

Procedural Sedation - Adult Patients

Providence

This course provides an overview of procedural sedation for adult patients.

You will review information on each topic and then be presented with questions to test your understanding.

Course and Concepts

LEVELS OF SEDATION & CAPNOGRAPHY

Content - Levels of Sedation Defined

Levels of Sedation Defined Review

Content - Capnography: End Tidal CO_2 Monitoring During Sedation

Capnography: End Tidal CO_2 Monitoring During Sedation Review

PRE/INTRA/POST SEDATION CONSIDERATIONS

Pre-Procedure Sedation Considerations

Content - Intra-Procedure Sedation Considerations

Intra-Procedure Sedation Considerations Review

Content - Post-Procedure Sedation Considerations

Post-Procedure Sedation Considerations Review

PHARMACOLOGY

Content - Pharmacology

Pharmacology Review

SEDATION COMPLICATIONS & RESCUE FOR ADULT PATIENTS

Content - Sedation Complications & Rescue for Adult Patients

Sedation Complications & Rescue for Adult Patients Review

CONCLUSION

Conclusion

Course and Concepts

Course Format

You will review information on each topic and then be presented with questions to test your understanding.

All activities must be completed before moving on to the next section.

The key concepts in this course are:

- Identify and describe the indications for use and desired outcomes in procedural sedation.
- Describe the sedation continuum.
- Define capnography.
- List at least one benefit that capnography offers that pulse oximetry does not.
- Differentiate between normal and abnormal capnography wave forms.
- List at least two potential causes for a loss of wave form.
- Identify potential actions to take if a patient's $EtCO_2$ is rising.
- Name the drugs most commonly used in sedation.
- Explain the clinical considerations with the drugs used in sedation.
- Identify the recommended doses and side effects of the drugs used in sedation.
- List considerations needed in drug administration in the geriatric populations.
- State the role of the RN during the procedural sedation process.
- Verbalize use of the ASA Classification Risk Assessment Tool.
- Relate the necessity of documented airway assessment by the Licensed Independent Practitioner [LIP] (Mallampati).
- Describe the pre-intra-post nursing management of the patient undergoing procedural sedation.
- Identify the equipment required for procedural sedation procedures.
- State when to use the Ramsay and Aldrete scales.
- List potential complications of procedural sedation.

- Identify first line emergency interventions required for the most commonly seen sedation complications.

CONTINUE

Content - Levels of Sedation Defined

Continuum of Sedation



Analgesia and sedation comprise a continuum.

It is not always possible to predict how an individual will respond.

The RN must be prepared to care for the patient if a deeper than intended level of sedation is attained.

Four Levels of Sedation

Before you peek at the answers below, can you name the four levels of sedation in order, beginning with the state of awake?



- American Society of Anesthesiologists



- American Society of Anesthesiologists

Minimal Sedation



- American Society of Anesthesiologists

Moderate/Dissociative Sedation



- American Society of Anesthesiologists

Deep Sedation



- American Society of Anesthesiologists

General Anesthesia

Review each of the question marks above before moving on.

Select each section below to review the definitions of each of the four levels of sedation.

Minimal Sedation

- A drug-induced state in which patients respond normally to verbal commands
- Cognitive function and coordination may be impaired
- Respiratory and cardiovascular functions are unaffected
- Patient has normal eye movements, respiratory rate and effort, and intact protective reflexes



Dissociative Sedation

- A trance-like cataleptic state in which the patient experiences profound analgesia and amnesia
- Airway protective reflexes, spontaneous respirations, and cardiopulmonary stability are all maintained

- Ketamine is the pharmacologic agent used for procedural sedation that produces this state

Moderate Sedation

- A drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation
- No interventions are required to maintain patent airway or adequate respirations
- Cardiovascular functions and protective reflexes are usually maintained

Desired Outcomes:

- Primary objective/outcome: reduce the patient's anxiety and discomfort
- Produce amnesia
- Enhance patient's cooperation
- Maintain stable vital signs
- Allay fear and anxiety with minimal medication
- Rapid recovery from the procedure



Deep Sedation

- A drug-induced depression of consciousness during which patients cannot be easily aroused, but respond purposefully following repeated or painful stimulation
- Patients may need assistance in maintaining a patent airway and respirations may be inadequate
- Cardiovascular function is usually maintained

Desired Outcomes:

- Primary objective/outcome: drug-induced decrease of consciousness that allows for comfort in an otherwise painful medical procedure
- Patient cannot be easily aroused but can respond purposefully following repeated or painful stimulation



Anesthesia

- A drug-induced loss of consciousness during which patients are not arousable, even with painful stimulation
- Patent airway, adequate respirations, cardiovascular functions may be impaired and often require assistance
- Requires an Anesthesiologist/anesthesia provider



Expand and review the content above before moving on.

Four Levels of Sedation - Defined

System	Minimal Sedation	Moderate/Dissociative Sedation	Deep Sedation	General Anesthesia
Response LOC	Normal response to verbal stimulation	Drowsy; purposeful response to verbal or tactile stimulation	Purposeful response following repeated or painful stimulation	Unarousable even with painful stimulus
Airway	Unaffected	Unarousable even with painful stimulus	Intervention may be required	Intervention often required
Spontaneous ventilation	Unaffected	Adequate	May be inadequate	Frequently inadequate
Cardiovascular function	Unaffected	Usually maintained	Usually maintained	May be impaired

CONTINUE

Levels of Sedation Defined Review

Select All That Apply:

RN responsibilities during a procedure requiring moderate sedation include:

- [ ] Assisting the Licensed Independent Practitioner (LIP) with the procedure
- [ ] Continuous monitoring of patient status, including vital signs and level of sedation
- [ ] The administration of medication ordered by a qualified LIP

SUBMIT

Multiple Choice:

The desired outcomes for moderate sedation include:

- ◯ Reduction of patient anxiety and discomfort with minimal medications
- ◯ Produce amnesia and maintain stable vital signs
- ◯ Enhance the patient's cooperation
- ◯ Rapid recovery from the procedure
- ◯ All of the above

SUBMIT

Multiple Choice:

Which of the following is **NOT** a goal of procedural (moderate) sedation?

- ◯ Guard patient safety and welfare
- ◯ Maintain adequate sedation with minimal risk
- ◯ Allay patient fear and anxiety
- ◯ Produce an unconscious patient

SUBMIT

True or False:

Deep sedation requires a LIP who is certified in deep sedation to be present during the procedure.

- ◯ True
- ◯ False

SUBMIT

Multiple Choice Scenario:

Your patient assessment findings are the patient is in a drug induced depression of consciousness but can respond to verbal commands. The patient can maintain his airway and respirations and pulse oximetry readings are 93% with the protective reflexes intact.

Which level of sedation is the patient in?

- ◯ Minimal sedation
- ◯ Moderate sedation
- ◯ Deep sedation
- ◯ General anesthesia

SUBMIT

Multiple Choice Scenario:

Your patient is receiving moderate sedation for the closed reduction of a fracture of the right tibia. Halfway through the procedure the patient's heart rate increases to 140, respirations increase to 24, he is moaning and crying out in pain. He can respond to verbal commands and his protective reflexes remain intact.

What level of sedation is the patient exhibiting?

- ◯ Minimal sedation
- ◯ Moderate sedation
- ◯ Deep sedation

- General anesthesia

SUBMIT

Multiple Choice:

Which of the following is **NOT** a characteristic of moderate sedation?

- Patient is easily arousable
- Minimally depressed level of consciousness
- Patient is unable to purposely respond to verbal stimuli
- Protective airway reflexes are maintained

SUBMIT

Multiple Choice:

Expected outcomes of moderate sedation may include all of the following **except**:

- A calm, cooperative patient
- A sleepy but easily arousable patient
- A sleepy patient who requires a chin lift to maintain a patent airway
- Amnesia related to the procedure

SUBMIT

Multiple Choice:

The primary purpose for using moderate sedation is to:

- ◯ Reduce the number of involuntary muscle spasms
- ◯ Support cardiovascular functions and depress consciousness
- ◯ Decrease anxiety and discomfort during an invasive procedure
- ◯ Reduce chance of seizures in patients during an invasive procedure

SUBMIT

Complete the content above before moving on.

Content - Capnography: End Tidal CO_2 Monitoring During Sedation

Benefits of Capnography

Click or tap the box to the left of each statement to mark it as read. Review all to move on.

- [ ] Improved ventilation assessment
- [ ] Assessment of blood flow
- [ ] Protection from misplacement of tubes
- [ ] Ventilation monitoring
- [ ] Avoiding poor outcomes (e.g., oversedation during sedation)
- [ ] Avoiding unnecessary tests (e.g., ABGs)

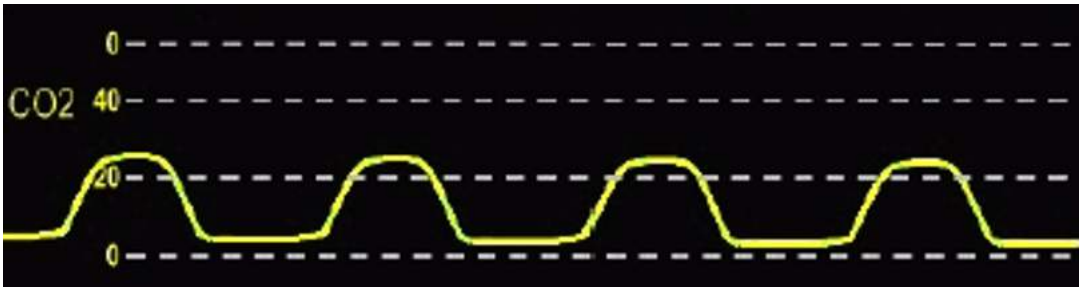
Complete the content above before moving on.

What is Capnography?

Capnography is the non-invasive measurement and numerical display of End-tidal CO_2 ($EtCO_2$), or the maximum expired CO_2 concentration during a respiratory cycle.

In an effective $EtCO_2$ tracing, note the rise and fall of expired CO_2 with each breath.

The normal range for $EtCO_2$ is 35-45 mm Hg



Waveform graphic courtesy of Covidien

Measuring Capnography

Exhaled carbon dioxide can be measured using various devices. The capnography equipment shown below are used to measure $EtCO_2$.

*These **examples** of capnography equipment **may not be representative of the equipment used at your ministry**.* **Be sure to familiarize yourself with the equipment you will be using.**









Oxygenation versus Ventilation



Pulse oximetry is used every day in the hospital setting, **but it is not enough to predict impending decline of a patient's pulmonary status!**

Case Study

Case Study

Let's review a patient scenario. You will want to consider what findings are expected and what findings are concerning to you. Think about whether important data is missing.

Click or tap the button below to get started!

Case Study - Mr. Wu



You are providing sedation and monitoring for Mr. Wu for a colonoscopy.

Mr. Wu is 78 with history of COPD and diabetes.

Prior to the procedure, you administer Versed 2 mg and Fentanyl 50 mcg IV.

Case Study - Mr. Wu

	11:15 Medication Administered	11:30 Mid-Procedure	11:45 Post-Procedure
RR	20	24	16
SpO_2	94%	94%	92%
$EtCO_2$	46	54	62

Monitoring Values

According to these values shown above, does Mr. Wu need any intervention? If you believe so, what would you do?

Click or tap the right arrow to the next screen when you are ready.

Case Study - Mr. Wu



If you said yes, you would be correct!

The procedure is over, yet Mr. Wu's CO_2 is still rising, his respiratory rate is decreasing, and his PaO_2 is dropping.

There are actually four interventions to consider. Can you name them all?

Jump to the last slide to see if you did!

Case Study - Mr. Wu

Interventions to consider:

- Stimulate him
- Insert an oral airway
- Neck/jaw positioning
- Watch for the need of drug reversal

Actions for abnormal $EtCO_2$

Alert the LIP of the patient's status and your concern:

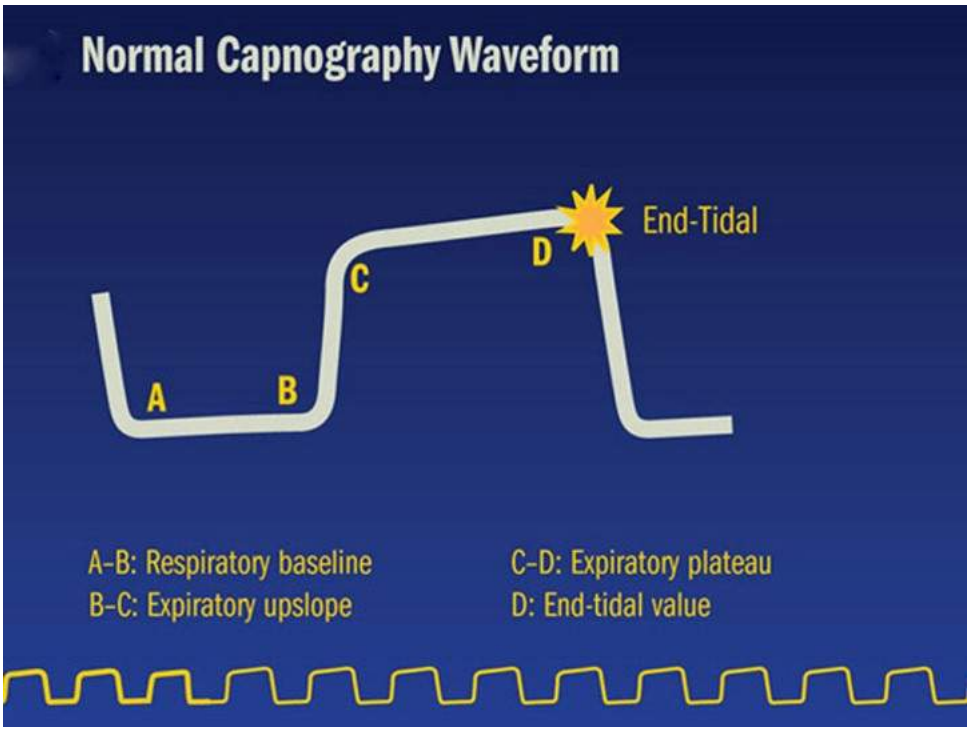
- If the $EtCO_2$ is high (e.g., > 50 mmHg), consider either inadequate ventilation or oversedation
- If the $EtCO_2$ is low (e.g., < 10 mmHg), consider partial or complete airway obstruction or loss of cardiac output

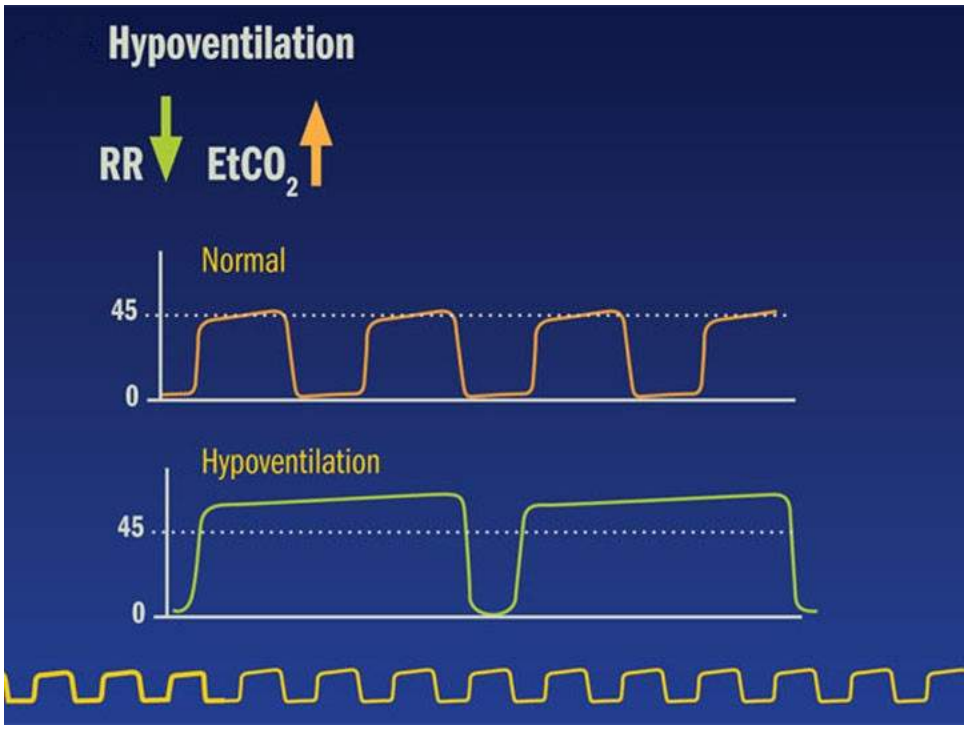
Interventions to consider include:

