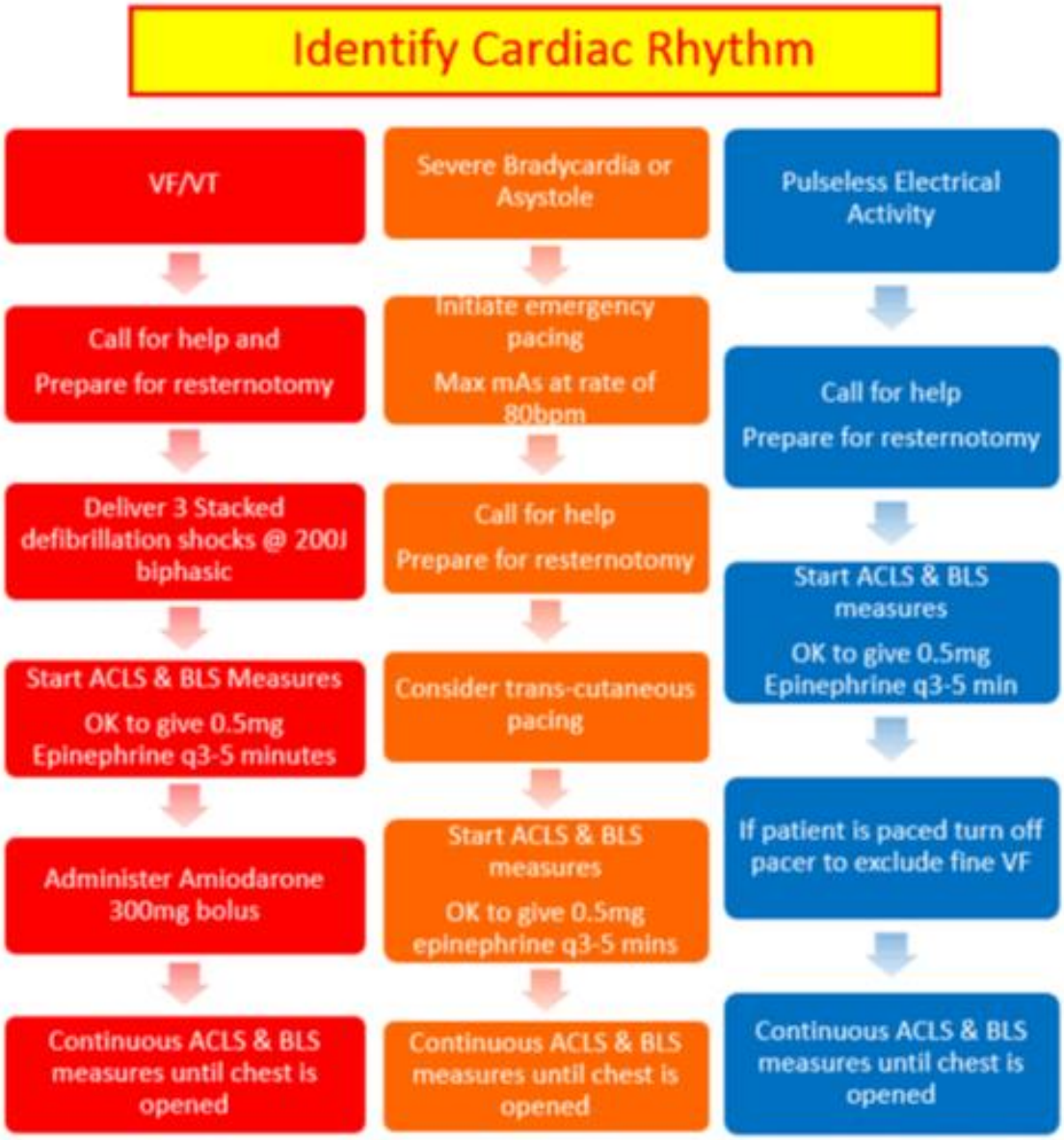


Figure 1 Six key roles in management of cardiac surgical arrest.