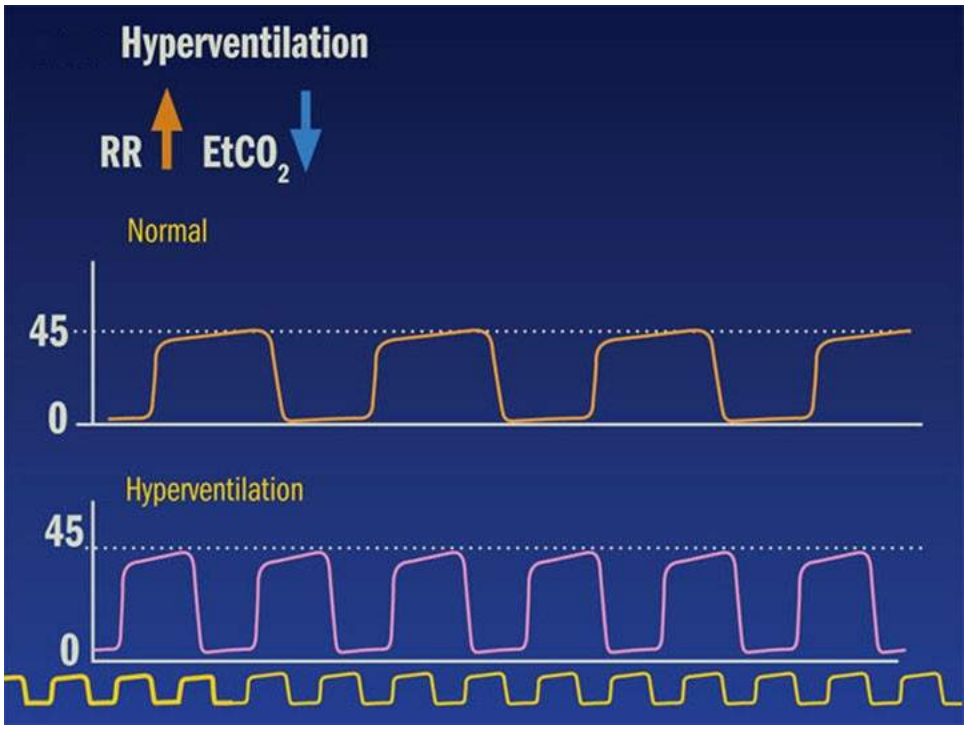
- Assess upper and lower airway patency and treat any obstruction or bronchospasm
- If concerned about decreased cardiac output, assess BP and pulse
- Treat per LIP order

Review both case studies above before moving on.

Capnography Wave Forms and Values







Waveform graphics courtesy of Covidien

CONTINUE

Determining Causes of Abnormal Wave Forms & Values

Abnormal wave forms may be seen during sedation. It is important to identify potential causes of these changes.



In the event of an abnormal wave form, check the equipment and the patient status

- Some abnormal wave forms can be due to poor connections, artifact, and misplaced cannulas rather than patient condition
- **Remember to check *both* equipment and patient!**

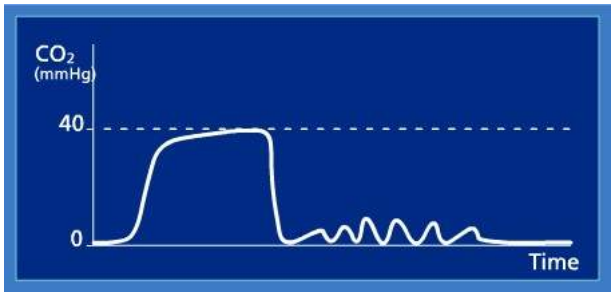
Select each section below to determine the causes of abnormal wave forms.

Abnormal Waveform - Loss of Waveform _

Sudden loss of waveform and $EtCO_2$ to zero or near zero means no respiration is detected!

Possible causes:

- Kinked or displaced cannula (check equipment first!)
- Apnea
- Very shallow respirations
- Total airway obstruction

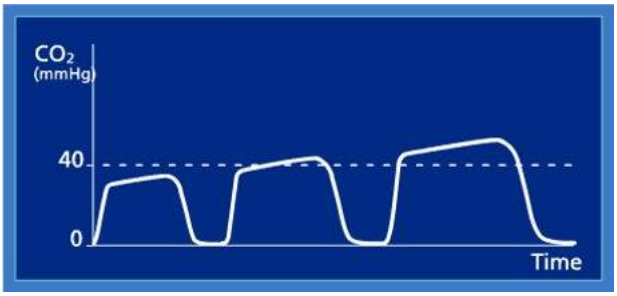


Abnormal Waveform - Increasing $EtCO_2$ Values

Gradual decrease in $EtCO_2$ with normal waveform indicates CO_2 production, or decreasing systemic or pulmonary perfusion

Possible causes:

- Hypoventilation due to analgesia or sedation
- Sudden increase in delivery of CO_2 to pulmonary circulation

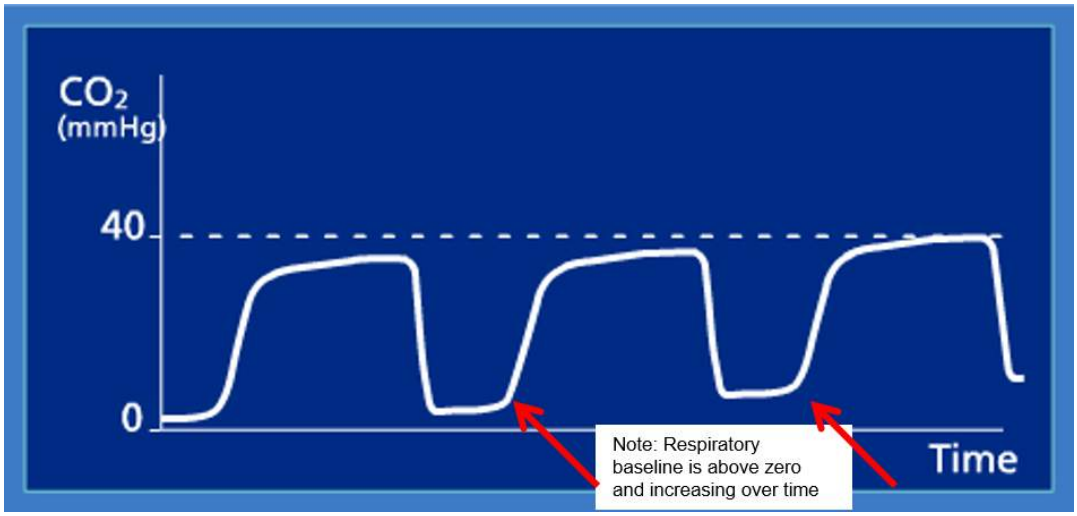


Abnormal Waveform - Rebreathing Exhaled CO_2

Rise in baseline CO_2 indicates rebreathing of CO_2

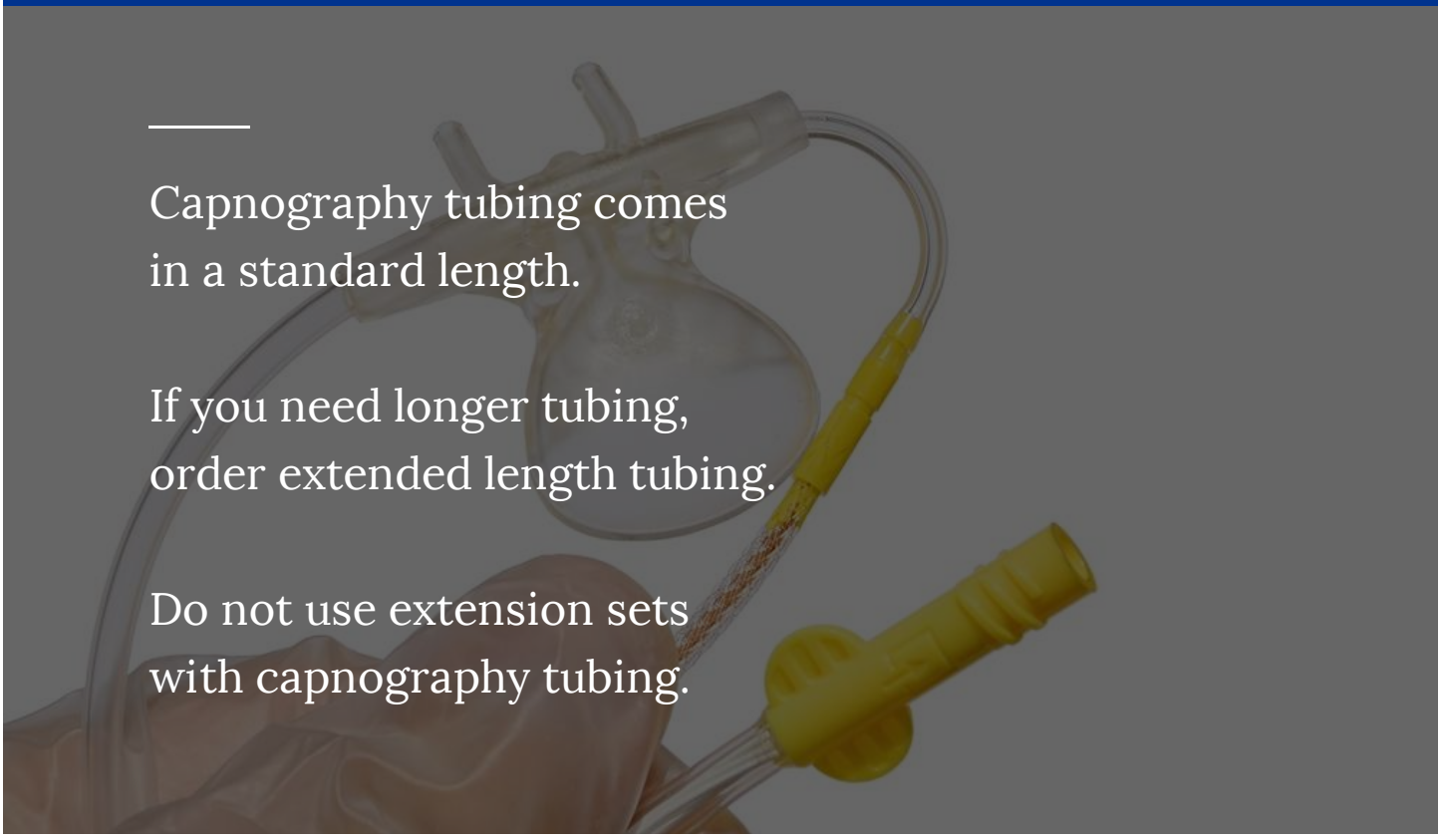
Possible causes:

- Poor head/neck alignment
- Draping at airway
- Insufficient flow to O_2 mask



Expand and review the content above before moving on.

Selecting the Correct Tubing



Capnography tubing comes designed for short term use or long term use. Review both uses by clicking or tapping on the flashcards below.

Short Term Use

Short term use tubing is only good for manufacturer recommended timeframe

- Typically used for monitoring during procedural sedation

Long Term Use

Long term use tubing has a filter for moisture control and can be used for longer durations

- This is the tubing to use if you anticipate the patient will need to be monitored after the procedure is complete

Complete the content above before moving on.

For more information on capnography or $ETCO_2$, click or tap the links below

Capnography

Respiratory compromise

Capnography during sedation

CONTINUE

Capnography: End Tidal CO_2 Monitoring During Sedation Review

True or False:

The normal $EtCO_2$ range is 35-45 mmHg.

- ◯ True
- ◯ False

SUBMIT

True or False:

Ventilation can be monitored with Pulse Oximetry.

- ◯ True
- ◯ False

SUBMIT

True or False:

Common causes of increase in $EtCO_2$ include and hypoventilation and oversedation.

- ◯ True
- ◯ False

SUBMIT

Multiple Choice:

When monitoring a patient using capnography during procedural sedation, the RN will intervene in response the following changes?

- ◯ Decreased respiratory rate
- ◯ Increased $EtCO_2$ value
- ◯ Loss of capnography waveform
- ◯ All of the above

SUBMIT

Multiple Choice:

If observing significant changes from baseline $EtCO_2$ value, the RN will:

- ◯ Instruct patient to take a deep breath
- ◯ Ensure patient has an open airway

- ◯ Check the cannula and reposition if necessary
- ◯ All of the above

SUBMIT

True or False:

An abnormal waveform can indicate equipment issues.

- ◯ True
- ◯ False

SUBMIT

True or False:

Pulse oximetry has limitations because there is a delay before oxygen saturation reflects hypoxia.

- ◯ True
- ◯ False

SUBMIT

Multiple Choice:

When is the best time to begin $EtCO_2$ monitoring?

- ◯ After the first dose of sedating medication
- ◯ When the pulse oximeter cannot display a reading
- ◯ Before any sedating medications are administered
- ◯ Only if supplemental oxygen is provided
- ◯ All of the above

SUBMIT

True or False:

Capnography provides a numeric value for $EtCO_2$ as well as a graphic display of the concentration of exhaled carbon dioxide in each breath.

- ◯ True
- ◯ False

SUBMIT

Multiple Choice:

Capnography should be utilized during procedural sedation:

- ◯ Only if supplemental oxygen is used
- ◯ To identify hypoventilation, apnea, or airway obstruction
- ◯ Instead of pulse oximetry
- ◯ If a patient needs to be intubated

SUBMIT

Multiple Choice:

Complete loss of the capnography waveform may result from:

- ◯ Hypoventilation
- ◯ No detection of breath
- ◯ Partial airway obstruction
- ◯ All of the above

SUBMIT

True or False:

Capnography provides caregivers with breath-to-breath information.

True

False

SUBMIT

Complete the content above before moving on.

Pre-Procedure Sedation Considerations

Assessment and Preparation

Safe and effective sedation requires assessment of patient's current condition, medical history, and individual risk factors.



Tools for Determining Sedation Risk Factors

Click or tap the checkbox to the left of each statement to mark it as read.

- [ ] Thorough medical history interview
- [ ] Physical exam within 30 days
- [ ] Patient's response to previous sedation/ anesthesia
- [ ] Use of American Society of Anesthesiologists (ASA) classification of physical status

- [ ] Airway assessment (Mallampati)
- [ ] Use of the STOP-BANG Assessment

Complete the content above before moving on.

Pre-Sedation Assessment

- LIP must be certified to perform moderate and/or deep sedation
- Requirements to be completed by LIP:
  - Current history and physical
    - Completed within 30 days
    - If over 24 hours old, must have an interval note
  - Airway assessment (Mallampati)
  - ASA score
  - Informed consent for procedure and sedation
- Site and/or procedural verification
- Nursing assessment (focused)



Sedation Risk Factor - Compromised Airway

COMPROMISED AIRWAY

Patients with anatomically compromised airways are at greater risk of respiratory complications

- The Mallampati assessment (performed by the LIP) provides information regarding airway risk
- The sedation nurse should verify the Mallampati assessment was performed and documented prior to administering sedation
    - Mallampati scores of 3 or 4 have higher risk for respiratory compromise

Image provided by UpToDate



CONTINUE



Sedation Risk Factor - Baseline Patient Condition

BASELINE PATIENT CONDITION

- The **ASA score** is a subjective assessment of patient's overall health

- It is used to assess the fitness of patients before a procedure/surgery

Class I	Normal healthy patient
Class II	Patient with mild systemic disease
Class III	Patient with severe systemic disease
Class IV	Patient with severe systemic disease that is a constant threat to life
Class V	Moribund patient not expected to survive 24 hours.