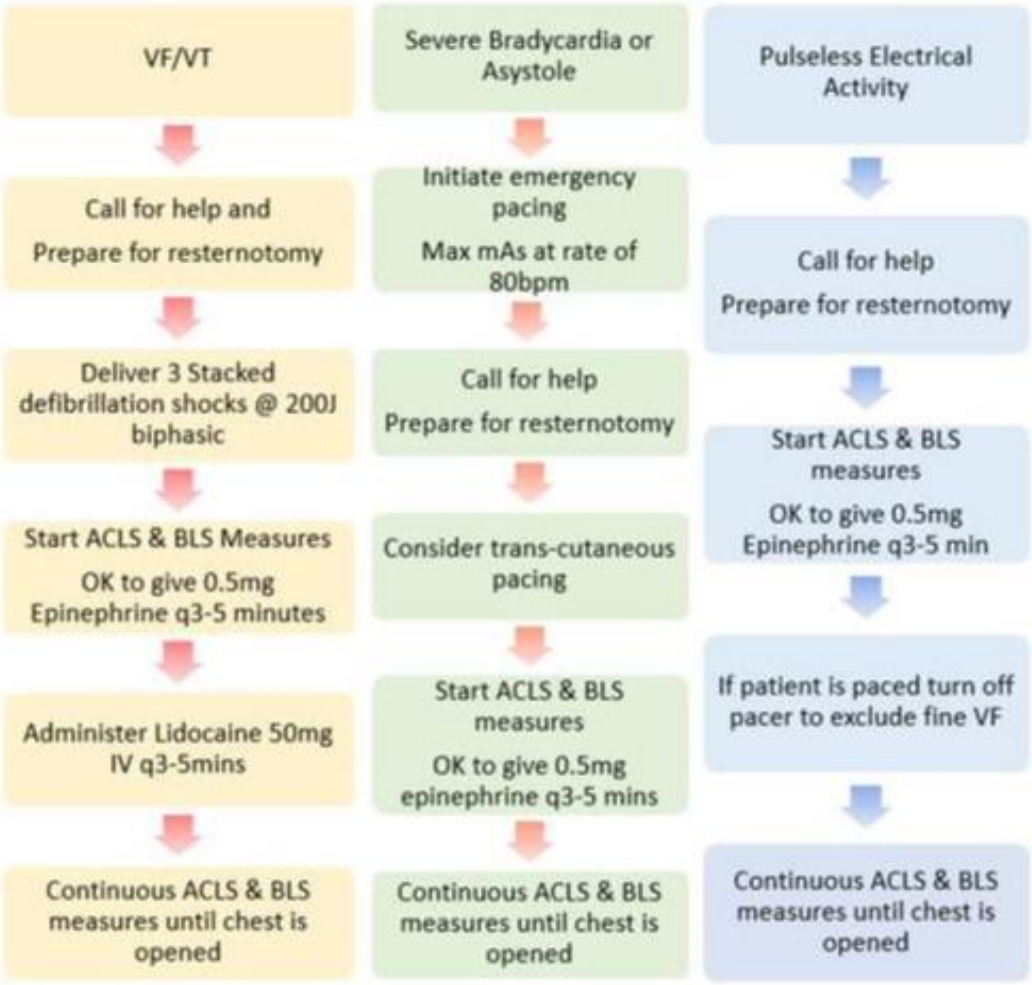
PSVMC Post Open Heart Surgery ACLS



- Airway and ventilation considerations:
  - If ventilated deliver FiO2 100% and turn off PEEP
  - Check ETT placement and cuff inflation by temporarily delivering approximately 10 breaths with bag-valve
  - Listen to breath sounds to rule out pneumothorax or hemothorax
  - Place patient back on ventilator with 100% FiO2 and no PEEP
- Defibrillation should occur in less than one minute from onset of event.
- This process is in effect during CICU stay upon transfer follow ACLS/BLS measures

PSVMC Post Heart Transplant ACLS

Identify Cardiac Rhythm



- Airway and ventilation considerations:
  - If ventilated deliver FiO2 100% and turn off PEEP
  - Check ETT placement and cuff inflation by temporarily delivering approximately 10 breaths with bag-valve
  - Listen to breath sounds to rule out pneumothorax or hemothorax
  - Place patient back on ventilator with 100% FiO2 and no PEEP
- Defibrillation should occur in less than one minute from onset of event.
- This process is in effect during CICU stay upon transfer follow ACLS/BLS measures
- ***Call Dr. Koomalsingh for ANY heart transplant Code Blue***

Heart Transplant Multi-Disciplinary Team Composition and Responsibilities

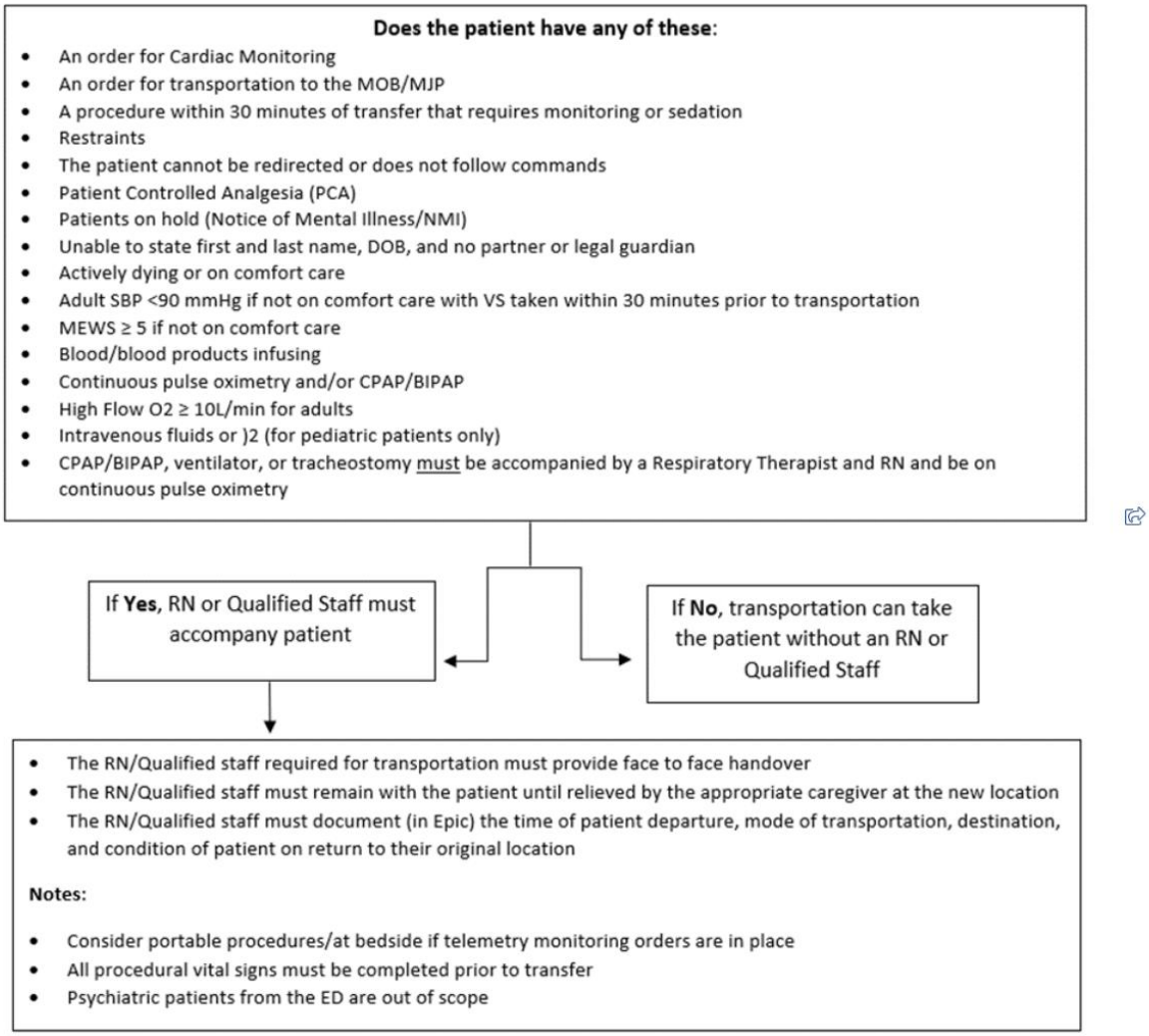
For additional information refer to full Policy: *Heart Transplant Multi-Disciplinary Team Composition and Responsibilities, Post Heart Transplant Discharge Process, Post Heart Transplant Vaccine Recommendations, and other i* in PolicyStat

Nursing: Inpatient Nursing staff are responsible for managing the daily care of the heart transplant patient in all phases

1. Expectations:
    a. Patient education.
    b. Communication with the multidisciplinary team.
    c. Collaboration with heart transplant team on discharge planning.
    d. Participation during inpatient rounding.
    e. CVOR staff will receive specific training regarding ABO verification.
    f. Critical Care staff will receive specific training regarding the immediate post-operative phase following transplant.
    g. Attend program-specific QAPI meetings, ad hoc.

Policy: Transportation of Patients

For additional information refer to full Policy: *Transportation of Patients* in PolicyStat



Care of Post-Thrombolytic and/or Thrombectomy Therapy Patients – Ischemic Stroke

For additional information refer to full Policy: *Care of the Post-Thrombolytic and/or Thrombectomy Therapy Patients – Ischemic Stroke* in PolicyStat

ASSESSMENTS:

1. Assess and document per stroke orders:
    1. Vital signs and neuro checks/SNAP checks (Stroke Neuro Assessment by Providence) = Level of Consciousness (LOC), pupils reactivity, movement of each extremity, and trend of originating neuro symptoms of first NIHSS. (Addendum A: SNAP flyer)
    2. Complete NIHSS
    3. Any side effects noted
2. Assess for neurological deterioration which may be a sign of Intracranial Hemorrhage (ICH).
    1. Onset of new headache, decreased LOC, uncontrolled high blood pressure, nausea or vomiting, worsened neurological exam:
        a. Activate Emergency Response and/or Rapid Response Team (RRT)
        b. Notify provider STAT
3. Assess for other signs of bleeding: hypotension, tachycardia, excessive oozing, ecchymosis, petechiae, abdominal and/or flank pain, hematuria, hemoptysis, or hematemesis and notify provider.
4. Assess for signs of angioedema or oral/tongue hematoma or swelling post thrombolytic administration.
    1. Treat, as ordered, with diphenhydrAMINE, famotidine, methylPREDNISolone AND if angioedema persists OR there is any life-threatening airway issue give subcutaneous or IM EPINEPHrine x 1 STAT (per order)
        a. Activate Emergency Response and/or RRT
        b. Notify provider STAT
        c. Prepare for emergent intubation when EPINEPHrine is needed (per order)
5. For thrombectomy patients, assess vascular access site and peripheral pulses per ministry standard or as ordered.