Optimal ASA Class for Procedures with Sedation

- ASA scores 1 and 2 are the best predictors of a successful outcome for the patient
- ASA score 3 and greater identifies a patient at higher risk for a negative outcome and may require closer monitoring and/or additional support

CONTINUE



Sedation Risk Factor -
Obesity & Sleep Apnea (OSA)

- Medications may cause relaxation of the oropharyngeal structure resulting in partial or total airway obstruction

- Additional precautions are taken for patients with sleep apnea and obesity
- Assess using STOP-BANG

STOP-BANG ASSESSMENT | PRECAUTIONS FOR OSA

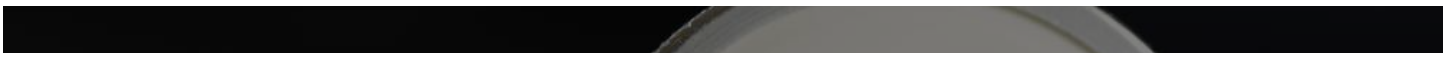
Scoring for STOP BANG:
5-8 "Yes" Responses = High risk of OSA
3-4 "Yes" Responses = Intermediate risk of OSA
0-2 "Yes" Responses = Low risk of OSA

- **S**noring
  - Do you **S**nore loudly?
- **T**ired
  - Do you often feel **T**ired, fatigued or sleepy during the daytime?
- **O**bserved
  - Has anyone **O**bserved you stop breathing during your sleep?
- **P**ressure
  - Do you have or are you being treated for high blood **P**ressure?
- **B**ody Mass Index
  - BMI > 35?
- **A**ge
  - > 50 years?
- **N**eck size
  - >16 inches or > 40 cm?
- **G**ender
  - Male?

STOP-BANG ASSESSMENT | PRECAUTIONS FOR OSA

- Management by anesthesia if the patient has severe central nervous system sleep apnea
- Position in lateral or semi-fowlers position if possible
- Use CPAP machine during the procedure and recovery phase if patient uses CPAP when they sleep
- Position patient to facilitate an open airway

CONTINUE





Sedation Risk Factor - Cardiac Disease

Cardiac Disease (Acute Coronary Syndrome, History of Myocardial Infarction/Occlusion, Angina, etc.)

- Review patient's chart to see if an ECG has been obtained within the last 6 months
    - If a recent ECG is not available, consider recommending a 12 lead ECG prior to the procedure
- If it is a non-cardiac procedure, a cardiology consult may be requested
- The patient should be on a cardiac monitor throughout the procedure

CONTINUE



Sedation Risk Factor - Other Complicating Conditions

Patients presenting with the following conditions are known to have increased risks with sedation:

1. Inability to communicate or cooperate
2. Multiple drug allergies
3. Multiple medications with potential for drug interaction with sedative analgesics
4. Current substance abuse
5. Obesity (BMI > 40)

Consider appropriate specialty consultation (anesthesia, obstetrics, cardiology, etc.):

- Known history of respiratory or hemodynamic instability
- Previous difficulties with sedation or anesthesia
- Severe sleep apnea or other airway related issues
- One or more significant co-morbidities
- Pregnancy

CONTINUE

Pre-Sedation Preparation - Nursing Assessment

General Assessment

- Vital signs: BP, HR, RR, SaO_2, $ETCO_2$
- Pain level
- Level of consciousness (Using Ramsay scale)

Airway Assessment	• Airway patency, ventilatory effort, lung sounds • Assess physical features that may cause difficulty in maintaining a patent airway or may impair intubation should the need arise (e.g., thick neck, reduced neck extension, TMJ, etc.)
Cardiac Assessment	• Cardiac rhythm, heart sounds, peripheral pulses and other indicators of tissue perfusion

Complete the content above before moving on.

Pre-Sedation Preparation - Verify NPO Status

VERIFY NPO STATUS

- To decrease risk of aspiration, NPO status must be evaluated prior to the administration of sedation
- Verify and document time of patient's last intake of food/fluids
- If the desired NPO status is not met, the goal of sedation should be carefully assessed and balanced with the urgency of the procedure
- May also consider anesthesia consult

NPO Guidelines

Substance	Time Recommendation
Clear liquids	2 hours
Light meal (toast, clear liquids)	6 hours
Fried foods, fatty foods, meat	8 or more hours

CONTINUE

Pre-Sedation Preparation - Patient Education



Patient instruction must include detailed, patient specific information that is pertinent to the planned procedure.

This includes:

- NPO
- Medication instructions and procedure specific preparation PRN
- Patient understanding of the planned procedure
- Need for a designated lay caregiver to escort patient home following discharge and be available for recommended post procedure care
- No driving for 24 hours

Pre-Sedation Preparation - Sedation Plan

Click or tap the checkbox to the left of each statement to confirm you have reviewed it.

☐ Discuss sedation plan and target level of sedation (Ramsay score) with LIP.

☐ The RN is expected to consider potential risk factors that may increase the chance of complications associated with procedural sedation.

- Communicate this information and any other concerns to the appropriate members of the healthcare team.

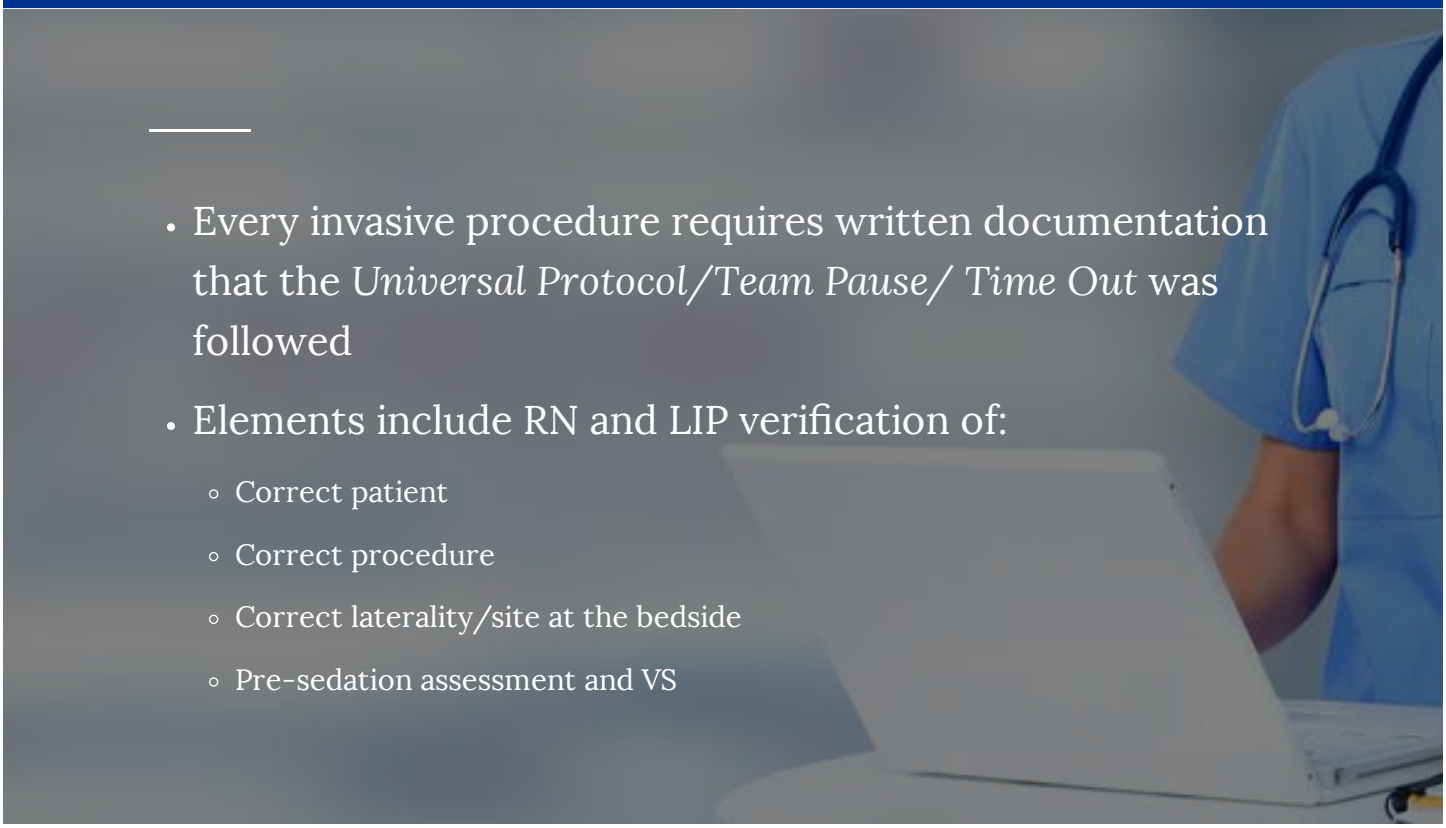
☐ The LIP and RN must consider whether sedation and monitoring would be more appropriately managed by an anesthesiologist.

🔒 Complete the content above before moving on.

Pre-Sedation Preparation - DNR/DNI Considerations

- DNR/DNI orders are not automatically rescinded during procedures.
- The existing DNR/DNI status is to remain active unless the LIP writes an order to initiate full code status during the procedure.
  - However, pre-existing code status may not be appropriate for the procedural circumstances as techniques routinely undertaken in the course of sedation could be classified as resuscitation.
- Every patient with DNR/DNI status should have a conversation with the LIP regarding code status prior to the procedure.

Pre-Sedation Preparation - Universal Protocol/Team Pause/Time Out



- Every invasive procedure requires written documentation that the *Universal Protocol/Team Pause/ Time Out* was followed
- Elements include RN and LIP verification of:
  - Correct patient
  - Correct procedure
  - Correct laterality/site at the bedside
  - Pre-sedation assessment and VS

Pre-Sedation Preparation - Required Equipment

Emergency equipment that must be immediately available:

Click or tap the checkbox to the left of each statement to mark it as read. Review all to move on.

- [ ] Bag/Valve/Mask and 100% oxygen source, airways, suction, and intubation equipment
- [ ] Code cart/defibrillator (include suction machine/equipment)
- [ ] Cardiac monitor (not required for all cases)
- [ ] Blood pressure monitoring (use correct cuff size)
- [ ] Pulse oximeter for continuous reading
- [ ] End-Tidal CO_2 monitor for continuous reading
- [ ] Patent IV site
- [ ] Drug antagonists/reversal agents (flumazenil and naloxone) must be at the bedside

Complete the content above before moving on.

Content - Intra-Procedure Sedation Considerations

Intra-Procedure Nursing Management

The sedation phase begins with the first dose of sedative agent. Level of sedation is assessed using a validated sedation scale.

Sedation ends when the procedure is complete and the patient achieves an Aldrete score of at least 8 (or pre-procedure score if baseline is < 8).

Sedation Scales

Sedation scales are tools used to:

- Determine accurate and consistent drug titration
- Decrease the risk of excessive drug dosing
- Decrease the risk of oversedation

Correlation between Ramsay Score and Level of Sedation

Ramsay Score	Clinical Status	Level of Sedation/Definition
1 2	Patient anxious, agitated or restless Patient cooperative, oriented and tranquil	**Minimal Sedation**: A drug induced state during which patients respond normally to verbal commands. Cognitive function and coordination may be impaired, but respiratory and cardiovascular functions are unaffected.
3	Patient asleep, responds to verbal commands	**Moderate Sedation**: A drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain patent airway or adequate respirations. Cardiovascular functions and protective reflexes are usually maintained.
4	Patient asleep, brisk response to light glabellar tap, tactile stimuli or loud noise	**Moderate** ← → **Deep**
5	Patient asleep, sluggish response to light glabellar tap, tactile stimuli or noise	**Deep Sedation:** A drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully following repeated or painful stimulation. Patients may need assistance in maintaining a patent airway and respirations may be inadequate. Cardiovascular function is usually maintained.
6	No response to light glabellar tap* or loud noise	**General Anesthesia:** A drug-induced loss of consciousness during which patients are not arousable even with painful stimulation. Patent airway, adequate respirations, cardiovascular functions may be impaired and often require assistance.

Glabellar tap = Tap on forehead between eyebrows

Richmond Agitation-Sedation Scale (RASS)

RASS is a 10-point scale, with:

- four levels of anxiety or agitation,
- one level denoting a calm and alert state, and
- five levels of sedation,

On one extreme of the RASS score, **+4** represents a very combative, violent patient, who is considered dangerous to the staff.

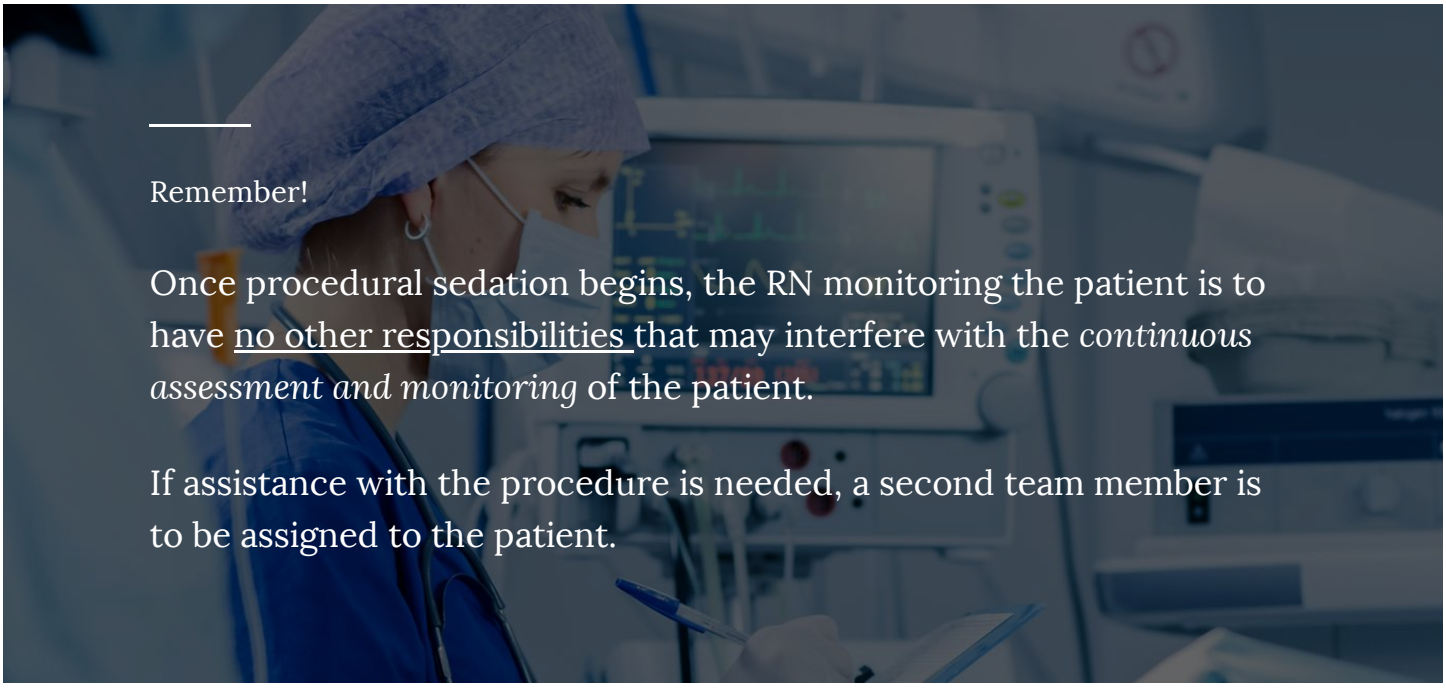
On the other extreme, **-5** represents a patient who is unarousable, with no response to voice or physical stimulation.

Score	Definition
+4	Combative, overtly combative or violent, immediate danger to staff.
+3	Very agitated, pulls on or removes tubes or catheters or is aggressive.
+2	Agitated, frequent non-purposeful movement or ventilator dyssynchrony.
+1	Restless, anxious or apprehensive but movements not aggressive or vigorous.

Score	Definition
0	Alert and calm.
-1	Drowsy, but sustains more than 10 seconds awake, with eye opening in response to verbal command.
-2	Light sedation: Awakens briefly (less than 10 seconds) with eye contact to verbal command.
-3	Moderate sedation: Any movement, except eye contact, in response to command.
-4	Deep sedation: No response to voice, but any movement to physical stimulation.
-5	Unarousable: No response to voice or physical stimulation.

Source: "The Richmond Agitation-Sedation Scale: validity and reliability in adult intensive care unit patients." *Am J Respir Crit Care Med* 2002;166:1338-1344.

CONTINUE



Remember!

Once procedural sedation begins, the RN monitoring the patient is to have no other responsibilities that may interfere with the *continuous assessment and monitoring* of the patient.

If assistance with the procedure is needed, a second team member is to be assigned to the patient.

Intra-Procedure Care & Documentation - Moderate Sedation

Monitoring	Frequency

Monitoring	Frequency
Electrocardiogram (ECG)	Continuously
Heart rate	Continuously
Ventilatory status, including: respiratory rate, oxygen saturation, and end-tidal carbon dioxide ($ETCO_2$)	Continuously
Blood pressure	Continuously
Sedation status	Continuously
Documentation	**Frequency**
RR, O_2 sat, $ETCO_2$, BP, HR, ECG, sedation level (respective scale/score used at your ministry)	Q 5 min
If change in patient condition: RR, O_2 sat, $ETCO_2$, BP, HR, **and** sedation level	Q 5 min until patient condition stabilizes

CONTINUE

Intra-Procedure Sedation Considerations Review

Multiple Choice:

You are providing sedation for a patient mid-endoscopy. He was medicated before the procedure started with Fentanyl 25 mcg IV and Versed 2.5 mg IV. You are unable to arouse your patient with a light tap to the forehead, nor does he arouse when you call his name loudly.

What is his Ramsay Sedation Score?

- ◯ 4
- ◯ 5
- ◯ 6

SUBMIT

Multiple Choice:

Your patient has been medicated with Morphine 4 mg IV and Versed 5 mg IV. He is sleeping but responds to commands.

What is his Ramsay Score?

- ◯ 2
- ◯ 3
- ◯ 4

SUBMIT

Complete the content above before moving on.

Content - Post-Procedure Sedation Considerations

Post-Procedure Equipment

- [ ] Patent IV site with IV fluids
- [ ] Oxygen and O_2 delivery devices (flow meters, nasal cannulae, face mask)
- [ ] Pulse oximeter
- [ ] Blood pressure monitoring (use correct cuff size)
- [ ] Cardiac monitor (if patient at risk)
- [ ] Code cart/defibrillator immediately available (including one-way valve mask, airways, suction, ambu-bag, intubation equipment, emergency drugs)
- [ ] Drug antagonists nearby

You should also consider monitoring $ETCO_2$ if you think the patient is at risk for post-procedure respiratory issues.

Post-Procedure Nursing Management

Continuous Monitoring

Continuous monitoring for no less than 30 minutes from administration of last dose of sedation medication **and** until an Aldrete score of greater than or equal to eight (≥ 8) is reached (or pre-procedure score if baseline is < 8).

Documentation

Documentation every 15 minutes for no less than 30 minutes from administration of last dose of sedation medication **and** until an Aldrete score of greater than or equal to eight (≥ 8) is reached (or pre-procedure score if baseline is < 8).

Additional Monitoring _

Additional monitoring may be required depending on patient's clinical status.

Post-Procedure Monitoring & Documentation

Monitoring	Frequency
Electrocardiogram (ECG)	Continuously
Heart rate	Continuously
Ventilatory status, including respiratory rate, oxygen saturation, and end-tidal carbon dioxide ($ETCO_2$)	Continuously
Blood pressure (e.g., every 5 minutes)	Continuously
Sedation level	Continuously
Documentation	**Frequency**
HR, BP, RR, O_2 sat, $ETCO_2$, sedation level, ECG (when included in plan of care)	Q 15 min
Aldrete score	Q 30 min

Aldrete Score

The Aldrete score evaluates recovery after sedation/anesthesia and patient readiness for discharge.

Level of Consciousness	• Fully awake or responds easily to verbal stimuli or pre-procedure baseline	= 2
	• Arousable on calling	= 1
	• Not responding	= 0

	Must be at least 1 at end of monitoring	
Respirations	• Able to breath and cough freely • Dyspnea or limited breathing • Apneic	**= 2** **= 1** **= 0**
Oxygen Saturation	• Maintains value ≥ 92% on room air • Requires supplemental O_2 to maintain saturation at ≥ 90% • Saturation ≤ 90% with supplemental O_2	**= 2** **= 1** **= 0**
Hemodynamic stability	• Blood pressure ± 20% baseline • Blood pressure ± 20-50% baseline • Blood pressure ± 50% baseline	**= 2** **= 1** **= 0**
Physical Activity	• Ability to move all extremities voluntarily or on command • Moves 2 extremities voluntarily or on command • Moves 0 extremities voluntarily or on command	**= 2** **= 1** **= 0**

Post-Procedure Nursing Management

Watch for Post-Procedure Sedation

- Once stimulation from the procedure is over, the patient may progress to a level of sedation deeper than what was assessed throughout the procedure
- This is why it is important to continue assessing sedation level in the post-procedure period



If reversal agents are used, ensure assessments are adequate to identify oversedation recurrence once the effect of the antagonist dissipates. This may require up to *2 hours of increased observation*.

Discharge Criteria

Procedural Area Discharge Criteria

Patient may be discharged from **procedural area** when patient has attained an Aldrete score of at least 8 (or pre-procedure score if baseline is < 8)

- Patient is alert and oriented
  - Mental status returned to baseline level or orientation
- Protective reflexes have returned to pre-procedure function
- Vital signs and respiratory function are stable (pre-procedure range) with adequate end-tidal CO_2 and O_2 saturation

Facility Discharge Criteria

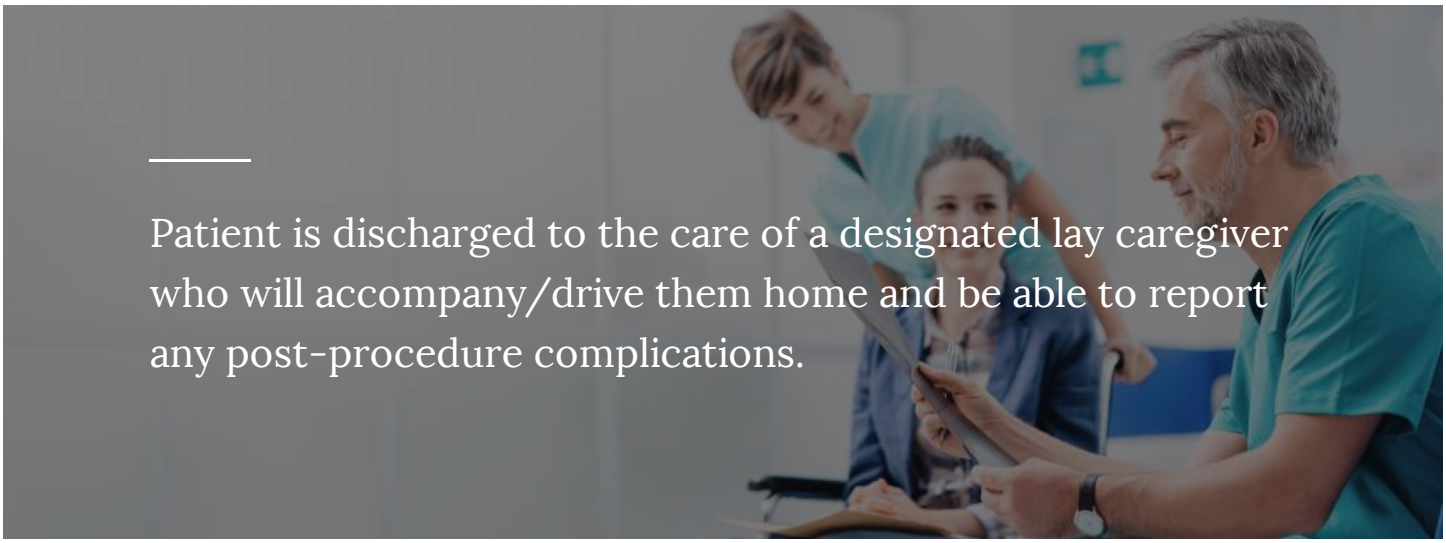
Patient may be discharged from **facility** when:

- Drinking liquids and/or eating light snack without nausea/vomiting

- Ambulating without dizziness
- Voiding without problems
- Minimal or no pain from the procedure
- If reversal agent used, a sufficient duration of monitoring completed to ensure re-sedation does not recur
    - Approximately 2 hours or more, based upon patient condition

Expand and review the content above before moving on.

Discharge



Discharge Education

- **Review information about expected behavior following sedation with patient and designated lay caregiver**
- **Provide written discharge instructions:**
    - No driving or using sharp instruments or equipment for 24 hours
    - Diet restrictions/allowances
    - No alcohol consumption for 24 hours
    - Use of medications

- Warning signs of complications or adverse drug interactions
- Special instructions in case of emergency
- Wound care or specific post procedure care
- Routine follow up with provider
- Provider contact numbers

Documentation Requirements



Document procedural sedation:

- Pre-sedation assessment
- Patient education
- Informed consent
- Current list of allergies and medications
- Time out/universal protocol/team pause (including pre-sedation assessment and vital signs)
- Documentation of vital signs, drugs, and procedure details
- Post-sedation assessment
- Patient response to procedure/medications

- Discharge criteria met

CONTINUE

Post-Procedure Sedation Considerations Review

Match the appropriate scale to the correct use.

Ramsay Sedation Scale	Used to measure level of sedation during and post-procedural monitoring
Aldrete Scale	Used to determine readiness for discharge after a procedure

SUBMIT

Use the Aldrete score tool below to answer the questions that follow:

Level of Consciousness	• Fully awake or responds easily to verbal stimuli or pre-procedure baseline • Arousable on calling • Not responding ***Must be at least 1 at end of monitoring***	**= 2** **= 1** **= 0**
Respirations	• Able to breath and cough freely • Dyspnea or limited breathing • Apneic	**= 2** **= 1** **= 0**
Oxygen Saturation	• Maintains value ≥ 92% on room air • Requires supplemental O_2 to maintain saturation at ≥ 90% • Saturation ≤ 90% with supplemental O_2	**= 2** **= 1** **= 0**
Hemodynamic stability	• Blood pressure ± 20% baseline • Blood pressure ± 20-50% baseline • Blood pressure ± 50% baseline	**= 2** **= 1** **= 0**
Physical Activity	• Ability to move all extremities voluntarily or on command • Moves 2 extremities voluntarily or on command • Moves 0 extremities voluntarily or on command	**= 2** **= 1** **= 0**

Multiple Choice Scenario:

After his endoscopy, your patient is asleep, but arouses to voice (quickly falls back to sleep). He moves all extremities on command, his respiratory rate is 8, his BP is 110/60 (baseline was 158/88), and his SPO_2 is 93-94% on 2 liters O_2 (baseline was 98% on room air).

What is his Aldrete score?

◯ 5

- ◯ 6
- ◯ 7
- ◯ 8

SUBMIT

Multiple Choice Scenario:

After a cardioversion for atrial fibrillation, your patient is awake and talking. He is able to move all extremities, has a respiratory rate of 12, his is BP 124/74 (baseline was 132/80), and his $Sa0_2$ is 96% on room air (baseline was 98%).

What is his Aldrete score?

- ◯ 7
- ◯ 8
- ◯ 9
- ◯ 10

SUBMIT

Fill in the Blank:

You are in the middle of a procedure using moderate sedation, your patient is on her back. Her pulse oximetry measurement falls to 86% (her baseline was 92%), her $ETCO_2$ rises to 60 (from her baseline of 40), and she is making “crowing sounds” with inspiration. What is the probable

cause?

(Hint: type in your 2 word answer below)

Type your answer here

SUBMIT

Multiple Choice:

The most frequent complication of moderate procedural sedation is:

- ◯ Allergic reaction to the drugs being administered
- ◯ Airway obstruction
- ◯ Hypotension
- ◯ Bradycardia

SUBMIT

Select All That Apply:

You are performing moderate sedation for an 82-year-old patient. Which of the following procedural sedation principles apply to this patient?

- ☐ Use incremental doses
- ☐ Allow adequate time between doses to achieve peak pharmacologic effects (5-10 minutes)

- [ ] Medication dosing should be increased 30-50% in the geriatric patient
- [ ] Assess effectiveness of each dose before administering more medication
- [ ] Geriatric patients are at high risk for over sedation and respiratory depression

SUBMIT

Multiple Choice Scenario:

You are in the middle of a moderate sedation procedure. Your patient's pulse oximeter measurement is down to 86%. The baseline is 92%. $ETCO_2$ is 50 and the waveform is getting taller. The patient is positioned on his back with sonorous respirations. What is the possible cause?

- ◯ He is sleeping
- ◯ He has an airway obstruction
- ◯ He has secretions in the back of his mouth
- ◯ He is hyperventilating

SUBMIT

Multiple Choice:

How frequently is the patient monitored during moderate procedural sedation?

- ◯ Every 5 minutes

- ◯ Every 15 minutes through the procedure
- ◯ Every 15 minutes until the Aldrete score is 8 or greater
- ◯ Continuously

SUBMIT

True or False:

The Aldrete Score is used throughout procedural sedation to assess the level of sedation.

- ◯ True
- ◯ False

SUBMIT

Multiple Choice:

What action should the RN take if the documented ASA Risk classification score is 4?

- ◯ None, it is only an assessment of risk.
- ◯ Refuse to help with the procedure as the RN's license is at risk.
- ◯ Discuss concerns with the LIP to ensure the patient's safety during the procedure. Escalate concern to immediate supervisor if needed.
- ◯ Call the RRT.

SUBMIT

Multiple Choice:

The Ramsey Sedation Scale tool is used for all **except**:

- ◯ Determining accurate and consistent drug titration
- ◯ Decreasing excessive drug administration
- ◯ Decreasing risk of sedation beyond the planned level of sedation
- ◯ Correlation to the Modified Aldrete Recovery Scale

SUBMIT

Multiple Choice:

The patient is sleeping but does awaken and respond easily to verbal and/or light tactile stimulation. Vital signs are stable, and respirations are unlabored. Airway patency is maintained without additional intervention.

What level of sedation has been achieved?

- ◯ Minimal sedation
- ◯ Moderate sedation
- ◯ Deep sedation

- ◯ General anesthesia

SUBMIT

Multiple Choice:

The patient is awake during the procedure, but calm and cooperative. Her vital signs are stable. She is a little slow in her verbal responses, but her responses are appropriate.

What level of sedation has been achieved?

- ◯ Minimal sedation
- ◯ Moderate sedation
- ◯ Deep sedation
- ◯ General anesthesia

SUBMIT

Multiple Choice Scenario:

You are performing the moderate sedation for a 42-year-old patient. How long should you wait to assess the effectiveness of a dose of before administering more medication?

- ◯ 1-2 minutes
- ◯ 3-5 minutes

- ◯ 5-8 minutes
- ◯ 10-15 minutes

SUBMIT

Multiple Choice Scenario:

Your patient is receiving procedural sedation for the closed reduction of a fracture of the left arm. Halfway through the procedure the patient's heart rate increases to 140, respirations are 26, he is moaning and responding to verbal command.

Using the Ramsey Sedation Scale, where would you rate the patient's sedation level?

- ◯ Ramsey 1: Patient is anxious, agitated, and restless
- ◯ Ramsey 2: Patient cooperative, oriented
- ◯ Ramsey 3: Patient asleep, responding to verbal commands
- ◯ Ramsey 4: Patient is asleep, brisk response to light gabellar tap or loud auditory stimulus

SUBMIT

Multiple Choice Scenario:

Mrs. Goldbloom, a 76-years-old patient, is going to have a colonoscopy under procedural sedation.

What interventions need to be considered?

- Total drug dosage should be decreased by 30-50% with careful titration of drugs
- Drugs will take longer to metabolize and therefore will circulate longer
- Mrs. Goldbloom will require careful and extended monitoring during the recovery period
- She is at high-risk for over-sedation and respiratory depression
- All of the above

SUBMIT

Complete the content above before moving on.

Content - Pharmacology

Nursing Management Topics

Click or tap the plus sign (+) next to each statement to read more. Review all to move on.