INTERVENTIONS:

1. Follow defined blood pressure parameters (BP) to reduce risk of hemorrhage (refer to stroke orders)
    1. Post thrombolytic: BP goal to be strictly controlled less than 180/105mmHg, or as ordered.
    2. Post thrombectomy with or without thrombolytic: BP to be strictly controlled less than 160/100mmHg, or as ordered
2. Ensure stroke measures are met:
    1. Perform bedside swallow screen prior to any oral intake
    2. VTE prophylaxis applied and documented
    3. Antithrombotic medication started by end of hospital day 2 and prescribed at discharge, unless contraindicated
    4. Patients with atrial fibrillation or flutter are given anticoagulation at hospital discharge, unless contraindicated
    5. Statin medication prescribed at discharge, unless contraindicated
    6. Stroke education provided and documented and includes: activation of EMS, need for follow-up after discharge, lifestyle changes to manage disease, individual risk factors for stroke, BEFAST warning signs and symptoms of stroke, planning for post hospital care needs
    7. Assessed for rehabilitation services

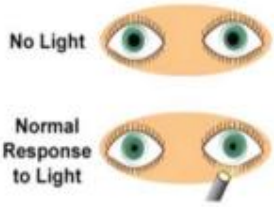
PROVIDENCE
Brain and
Spine Institute

SNAP

Stroke Neuro Assessment by Providence

Level of Consciousness

Defined as 1a, 1b, 1c of NIHSS or GCS



Pupil Reactivity

Movement of Extremities

Defined as 5a, 5b, 6a, 6b of NIHSS

Trend Original Symptoms of First Documented NIHSS

Unsure of first NIHSS or too many deficits?

Do Full NIHSS & Pupil Reactivity

Post Operative Management of Carotid Endarterectomy or Carotid Artery Stent

For additional information refer to full Policy: *Practice Guidelines for Post Operative Management of Carotid Endarterectomy or Carotid Artery Stend* in PolicyStat

ASSESS and DOCUMENT:

In absence of a provider order consider performing the following:

VITAL SIGNS:

- Blood pressure, heart rate, oxygen saturation, and respiratory rate on admission, every 15 minutes x 1 hour, every 30 minutes x 1 hour, every 1 hour x 4 hours, then every 2 hours and PRN changes.
- Temperature every 4 hours and PRN.

NEUROLOGICAL:

- GCS, drift in each extremity, and Cranial Nerve assessment every 15 minutes x 1 hour, every 30 minutes x 1 hour, every 1 hour x 4 hours, then every 4 hours and PRN any neuro change.
    - Cranial nerve assessment to include: pupils size and reaction, visual fields, extraocular movements, facial symmetry, facial sensation, palate symmetry, gag, cough, shoulder shrug, and tongue protrusion.
- NIHSS within 4 hours post procedure, every 4 hours until discharged, and PRN any neuro change.

RESPIRATORY STATUS AND AIRWAY:

- Monitor respiratory effort.
- Monitor for evidence of airway stridor.
- Monitor ability to protect airway.

SURGICAL SITE:

- Evaluate incision site and symmetry every 15 minutes x 1 hour, every 30 minutes x 1 hour, every 1 hour x 4 hours, then every 4 hours and PRN.
- Evaluate posterior neck for dependent drainage.
- Monitor and care for wound drains as ordered.

GENERAL NURSING CARE:

- Maintain continuous EKG monitoring for at least 24 hours.
- Elevated head of the bed to 30 degrees and head in neutral position.
- Maintain strict blood pressure control within parameters ordered.
- Maintain oxygen saturation above 94%, or above 92% in patients at risk for hypercapnic respiratory failure.
- Maintain bedrest if hemodynamically unstable.
- Perform bedside swallow evaluation using standardized protocol to assess for adequate swallow prior to any PO intake, advance diet as tolerated per order.
    - If patient fails bedside swallow evaluation: keep patient NPO and place order for speech pathology consultation.
- Diabetic patients: ensure glucose is monitored and treated to keep less than 180mg/dL, avoid hypoglycemia.
- Ensure antiplatelet medications are administered as ordered.

POST OPERATIVE COMPLICATIONS

Notify the provider immediately if any of the following occur:

- Surgical site hematoma, neck asymmetry or tracheal deviation.
    - bleeding into the surgical bed can compress the trachea and obstruct the airway
- Evidence of airway stridor or respiratory distress.
    - a sign of swelling or bleeding causing compression on the trachea and can progress to airway obstruction
- Impaired gag reflex, difficulty swallowing, facial asymmetry, abnormal pupillary response, change in speech, other cranial nerve impairments or changes in the NIHSS.
    - cranial nerve injury can occur due their proximity to the carotid surgical site or from a stroke secondary to the surgery.
- Hypotension and/or bradycardia
    - due to manipulation of the carotid baroreceptors
- Hypertension
    - due to manipulation of the carotid baroreceptors or anesthesia effects and/or history of hypertension
- Significant unilateral headache, change in level of consciousness, seizure, nausea or vomiting.
    - this may be a sign of intracerebral hemorrhage from cerebral hyperperfusion syndrome.
- Signs or symptoms of infection at surgical site

ARTERIAL ACCESS SITE MANAGEMENT:

- Femoral Access:
    - Bedrest as ordered, length of bedrest is dependent on if closure device was used and complications noted at site.
    - Monitor for signs of hematoma formation and complications related to procedure.
        - vasovagal response, retroperitoneal/bleeding, pseudo aneurysm.
    - If sheathe is present or closure device was used, refer to Procedure #76, AACN Procedure Manual for High Acuity, Progressive, and Critical Care 7th Ed. (2017)
- Radial Access: Refer to Procedure #77, AACN Procedure Manual for High Acuity, Progressive, and Critical Care 7th Ed. (2017)

MANAGEMENT POST TRANSCAROTID ARTERY ACCESS:

Guidelines above are followed, there is less risk of cranial nerve injury with this procedure.