Pharmacological Considerations

Verify the sedation plan with the LIP:

- Moderate versus deep sedation?
- Is the LIP trained for the intended level of sedation?



Goals of Medication Administration

- A rapid and predictable onset of action following drug administration
- Minimal adverse respiratory and/or cardiovascular effects
- Allow for quick recovery
- Optimal patient satisfaction



Titrating Sedation Medications

- The administration of each dose of medication will be by the order of the LIP performing the procedure
- RN must be familiar with sedation medication, appropriate dosing, time to peak effect, and side effects
- Dosages and rates of administration must be individualized to patient response

Titrate each drug individually for desired effect:

- Use incremental doses
- Allow adequate time between doses to achieve peak pharmacologic effects
- Assess effectiveness of each dose before administering more medication

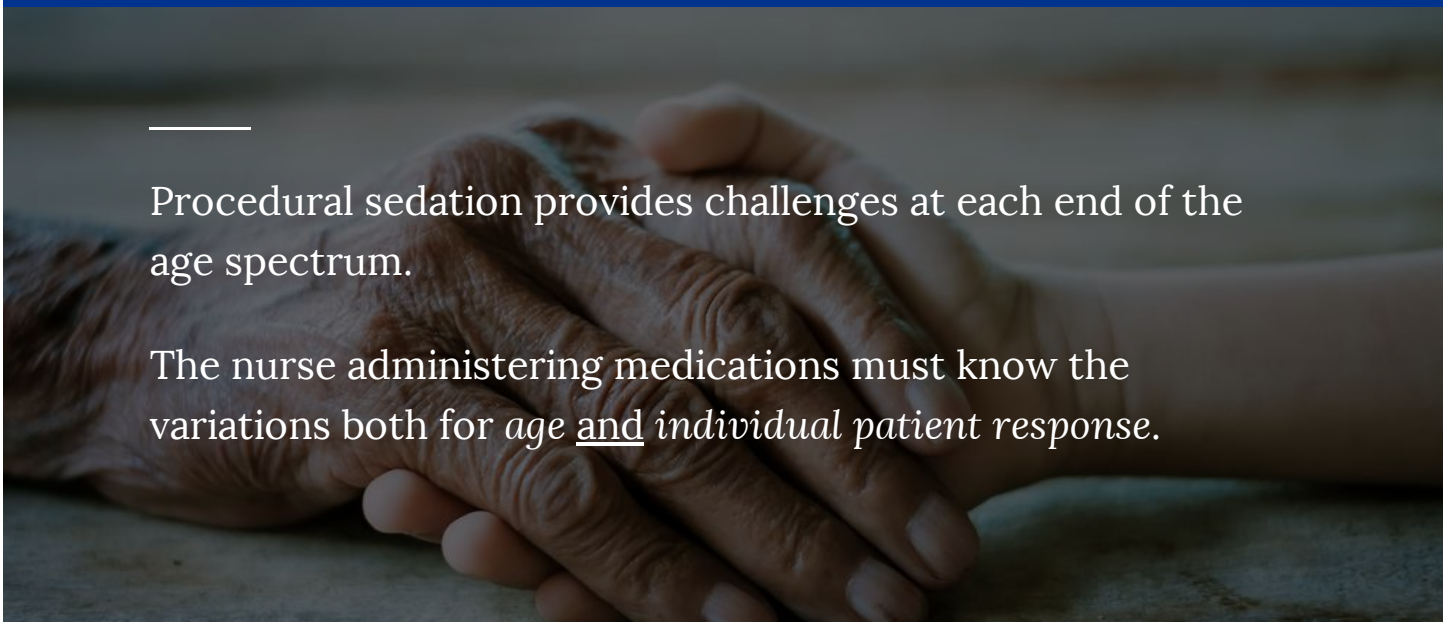
Consider your patient's response before administering the entirety of an ordered dose. It is acceptable to provide the ordered dose in incremental doses to assess effectiveness before administering the next portion.

Remember: Risk of respiratory depression increases when multiple agents are used.



Expand and review the content above before moving on.

Medication Administration Across the Lifespan



Geriatric Considerations

- [ ] Aging is associated with a progressive decrease in the function of the major organ systems by 1-1.5% after 30 years
- [ ] Drugs circulate longer and take longer to metabolize
- [ ] Elderly persons often have co-morbidity health issues which may result in poly-pharmacy practices
  - Careful pre-procedure assessment is needed to identify possible synergistic drug interactions
- [ ] This population is at high risk for over sedation and respiratory depression
  - Geriatric patients will require close and extended monitoring throughout the procedure and recovery
- [ ] Discuss the sedation plan with LIP
  - Consider reducing the dosages of sedating agents by 30-50% in the geriatric patient

CONTINUE

Medications Used for Procedural Sedation

The two main types of medications used for procedural sedation are **Opioids/Synthetic Opioids** and **Benzodiazepines**.

Barbiturates *can* be used for sedation, but they are used infrequently.

Note: Combining drugs increases the risk of adverse effects in ALL age groups.

CONTINUE

Drugs Commonly Used in Procedural Sedation

Medication	Pharmacology	Effect	Adverse Effect
Morphine sulfate *Opioid*	• Dose: 2-4 mg IV • Onset: 5-10 minutes • Duration: 2-5 hours	Analgesia	Respiratory depression, apnea, laryngospasm, chest wall rigidity with RAPID administration, hypotension, bradycardia, shock, urinary retention, pupil constriction, agitation, tremor, and/or dysphoria
Hydromophone HCl (Dilaudid) *Synthetic opioid*	• Dose: 0.2-2 mg IV (decrease dose by 30-50% in geriatric patients) • Onset: 5-10 minutes • Duration: 2-3 hours	Analgesia *Shorter duration of effect than morphine*	Respiratory depression, hypotension, bradycardia, syncope, circulatory depression, drowsiness, dysphoria, and/or vertigo **WARNING:** Rapid administration of Fentanyl can cause chest wall rigidity, which may be fatal

Medication	Pharmacology	Effect	Adverse Effect
Fentanyl *Synthetic opioid*	<u>Note:</u> 100 times more potent than morphine. ***ADMINISTER SLOWLY!*** • Dose: 25-100 mcg IV • Onset: 3-5 minutes • Duration: 30-60 minutes		
Diazepam (Valium)* *Benzodiazepine*	• Dose: 1-5 mg IV • Onset: IV 2-5 minutes PO 45-60 minutes • Duration: IV 6 hours, PO up to 24 hours	Amnesia, anxiolysis, muscle relaxation, anticonvulsant	Respiratory depression, apnea with rapid administration, hypotension, bradycardia, confusion, restlessness, agitation, and/or combativeness **Diazepam is irritating to vein, may be painful on administration*
Midazolam (Versed) *Benzodiazepine*	• Dose: 0.5-1 mg IV • Onset: 1-5 minutes • Duration: 45-60 minutes Before administering a second dose, evaluate the effect of the medication: • 2 minutes for IV route • 5-10 minutes for nasal route • 10-20 minutes for oral route		
Phenobarbital *Barbiturates*	• Dose: 100-320 mg IV (larger doses may be needed for patients with epilepsy) • Onset: IV 5 minutes • Duration: 10-12 hours	CNS depression, anticonvulsant	Respiratory depression, apnea (Increases with rapid administration - Do not administer greater than 50 mg/min), hypotension, circulatory collapse, and/or paradoxical excitement

Reversal Agents

Remember: Not every medication has a reversal agent!

CONTINUE

Test Yourself

Before you click or tap to flip each card below to reveal the corresponding reversal agent, test yourself to see if you can recall what they are. Review all cards before moving on.

Opioids	Reverse with nalaxone (Narcan)

1 of 5

Benzodiazepines	Reverse with flumazenil (Romazicon)

2 of 5

Barbiturates

NO specific reversal agent

- Treat symptoms and provide supportive therapy

3 of 5

Naloxone (Narcan)

Respiratory depression:
Titrate agent using 1-10 micrograms/kg every 1-2 minutes as necessary until effective respiratory effort resumed

- Will maintain some analgesia for underlying pain

Acute pulmonary edema:
Provide full, immediate reversal using 0.1 mg/kg to max dose of 2 mg

- Will experience pain and hypertension associated with full reversal dose

4 of 5

Flumazenil (Romazicon)

- Dose = 0.2 mg
- May repeat, as needed

Safety Note: *The use of Flumazenil may lower the seizure threshold in patients taking long term benzodiazepines*

Complete the content above before moving on.

Treating Oversedation

If your patient progresses beyond the goal of therapy, supportive therapy should be provided.

- Consider reversal agent (per LIP order)
- Continue continuous monitoring for at least 30 minutes AND an Aldrete > 8 following procedure
  - May require 2 or more hours of additional monitoring
- Provide respiratory support, for example:
  - Increase oxygen
  - Jaw thrust/chin lift
  - Oral airway
  - Ambu bag
  - Prepare for intubation, etc.



CONTINUE

Pharmacology Review

True or False:

The correct drug administration procedure is to titrate each drug individually and to assess the effectiveness of the drug before giving additional doses.

- ◯ True
- ◯ False

SUBMIT

Multiple Choice Scenario:

An endoscopy procedure has been ongoing for 30 minutes. The patient has received a total of Versed 7 mg IV and Fentanyl 100 mcg IV to achieve the planned level of moderate sedation. His vital signs have been stable. Respirations have slowed to 10 are even and unlabored. Oxygen saturation (SpO_2) is 90% on room air and his $ETCO_2$ is 46. The patient's response to a tap on the forehead is sluggish and he is unable to respond to commands.

The most appropriate nursing action at this time would be:

- ◯ Continue continuous monitoring. Increase documentation to Q 5 minutes until patient returns to planned moderate level of sedation, then resume documentation Q 10 minutes
- ◯ Administer a reversal agent immediately as the patient has crossed into deep sedation
- ◯ Ensure the patient's airway remains patent and ventilations adequate

- Be prepared to administer reversal agents should the patient's respiratory status decline further or the patient does not return to the moderate level of sedation quickly
- All but administer a reversal agent

SUBMIT

Multiple Choice Scenario:

Ms. Carson, an 82-year-old female in good health, is having an electrical cardioversion for sudden onset of rapid atrial fibrillation. The LIP plans to use Versed for the procedural sedation drug.

What considerations need to be made before proceeding with the cardioversion?

- Consider co-morbidities in determining the drug dose of Versed
- Give IV fluids rapidly to increase the elimination of the drug from the patient's system
- Reduce the total drug dose by 30-50% due to patient's age
- All of the above

SUBMIT

Multiple Choice Scenario:

Mr. Miller is undergoing an electrical cardioversion at the bedside. He has received Versed and Fentanyl for sedation and analgesia. The patient is now sleeping and does not awaken to normal tone of voice but attempts to open his eyes when tapped on the forehead and weakly squeezes the nurse's hand when asked.

What nursing interventions should be implemented?

- Increase frequency of monitoring
- Apply oxygen per nasal cannula at 2 liters/minute
- Prepare reversal agent and notify the physician
- Continue continuous patient monitoring

SUBMIT

Multiple Choice:

Which of the following statements about Fentanyl are true?

- 100 times more potent than Morphine Sulfate
- Short duration analgesic
- Rapid IV infusion may result in skeletal muscle and chest wall rigidity
- Onset of action for IV dose is 2-3 minutes
- All of the above

SUBMIT

Multiple Choice:

Adequate moderate sedation is achieved when the patient:

- ◯ No longer has a gag reflex
- ◯ Begins to snore
- ◯ Begins to relax and speech is slurred
- ◯ No longer responds to painful stimuli

SUBMIT

True or False:

As long as the patient is sedated you do not need to use analgesia.

- ◯ True
- ◯ False

SUBMIT

Select All That Apply:

Opiates most commonly used as adjuncts to benzodiazepines for procedural sedation are:

- ☐ Oxycodone
- ☐ Fentanyl

- [ ] Morphine sulfate
- [ ] Tramadol

SUBMIT

Multiple Choice:

In geriatric patients, the drug doses used in moderate sedation should be reduced by:

- ◯ 10-20%
- ◯ 15-40%
- ◯ 25-55%
- ◯ 30-50%

SUBMIT

Multiple Choice:

The appropriate dose of flumazenil (Romazicon) for reversing midazolam is:

- ◯ 0.2 mg IV
- ◯ 1 mg IV every 2 minutes

- ◯ 2 mg IV and repeat after 5 minutes of observation if needed
- ◯ 1 mg IV followed by 0.4 mg Narcan IV

SUBMIT

Multiple Choice:

Goals of drug administration in procedural sedation are:

- ◯ Minimum side effects
- ◯ Rapid recovery
- ◯ Patient satisfaction
- ◯ All of the above

SUBMIT

Multiple Choice:

The possible adverse effect of most concern when using midazolam is:

- ◯ Seizures
- ◯ Flaccid paralysis
- ◯ Respiratory depression

- ◯ Cardiac arrhythmias

SUBMIT

Multiple Choice:

Which of the following is true when administering reversal agents?

- ◯ The patient must be continuously monitored long enough to ensure that sedation and cardio-respiratory depression does not recur once the effect of the reversal agent dissipates
- ◯ The patient must be monitored every 15 minutes for 2 hours following administration of a reversal agent
- ◯ There is a reversal agent for every medication that may be used during procedural sedation
- ◯ One dose of a reversal agent will return patient to the desired level of procedural sedation

SUBMIT

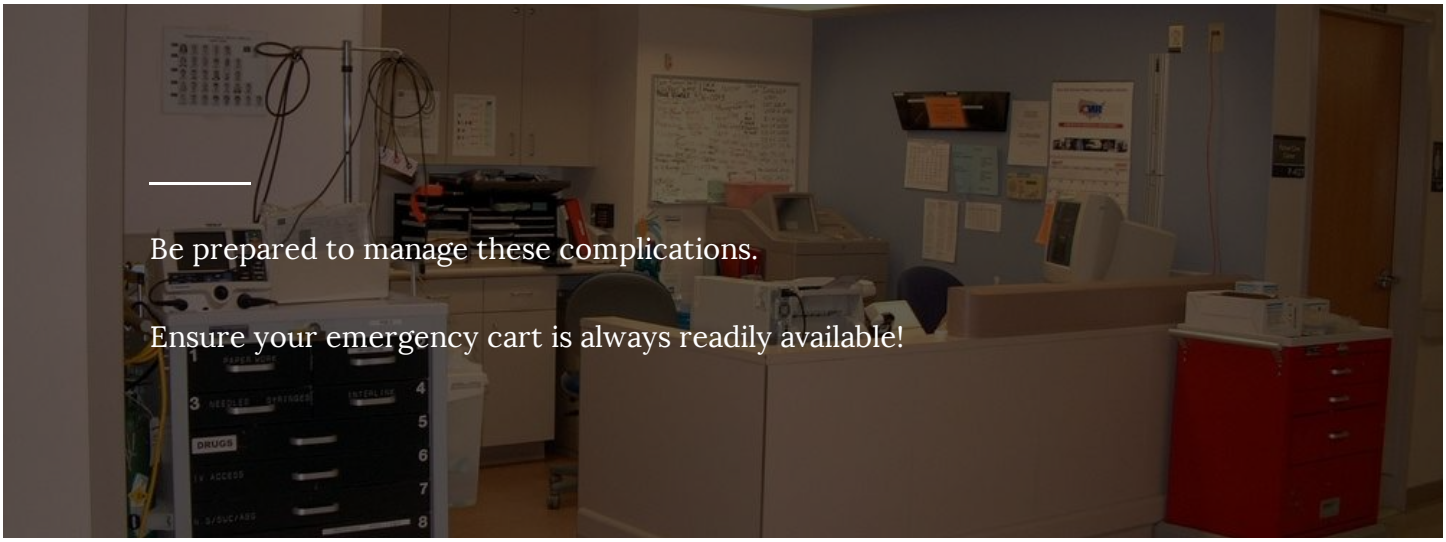
Complete the content above before moving on.