PATIENT EDUCATION:

- Give patient stent information and stent identification card.
- Provide stroke education, risk factor management, and signs and symptoms (teach BE FAST acronym).
- Provide arterial access management education for discharge if indicated.
- Review medications for post procedural care.
- Review physical activity limitations.

Ceribell EEG (Adult)

For additional information refer to full Policy: *Rapid Detection of Non-Convulsive Seizures Using Ceribell EEG (Adult)* in PolicyStat

To be trained in the application of the Ceribell device, an RN must:

A. Complete the HealthStream initially
B. Return demonstrates application of device initially

SPECIAL CONDITIONS

A. The Ceribell EEG monitor is not CT or MRI compatible. Remove the Ceribell recorder and accessories in the patient room prior to CT or MRI. Replace upon returning to patient's room.
B. The Ceribell EEG monitor is not compatible with defibrillation. Remove the Ceribell recorder and accessories prior to defibrillation.
C. During Brain stethoscope use, an activity moving patient can cause EEG artifact and false alerts.
D. Ceribell can be used on a patient with a craniectomy without a bone flap in emergent situations with the neurosurgeon's approval. This would require close monitoring and careful placement by a provider.

DIRECTIONS

A. The Ceribell EEG system is used only with an order from a neurologist in a clinical setting where there is concern that the patient is having signs and symptoms consistent with seizure activity or there is a concern for nonconvulsive seizures when standard CEEG is not immediately available or after hours.
B. Ceribell can be ordered between 2200 and 0600, otherwise, a standard CEEG study should be obtained whenever possible.
C. Ceribell inclusive populations:
    1. Recent clinical seizure or convulsive status epilepticus without return to baseline
    2. Patient with persistent altered mental status due to CNS problems, such as
        a. Infection
        b. Trauma
        c. Stroke
        d. Tumor
        e. Anoxic injury
    3. Persistent altered mental status without an explanation
    4. Episodic or repetitive movements that are concerning for seizures
    5. Post cardiac arrest with persistent altered mental status after resuscitation
    6. Rule out non-epileptic seizures
D. Ceribell exclusions:
    1. Elective outpatient EEG testing
    2. Diagnosing and/or managing epilepsy
    3. Open wounds with exposed brain or infected flap
    4. Neonates
E. The recommended duration of Ceribell EEG is 2 to 12 hours. Can be used up to 24 hours. Average usage is 3-4 hours. The ordering provider will determine the duration based on clinical need.

Administration of Peripheral IV Vasopressor in Adult Patients

For additional information refer to full Policy: *Administration of Peripheral IV Vasopressors in Adult Patients* in PolicyStat

POLICY

SAFETY MEASURES FOR PERIPHERAL ADMINISTRATION OF VASOPRESSORS

- The maximum recommended duration of any vasopressor medication administered peripherally is **24 hours.**
    - Provider may determine it is necessary to exceed this recommendation (order required).
- The maximum recommended vasopressor doses for peripheral administration are listed below (See Medications section).
    - Provider may determine it is necessary to exceed these recommendations (order required).
- The maximum vasopressor concentrations for peripheral administration listed below shall not be exceeded (See Medications section).
- Provider shall assess whether central line placement is required for vasopressor administration based upon peripheral line criteria below.

Peripheral line criteria

- Recommend use of a 20-gauge or larger IV catheter
- Follow PIV placement recommendations as outlined in Peripheral IV Insertion - Adult
    - Line placement shall be in the forearm or upper arm contralateral to the blood pressure cuff.
        - Placement in an alternative location requires provider order.
    - Do not use lines in areas of flexion (e.g. hand, wrist, antecubital fossa) for vasopressor administration.
- One PIV must be dedicated to the administration of a single vasopressor.
    - A central line should be considered if administration of more than one vasopressor is required.
    - No other medications should be administered in the vasopressor line.
- Patient should have a minimum of **two peripheral intravenous** lines when vasopressor will be administered via PIV.
- Midline catheters may not be used for peripheral administration of vasopressors.

MEDICATIONS

- The following vasopressors and concentrations may be administered via peripheral intravenous lines.
- **Vasopressors not on this list are restricted to central line administration.**

Vasopressor	Recommended Maximum Peripheral Concentration	Recommended Maximum Peripheral Dose
DOPamine	1600 mcg/mL	10 mcg/kg/min
EPINEPHrine	20 mcg/mL	10 mcg/min
Norepinephrine	16 mcg/mL	20 mcg/min
Phenylephrine	400 mcg/mL	250 mcg/min
Vasopressin	0.2 units/mL	0.04 units/min

Impella Devices

For additional information refer to full Policy: *Percutaneous Ventricular Assist Device – Abiomed Impella Devices* in PolicyStat

General patient considerationsCopy Link

- Chest x-ray completed upon arrival to the CICU to verify position.
    - Ensure outlet is at or above the bifurcation of the right and left PA branch.
    - Ensure inlet is positioned in the IVC at the level of the diaphragm or apex of heart and away from RA and TV.
- Do not use thermodilution cardiac output or continuous cardiac output monitoring as they are not accurate when the Impella RP is in use. FICK cardiac output calculation must be performed for accurate assessment.
- Monitor placement signal and motor current to detect inlet/outlet obstruction and suction events. Pay attention to alarms.
- Manage patent fluid status/preload to obtain acceptable target flows; maintain a positive CVP.
- Reduce air entrainment risks via venous access sites by maintaining occlusive dressings on all applicable sites and caps on all IV lines.
- Chart routine Impella device operational parameters every hour as per protocol.
- Head of bed should remain <30 degrees; reverse Trendelenburg is acceptable.
- Device should be maintained at P6 or higher unless actively weaning.

RN Daily Management

1. Assess Impella access site, distal pulses, involved extremity color, and motor/sensation (CMS) every 1 hour.
2. Observe insertion site for bleeding and hematoma.
3. Assess Impella position using the motor current as displayed by the AIC.
4. Observe and document the external measurement marking at the insertion site.
5. Dressing change per "Clinical Reference Summary: Prevention of Central Line Associated Blood Stream Infection – Adult & Pediatric Bundle."
    1. For all axillary access, use 2 Foley Anchors/Driveline Securement Kits to secure at two anchor points onto torso.
6. For 5.0 or LD, placement signal range: 20-60/+-6

- Differential Placement Sensor: Diastole/Systole
    - More pressure across aortic valve in diastole than systole.
- If outside of this range:
    - If patient stable, re-zero PS by selecting:
        - Menu: Start Manual Re-zero
    - If PS still not within range use Mean Motor Current Flow Estimation Chart to document Impella Flow. DO not use the Impella flows displayed in lower left corner.
    - If alarms indicate "placement signal failure", device will calculate Impella flows based on MAP and display in lower left corner.

Continuous Renal Replacement Therapy (CRRT) Management

For additional information refer to full Policy: *Continuous Renal Replacement Therapy (CRRT) Practice Guideline* in PolicyStat

Dialysis nurse or credentialed critical care nurse responsibilities:

1. Follow steps listed in Lippincott: Continuous renal replacement therapy (CRRT)
2. Prime and set up circuit per manufacturer instructions, including appropriate anticoagulation
    a. NOTE: Anticoagulation requirements may not be included in Lippincott Procedure Manual.
3. Monitor filter pressure drop. If the pressure is more than 90 mmHg above the initial recorded filter pressure drop, filter clotting is imminent. Return blood to patient using return blood procedure as described by manufacturer instructions.
4. Monitor Trans-Membrane Pressures (TMP): Once the TMP reaches 450mm Hg the CRRT blood pump will stop. Changes in blood flow rates, patient fluid removal rates and CRRT replacement fluid rates will affect TMP. If prescribed rate changes cause an increase in TMP that may stop blood pump: return to previous settings and notify Nephrologist. As the filter membrane becomes occluded TMP pressures will also increase. Before TMP reaches 400mmHg, return blood to patient using 'return blood procedure' as described above.
5. Monitor de-aeration chamber every hour. Adjust blood air interface level as needed using screen soft key "tools" and press up or down key for desired effect.

Anticoagulation with Citrate:

1. Initiate Citrate infusion and Calcium replacement infusion per MD order.
2. If CRRT blood pump stops, immediately stop calcium infusion pumps.
3. Systemic ionized calcium will be drawn as ordered and used to titrate the calcium infusions using the calcium replacement sliding scales in physician order.
4. Follow order sets to determine timing of repeat lab draws.

Anticoagulation with Heparin:

1. Heparin infusion per MD order.

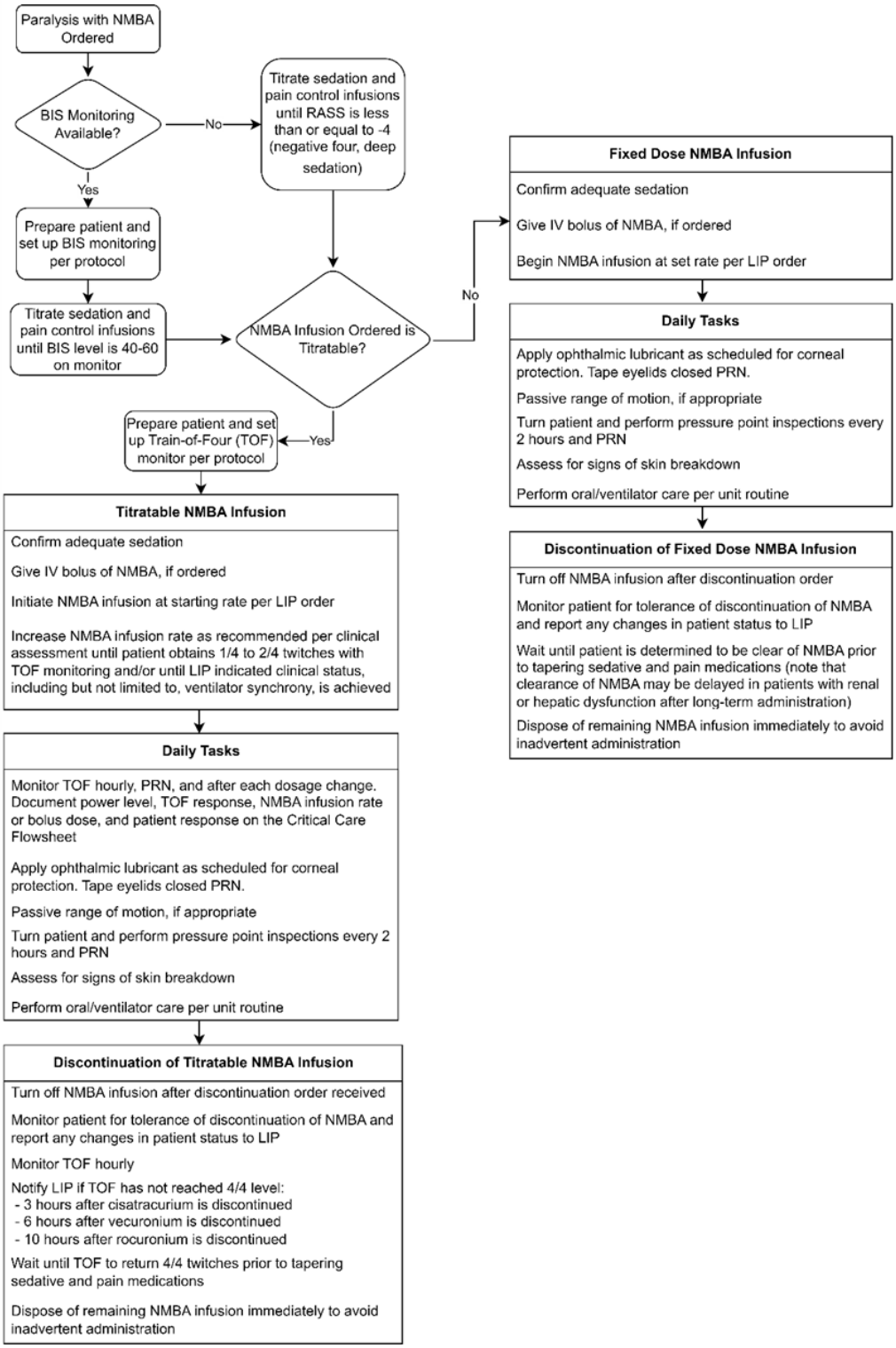
Anticoagulation with Argatroban:

1. Argatroban infusion per MD order.
2. See Addendums A and B for ECMO configurations.

Continuous Infusion of Neuromuscular Blocking Agents (NMBA) in Critical Care Patients

For additional information refer to full Policy: *Continuous Infusion of Neuromuscular Bocking Agents (NMBA) in Critical Care: Adults* in PolicyStat

ADDENDUM C: Management of Patient on Continuous NMBA Infusion Algorithm



Procedural Sedation

Moderate & Deep Procedural Sedation by Non-Anesthesia LIP - Adult

For additional information refer to full Policy: *Moderate & Deep Procedural Sedation by Non-Anesthesia LIP - Adult*

POLICY STATEMENT:

A. This policy outlines procedures and guidance for adults requiring moderate or deep procedural sedation.
B. **Moderate Procedural Sedation**: Only a licensed independent practitioner (LIP) privileged in moderate sedation OR a moderate sedation trained RN may administer moderate procedural sedation.
C. **Deep Procedural Sedation**: Only a LIP privileged in deep sedation OR a deep sedation trained RN may administer deep procedural sedation.
D. A sedation privileged LIP OR a sedation trained RN must be present at the patient's bedside throughout the administration of sedation.
E. The RN administering moderate or deep procedural sedation must be trained.
F. The RN monitoring a patient receiving moderate or deep procedural sedation:
    a. The patient must be monitored continuously without interruption for the duration of the procedural sedation.
    b. Should have no competing responsibilities that would compromise continuous monitoring and assessment of the patient during a sedation episode.
    c. The RN may not leave the patient unattended or perform other tasks that would compromise patient monitoring.
    d. If the sedation trained RN needs assistance with the procedure, a second team member is to be assigned to the patient (NOTE: The second member does NOT need to be trained in procedural sedation but must be able to effectively recognize patient decompensation resulting from procedural sedation and provide rescue interventions within scope of practice).
G. If post-procedure care and safe transportation home cannot be arranged, the procedure may be canceled except for urgent/emergent procedures according to the established definitions for such procedures.