Content - Sedation Complications & Rescue for Adult Patients

Manage Complications of Sedation

Signs and symptoms of over sedation:

- [ ] Respiratory depression
- [ ] Airway compromise (most common sedation complication)
- [ ] Unresponsiveness
- [ ] Cardiovascular instability

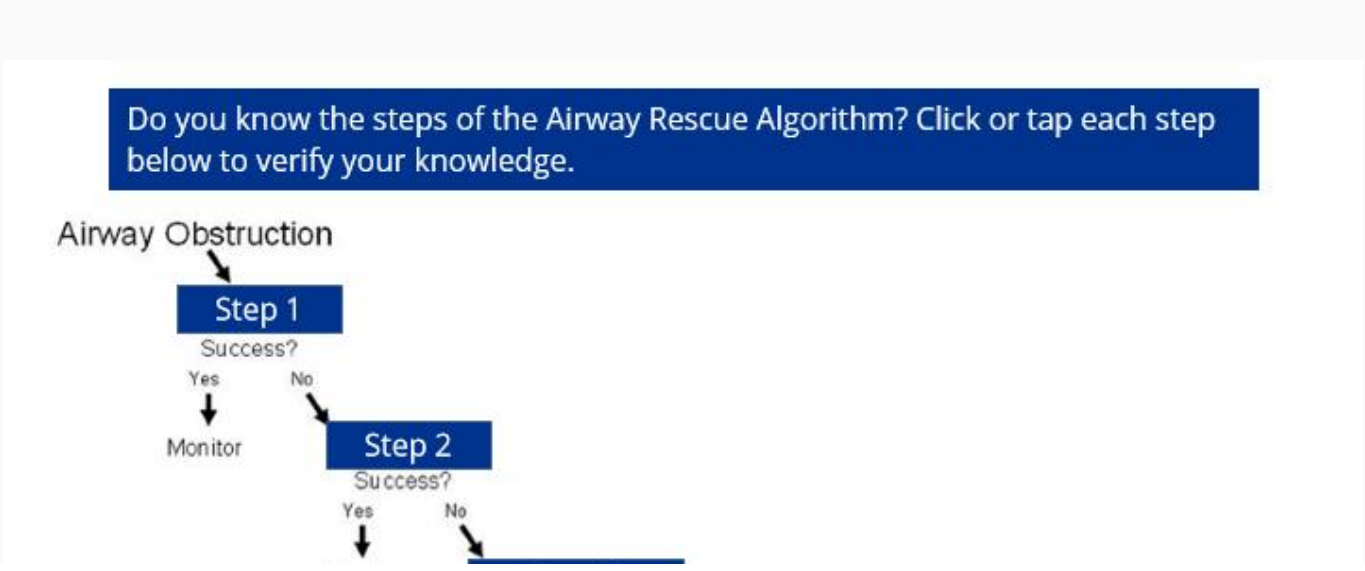


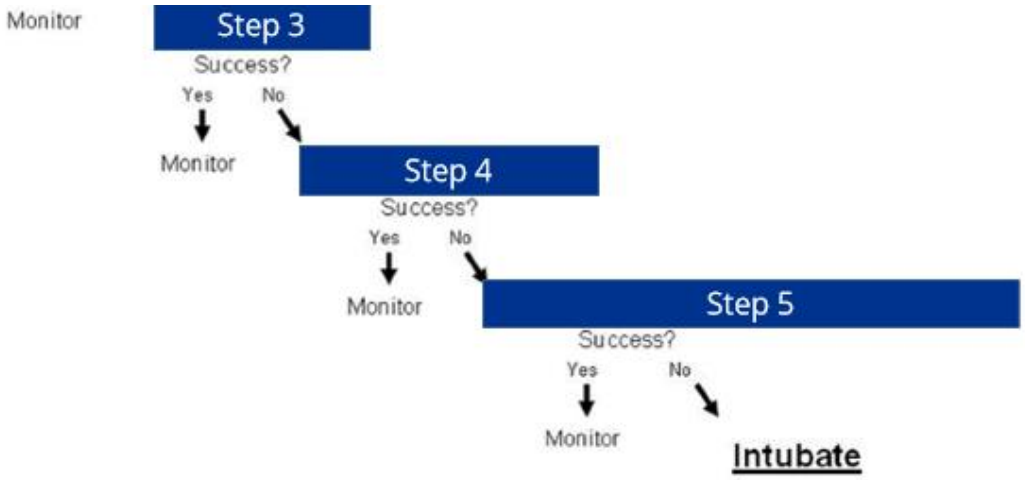
Airway Management



- Airway obstruction is the most common complication in sedation
- Follow ACLS/PALS airway management guidelines
- Airway resuscitation equipment must be at the bedside or immediately available (Airways, Ambu Bag, Suction)
- Oxygen mask or nasal cannula must be immediately available

Airway Rescue Algorithm





Complete the content above before moving on.

Click or tap on the numbers below to review five ways to manage sedation complications. Review all to move on.





Do NOT give more sedation medication



Initiate emergency airway management



Communicate patient status to provider



Consult with LIP about further management of patient status including use of reversal agents



If reversal agents are used, ensure assessments are adequate to identify over-sedation recurrence once the effect of the antagonist dissipates (may require up to 2 hours of increased observation)

Review all five ways to manage sedation complications above before moving on.

Identifying Patients Transitioning to Deep Sedation

If the patient transitions to unplanned deep sedation, it is imperative that you initiate rescue procedures!

- The patient has transitioned to deep sedation if they cannot be easily aroused (even if they respond purposefully following repeated or painful stimuli)
  - These patients may have trouble breathing and often require assistance in maintaining a patent airway
- A score of 5 or 6 on Ramsay sedation score is indicative of transition to deep sedation

Actions for When Sedation Progresses Deeper Than Planned

Let's take a look at the steps to take when a patient progresses deeper into sedation than anticipated. Appropriate measures need to be taken to return patient to planned sedation level.

1

Notify team involved with the procedure of patient's status:

"The patient's sedation is increasing and has transitioned to a deeper sedation level than planned. We need to address sedation level before proceeding."

2

Assess patient's airway.

If respirations are impaired, prepare rescue procedures:

1. Manually open airway (jaw thrust)
2. Consider insertion of oral or nasal airway
3. Assist with ventilations (bag/valve mask)
4. Prepare for intubation: Consider calling for anesthesia or code blue as appropriate to situation
5. Suction airway PRN

4

Be aware that the progression towards deep sedation varies from person to person.

5

Be alert to accumulation of secretions in the airway - aspiration is the most common cause of death in procedural sedation.

6

If deep sedation has occurred, institute measures to return to the planned level of sedation.

7

Monitor patient for signs of decreased respiratory status and airway compromise. Follow airway rescue algorithm as needed.

8

Administer reversal agents per LIP orders.

Document patient status every 5 minutes, including:

- BP
- Pulse
- Respirations
- $ETCO_2$
- Pulse oximetry
- Sedation level
- ECG pattern

Remember!

Only caregivers specifically certified in endotracheal intubation may perform airway intubation.

Complete the content above before moving on.

Complications: Allergic Reactions

Allergic Reactions

Although they are rare, allergic reactions to medications do occur. Be sure to note allergies and symptoms at the pre-procedure assessment.

The following are the most common signs of an allergic reaction:

- Generalized flush with tingling
- Pruritus
- Tachycardia
- Urticaria
- Angioedema
- Inspiratory stridor
- Wheezing
- Sudden hypotension
- Cardiac arrhythmias
- Loss of consciousness
- Seizures

Responding to an Allergic Reaction

1. Stop procedure
2. Administer appropriate drugs to counteract the allergic response as ordered:
    a. Epinephrine
    b. Benadryl
    c. Hydrocortisone, etc.
3. Monitor blood pressure
4. Support cardiovascular system with emergency medications/fluids
5. Keep airway patent
6. Anticipate possible endotracheal intubation
7. Consider calling RRT (or Code Blue)

CONTINUE

Sedation Complications & Rescue for Adult Patients Review

Multiple Choice Scenario:

Your patient has progressed to unplanned deep sedation during the procedure. He does not have spontaneous respirations, the SpO_2 has dropped to 65% on 6 L of O_2 and the $ETCO_2$ waveform is flat. The LIP decides to stop the procedure to intubate the patient.

What should you do?

- ◯ Intubate the patient
- ◯ Call for assistance and support the airway until the LIP intubates the patient
- ◯ Call an RRT
- ◯ Transfer the patient to the critical care unit immediately, then intubate

SUBMIT

Multiple Choice Scenario:

Mr. Smythe has received 4 mg of morphine sulfate IV. You notice during your procedural assessment that hives are forming. He is now having difficulty breathing with high pitched crowing on inspiration with stridor. His blood pressure has dropped from 140/78 to 80/40. You alert the LIP of the suspected allergic reaction.

Which of the following interventions would you **NOT** perform?

- ◯ Stop the procedure

- ◯ Administer medications to reverse the allergic reaction per LIP order
- ◯ Intubate the patient immediately
- ◯ Call code team
- ◯ Support the airway

SUBMIT

Select All That Apply:

Your patient's baseline vital signs are HR 78, RR 16, B/P 132/78, O_2 saturation 96%, and $ETCO_2$ 35 mmHg on room air. 15 minutes into the procedure, you obtain the following vital signs: HR 65, RR 10, B/P 120/70, O_2 saturation 94%, $ETCO_2$ 47 mmHg.

Which parameter(s) is/are of concern and bears closer observation?

- ☐ RR of 10
- ☐ $ETCO_2$ of 47
- ☐ HR of 65
- ☐ B/P of 120/70
- ☐ O_2 saturation of 94%

SUBMIT

Multiple Choice:

What would be the first line intervention if airway obstruction is suspected?

- ◯ Administer the appropriate reversal agent
- ◯ Continue pulse oximetry monitoring
- ◯ Reposition the airway using techniques for opening the airway
- ◯ Intubate the patient immediately

SUBMIT

True or False:

The most common cause of death in procedural sedation is respiratory depression.

- ◯ True
- ◯ False

SUBMIT

Multiple Choice Scenario:

Your patient has received large doses of midazolam (Versed) and fentanyl for painful debridement of a wound. 20 minutes into the procedure the patient begins to have sonorous respirations. You perform a chin lift and reassess the patient's status. The patient does not respond to verbal, tactile or painful stimuli.

Which level of sedation describes the patient's current status?

- ◯ Minimal sedation
- ◯ Moderate sedation
- ◯ Deep sedation
- ◯ General anesthesia

SUBMIT

Multiple Choice Scenario:

Your patient is undergoing procedural sedation for suturing of a large laceration. 20 minutes into the procedure his Ramsey Sedation Scale has changed from 3 to 1. He is moaning and withdrawing from painful stimuli with each placement of the skin staple.

What is your assessment?

- ◯ The patient is hypoxic
- ◯ Patient needs a different pain medication
- ◯ The patient has inadequate analgesia for the procedure
- ◯ The patient is allergic to the medication used for the procedure

SUBMIT

Multiple Choice Scenario:

Your patient has received a total of 10 mg of IV morphine sulfate for procedural sedation. He is restless and agitated. His respirations are 10 and shallow.

What may be the cause?

- ◯ The patient is responding to the painful procedure and needs more medication
- ◯ The patient is showing early signs of an allergic response to the morphine sulfate
- ◯ The patient may be showing signs of hypoxemia and further assessment is needed
- ◯ The patient is having an opposite effect with the use of morphine sulfate and a different drug should be administered

SUBMIT

Select All That Apply:

Which of the following would suggest that your patient has drifted into deep sedation?

- ☐ Vital signs are stable, but oxygen saturation has decreased slightly
- ☐ Respirations have decreased to 10/minute, oxygen saturation remains at 99%, and $ETCO_2$ is 3 mmHg above baseline
- ☐ Patient attempts to open eyes only after pain stimulus (e.g., sternal rub)
- ☐ A chin lift is required to maintain a patent airway and $ETCO_2$ has risen 10 mm Hg above baseline

SUBMIT

Complete the content above before moving on.

Conclusion

Congratulations!
You have completed this course.

Thank you for completing the Procedural Sedation - Adult Patients course!

If you have any unit-specific questions, please contact your nursing unit manager or preceptor.

Exit
Click to exit the course.

EXIT

PROVSOUTH: Tenecteplase for Acute Ischemic Stroke

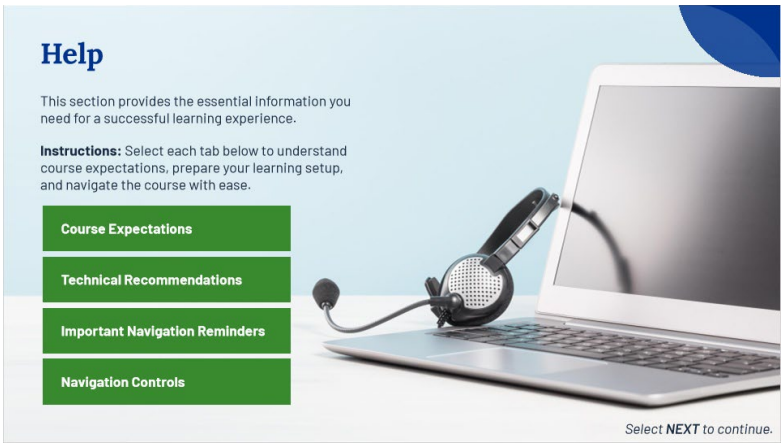
1. Tenecteplace for Acute Ischemic Stroke

1.1 Title

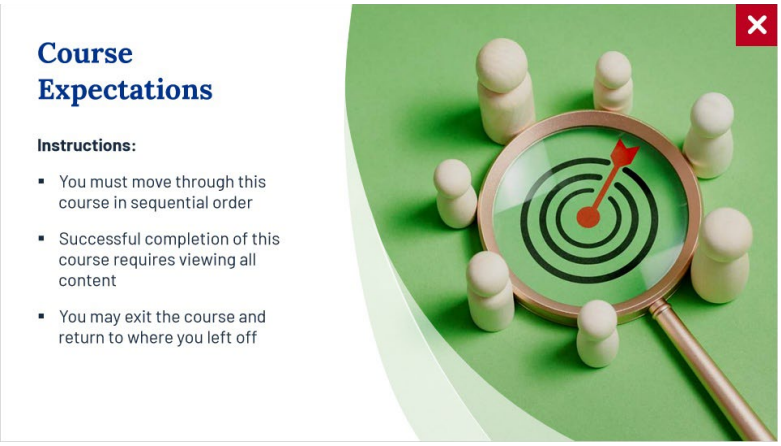


Notes:

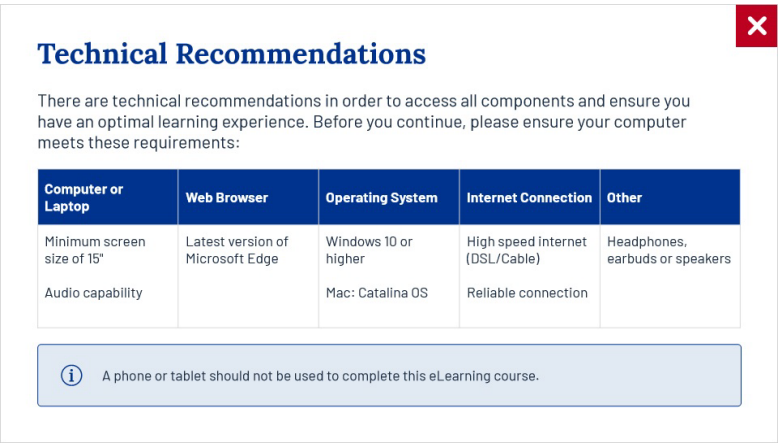
1.2 Help



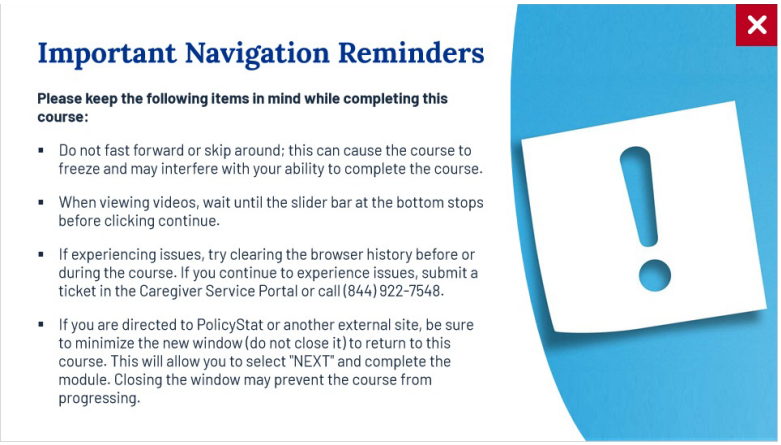
Course Expectations (Slide Layer)