Pre-Procedure

A. The sedation privileged Provider is responsible for:
    a. Obtaining informed consent and PARQ (Procedure, Alternatives, Risk, and Questions) for the patient receiving moderate or deep sedation
    b. Documenting the history and physical, noting vital signs, airway assessment, patient anesthesia experience, medications, allergies, and any pertinent diagnostic data.
    c. Documenting the pre-sedation assessment
    d. Documenting and assessing the patient's risk for obstructive sleep apnea using STOP-BANG (Snoring, Tiredness, Observed Apnea, Pressure, Body Mass Index, Age, Neck Circumference, and Gender) assessment
    e. Documenting the Mallampati assessment
    f. Documenting the ASA assessment
B. The sedation trained RN is responsible for:
    a. Verifying and documenting NPO status based on the ASA Fasting Guidelines
    b. Documentation of time-out procedure
    c. Vital signs (e.g., blood pressure (BP), respiratory rate (RR), heart rate (HR), rhythm), pain, sedation level using the Ramsay or Richmond Agitation Sedation Scale (RASS) scale, end-tidal CO2 (ETCO2) and pulse oximetry (O2 sat) are evaluated, documented, and communicated to the LIP immediately prior to initiation of sedation.
    d. Patent IV access
    e. Emergency Life Support Cart *(Code Cart)* with defibrillator and intubation supplies will be immediately available.

f. Equipment required: Airway management tools (e.g. Supplemental oxygen source, nasal cannulas, simple masks, bag/valve mask, suction with suction cannulas) and cardiac monitoring equipment.
g. Reversal agents are to be at the patient's bedside prior to beginning the procedure. (NOTE: Not all sedation medications have reversal agents).
h. *Planned outpatient procedure only*: Verification of a designated lay caregiver to escort the patient home
i. Patient education
j. Plan of care
k. An adult with an ASA score of 3 or greater, a BMI > 40, and/or a Mallampati score of 3 or 4 have higher risk for respiratory compromise and may require closer monitoring and/or additional support. The provider and registered nurse must consider whether sedation and monitoring would be more appropriately managed by an anesthesiologist/CRNA based upon patient's individual care needs.

Intra-Procedure Monitoring and Documentation

SUMMARY: INTRA-PROCEDURE MONITORING & DOCUMENTATION	
MONITORING	**FREQUENCY**
• Electrocardiogram (ECG) • Heart rate • Ventilatory status, including respiratory rate, oxygen saturation, and end-tidal carbon dioxide (ETCO2). • Blood pressure (e.g. Every 5 min) • Sedation status (Ramsay or RASS scale) **Continuous monitoring must be plainly visible to the person responsible for monitoring the patient**	Continuously
DOCUMENTATION	**FREQUENCY**
HR, BP, RR, O2 sat, ETCO2	Every 5 min
AND	
Sedation level (Ramsay or RASS scale) **pre-goal**	Every 5 min
Sedation level (Ramsay or RASS scale) **at goal**	Every 5 min
If change in patient condition: HR, BP, RR, O2 sat, ETCO2 AND Sedation level (Ramsay or RASS scale)	Every 5 min until patient condition stabilizes

Post-Procedure Monitoring and Documentation

SUMMARY: POST PROCEDURE MONITORING & DOCUMENTATION	
MONITORING	**FREQUENCY**
• Electrocardiogram (ECG) • Heart rate • Ventilatory status, including respiratory rate, oxygen saturation, and end-tidal carbon dioxide (ETCO2) • Blood pressure (e.g., Every 5 min) • Sedation level (Ramsay or RASS scale)	Continuously
DOCUMENTATION	**FREQUENCY**
HR, BP, RR, O2 sat, ETCO2, sedation level (Ramsay or RASS scale), ECG (when included in plan of care)	Every 15 min
Aldrete score	Every 15 min

Discharge after Sedation:

A. Patient may be discharged from the procedural area (e.g., transfer to inpatient unit) when:
   a. Aldrete score of at least 8 or greater (or pre-procedure score if baseline is < 8).
   b. Patient is alert and oriented (or mental status returned to baseline level or orientation).
   c. Protective reflexes have returned to pre-procedure function
   d. Vital signs and respiratory functions are stable (pre-procedure range) with adequate end-tidal CO2 and O2 saturation.

B. Patient may be discharged from the facility (e.g., home) when:
   a. Drinking liquids and/or eating a light snack without nausea or vomiting
   b. Ambulating without dizziness
   c. Voiding without problems
   d. Post-procedure pain plan in place
   e. If reversal agent is used, a sufficient duration of monitoring completed to ensure re-sedation does not recur (e.g., approximately 2-hours or more, based upon patient condition).
   f. Patient is discharged to the care of designated lay caregiver who will accompany/drive them home and be able to report any post-procedure complications

Moderate & Deep Sedation by Trained RN

Pertinent Policies: For additional information, review the following policies once you are ON-SITE (these require a PSJH login to access):

Moderate & Deep Procedural Sedation by Non-Anesthesia LIP - Adult

Emergency Department Protocol for Moderate (Conscious) Procedural Sedation- Ketamine (Hood River) (only for use at Hood River site)

Moderate Sedation for Pediatric Population

Deep Procedural Sedation for Pediatric Patients

- All RNs administering procedural sedation will be trained to do so.
- All RNs will comply with the Oregon State Board of Nursing Interpretive Statement on procedural sedation (**can** be accessed without a PSJH login).
- Complete online Modules (**can** be access without a PSJH login):
    - Module: Procedural Sedation (Moderate and Deep) - Adult
    - Module: Procedural Sedation (Moderate and Deep) - Pediatric
- Any RN providing continuous patient monitoring during a procedural sedation episode will complete and maintain BLS and ACLS certification. In areas where pediatric patients receive sedation, PALS certification is required. In areas where pediatric patients are exclusively treated, ACLS is not required.