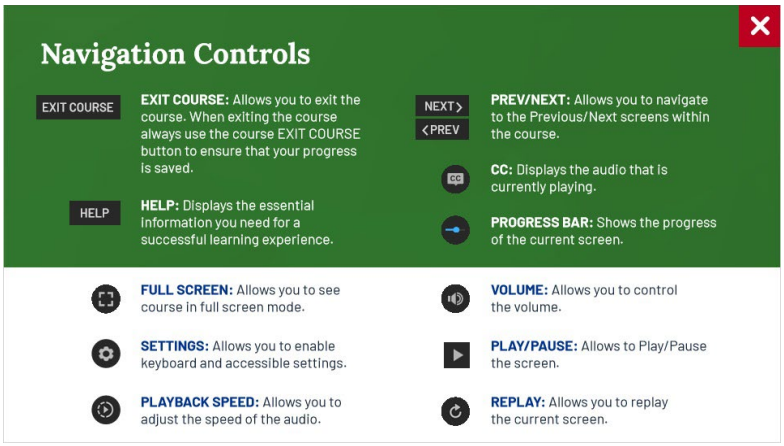
Technical Recommendations (Slide Layer)



Important Navigation Reminders (Slide Layer)



Navigation Controls (Slide Layer)



1.3 Learning Objectives

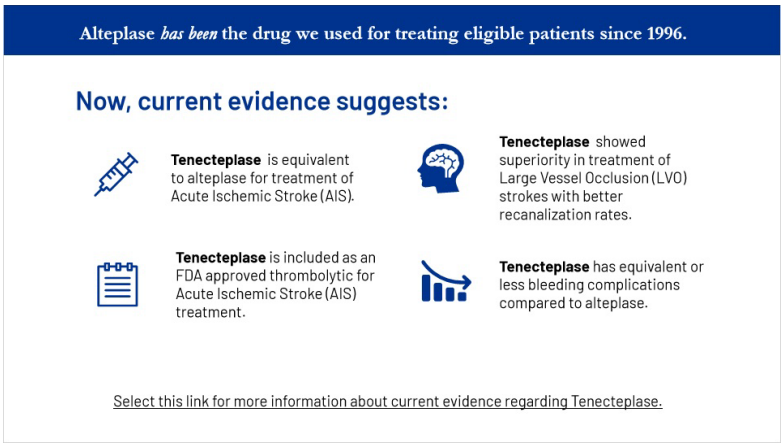


Notes:

1.4 The Case for Tenecteplase: Practice Change SBAR

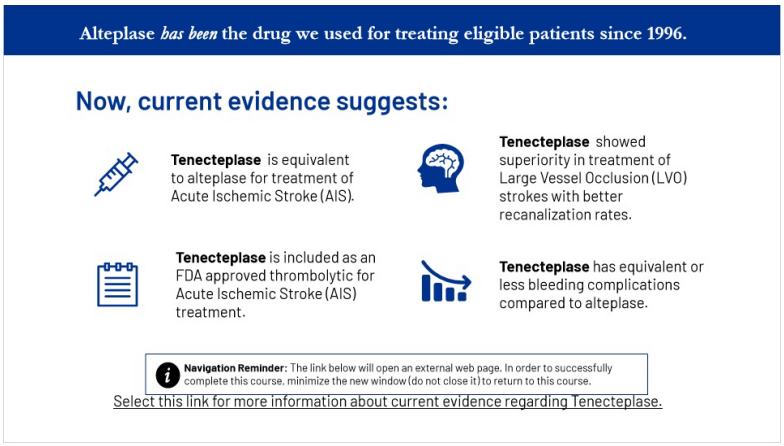


1.5 Overview

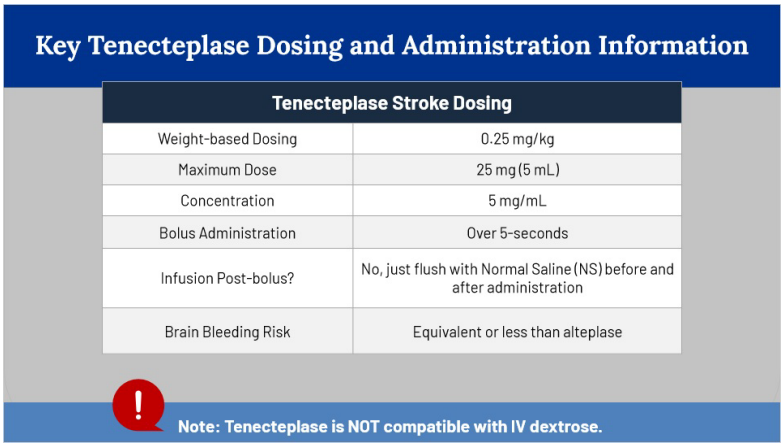


Notes:

Navigation Reminder (Slide Layer)



1.6 Note: Tenecteplase is NOT compatible with IV dextrose.

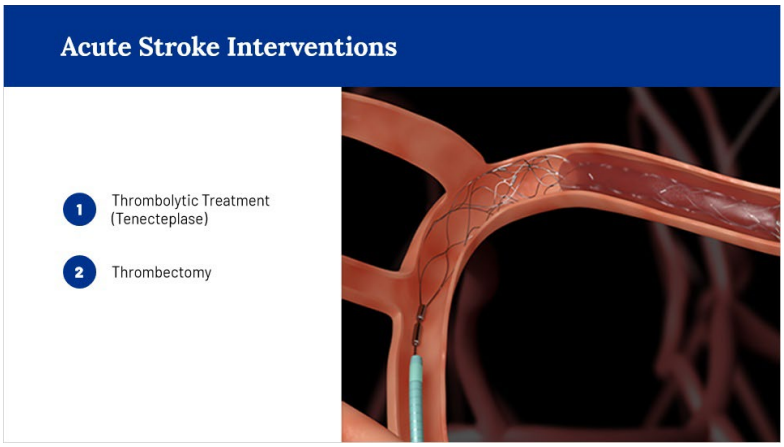


Notes:

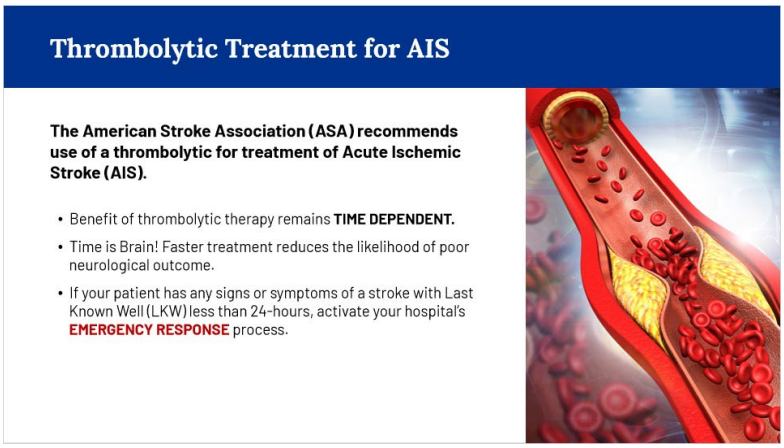
1.7 Acute Stroke Treatment



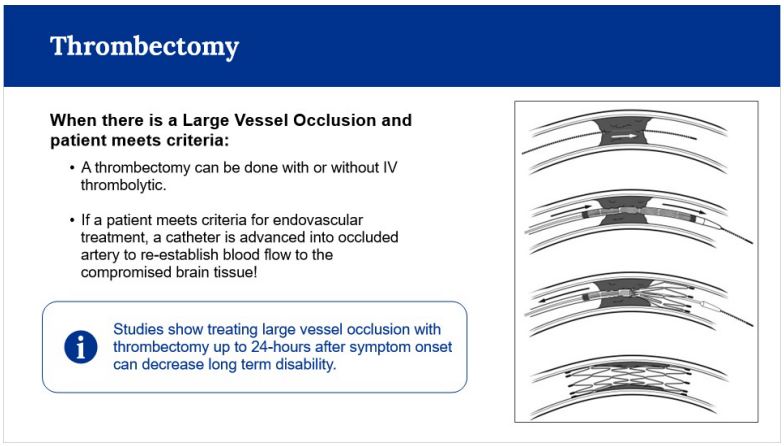
1.8 Stroke Treatment Options



1.9 Thrombolytic Treatment for AIS



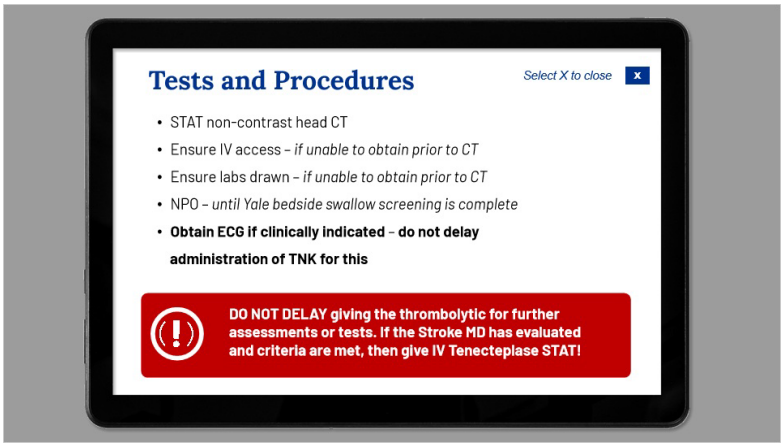
1.10 Thrombectomy



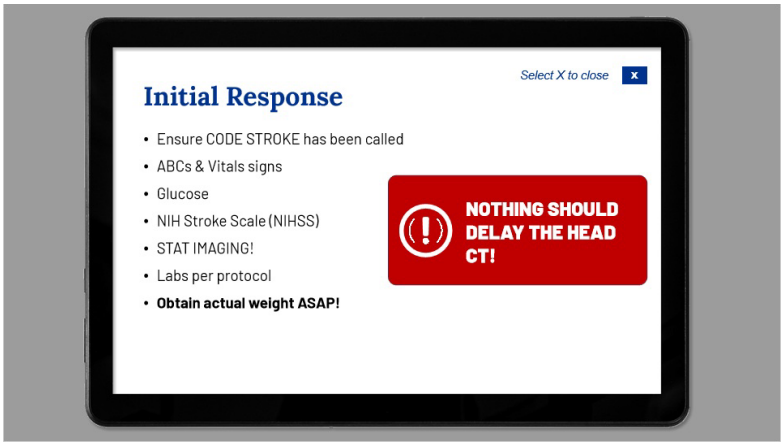
1.11 Responding to a Code Stroke



Tests and Procedures (Slide Layer)



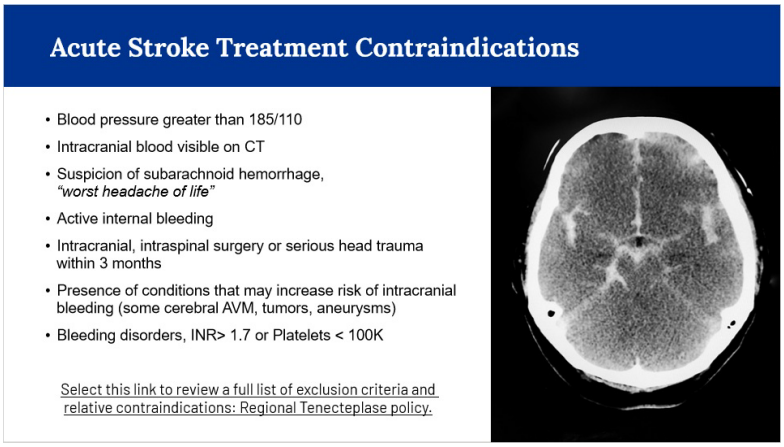
Initial Response (Slide Layer)



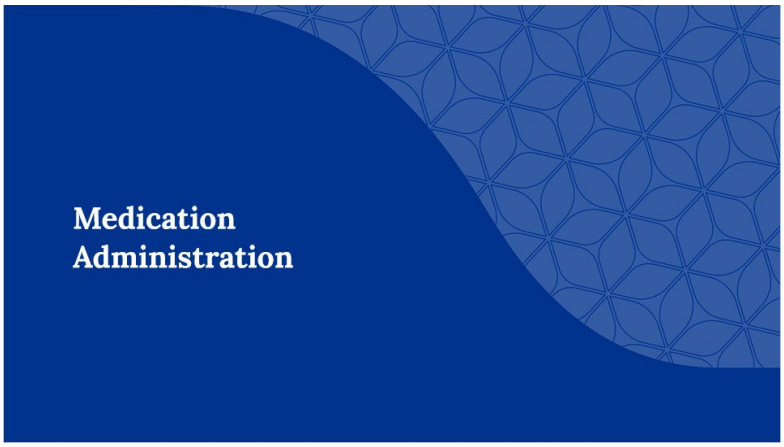
1.12 Contraindications



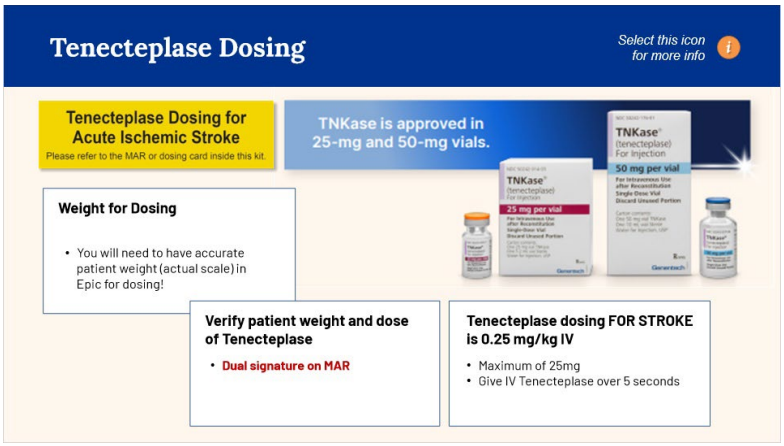
1.13 Acute Stroke Treatment Contraindications



1.14 Medication Administration



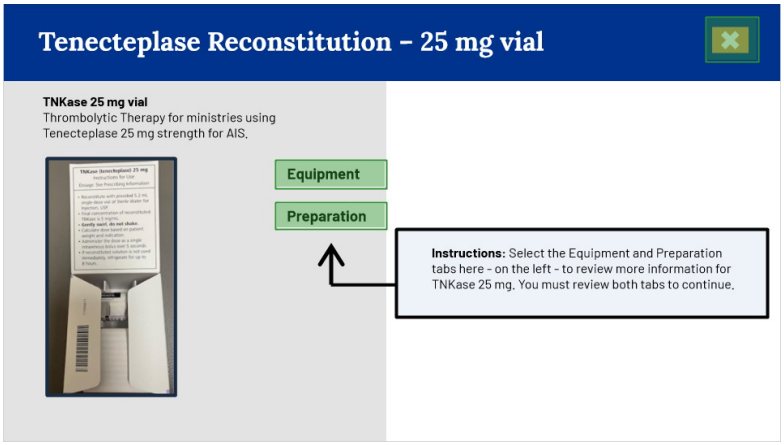
1.15 Tenecteplase Dosing



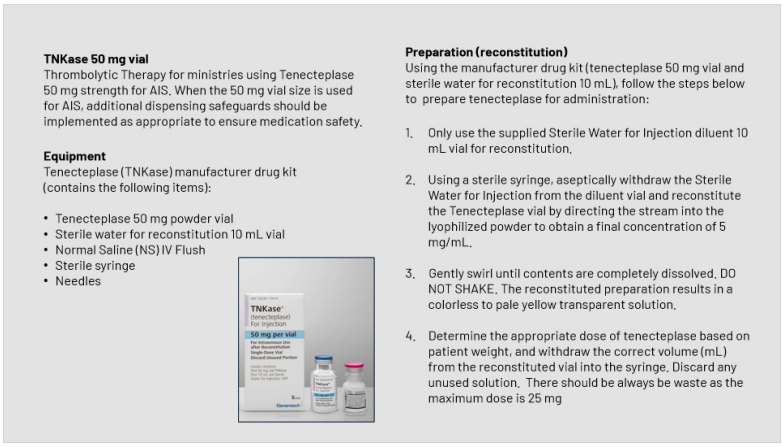
1.16 Tenecteplase Reconstitution



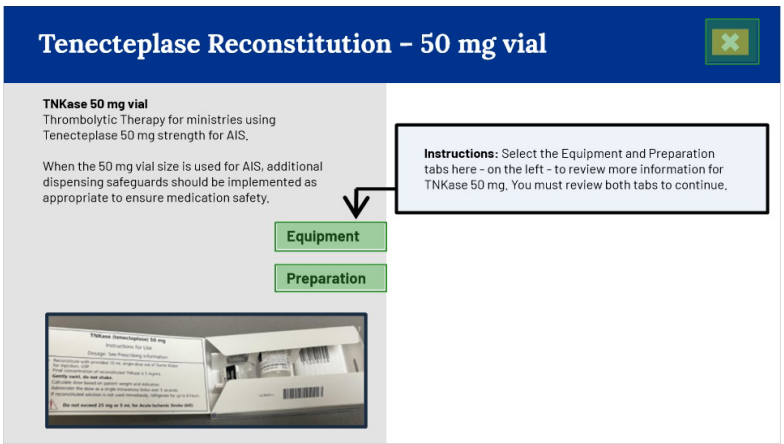
25 (Slide Layer)



do not use (Slide Layer)



50 (Slide Layer)



1.17 Best Practice

Best Practice

- Use a 5 mL syringe to draw up final dose to avoid exceeding max dose of 25 mg for stroke (5 mL).
- Dosing for Tenecteplase is calculated using a weight range.
- This works out to about 0.25 mg/kg.



Notes:

1.18 Tenecteplase Dosing

Tenecteplase Dosing

Step 1

- Tenecteplase dosing

Step 2

- Calculate dose according to patient's ACTUAL scale weight 0.25 mg per kg *(refer to the table on the right to find the patient dose)*

Step 3

- Withdraw the appropriate dose/volume of Tenecteplase solution based on weight

Step 4

- Round dose mL to the nearest 0.2 mL

Tenecteplase Dosing
Acute Ischemic Stroke

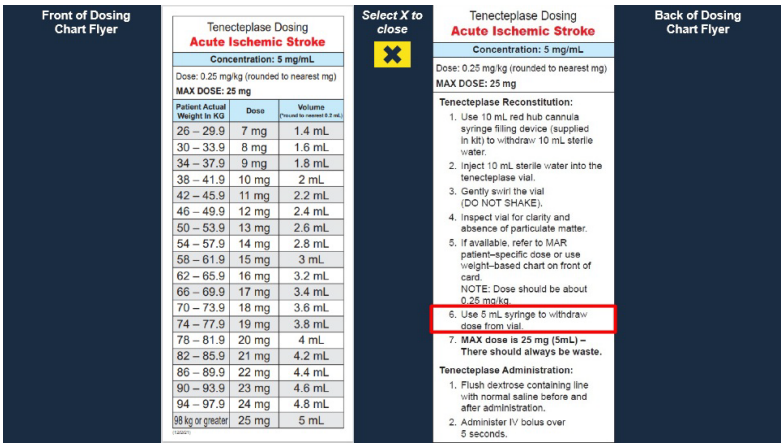
Concentration: 5 mg/mL

Dose: 0.25 mg/kg (rounded to nearest mg)

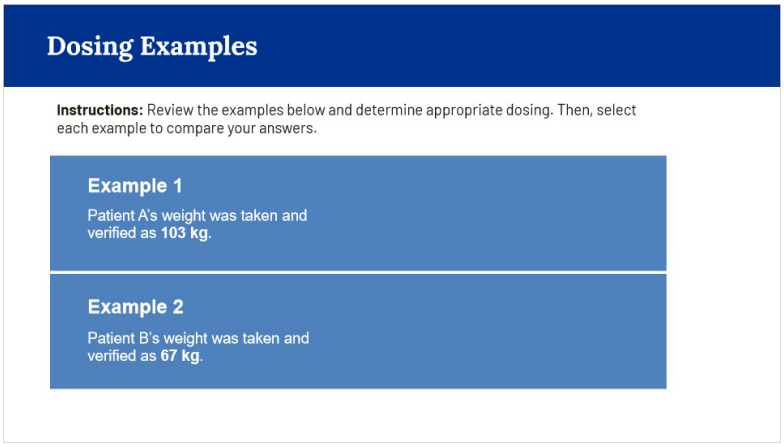
MAX DOSE: 25 mg

Patient Actual Weight In KG	Dose	Volume (*round to nearest 0.2 mL)
26 – 29.9	7 mg	1.4 mL
30 – 33.9	8 mg	1.6 mL
34 – 37.9	9 mg	1.8 mL
38 – 41.9	10 mg	2 mL
42 – 45.9	11 mg	2.2 mL
46 – 49.9	12 mg	2.4 mL
50 – 53.9	13 mg	2.6 mL
54 – 57.9	14 mg	2.8 mL
58 – 61.9	15 mg	3 mL
62 – 65.9	16 mg	3.2 mL
66 – 69.9	17 mg	3.4 mL
70 – 73.9	18 mg	3.6 mL
74 – 77.9	19 mg	3.8 mL
78 – 81.9	20 mg	4 mL
82 – 85.9	21 mg	4.2 mL
86 – 89.9	22 mg	4.4 mL
90 – 93.9	23 mg	4.6 mL
94 – 97.9	24 mg	4.8 mL
98 kg or greater	25 mg	5 mL

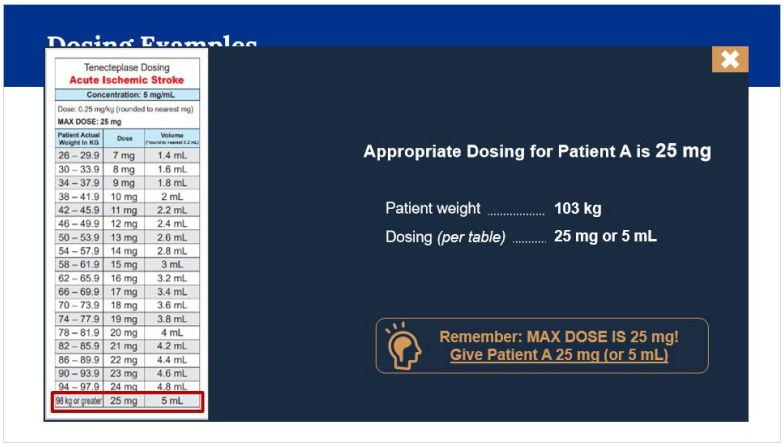
Table Zoom (Slide Layer)



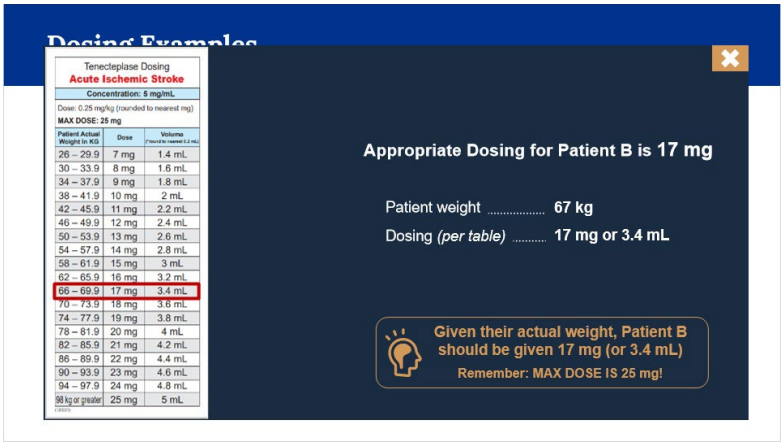
1.19 Dosing Examples



Example 1 (Slide Layer)



Example 2 (Slide Layer)

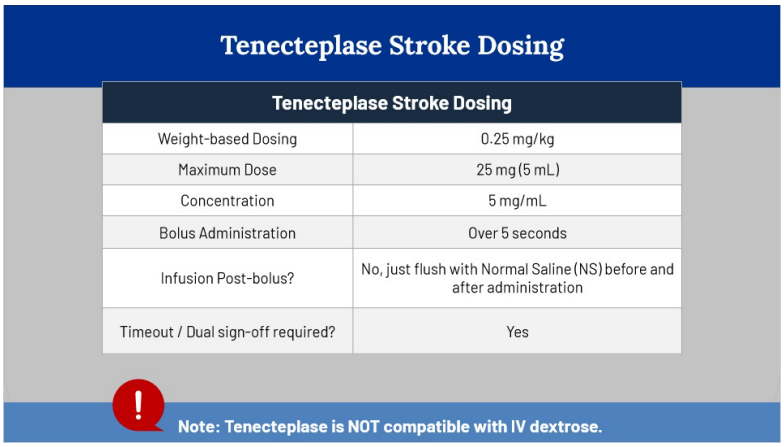


1.20 Before Administering



Notes:

1.21 Tenecteplase Stroke Dosing.



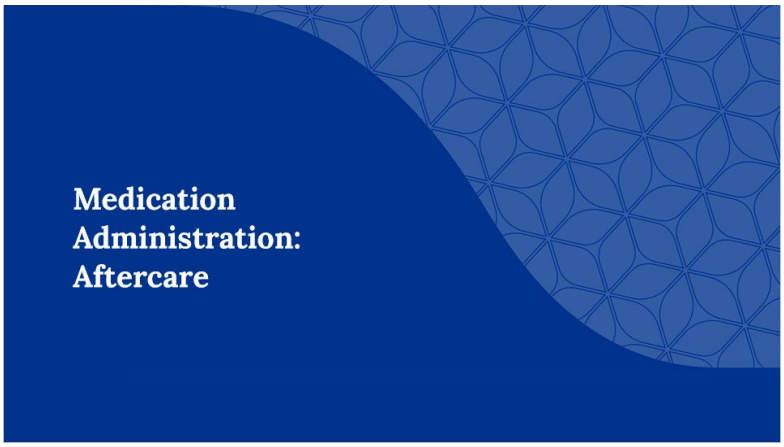
Notes:

1.22 Administering Tenecteplase

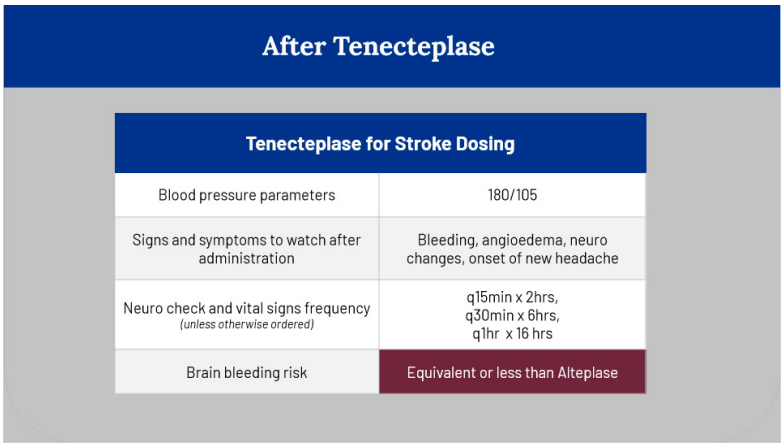


Notes:

1.23 Medication Administration: Aftercare

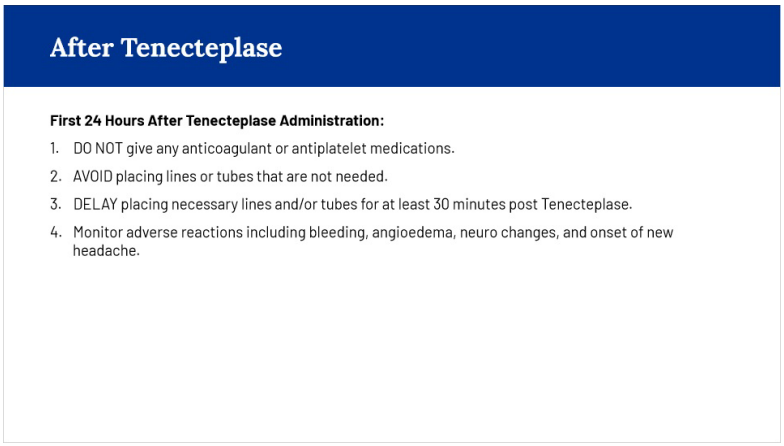


1.24 After Tenecteplase



Notes:

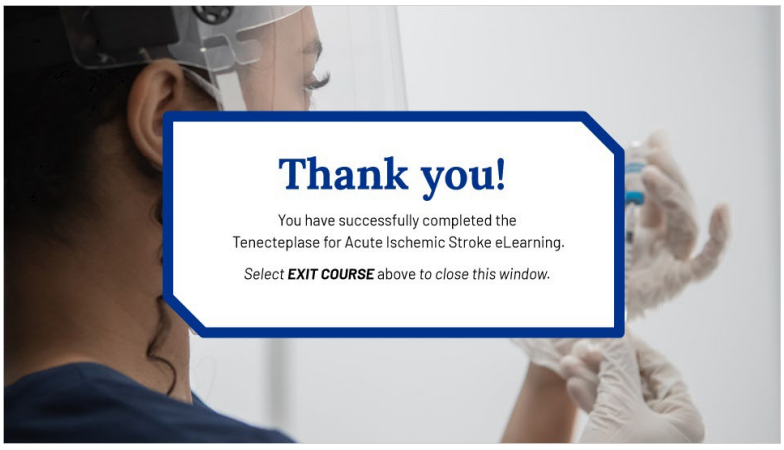
1.25 After Tenecteplase



1.26 Every 15 minutes



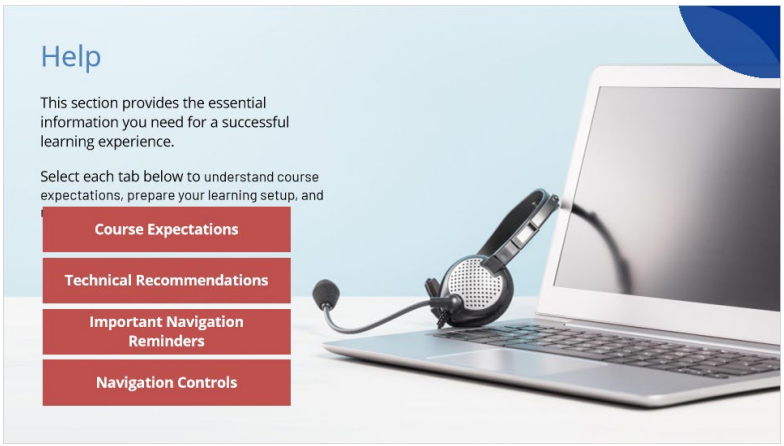
1.27 Conclusion



Notes:

2. HELP

2.1 Help

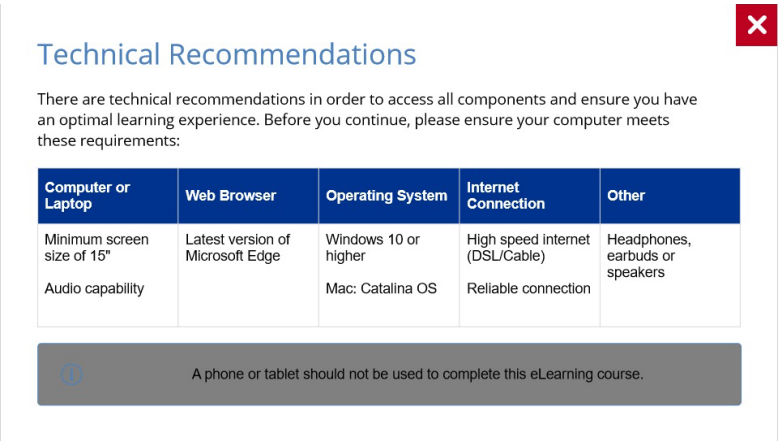


Notes:

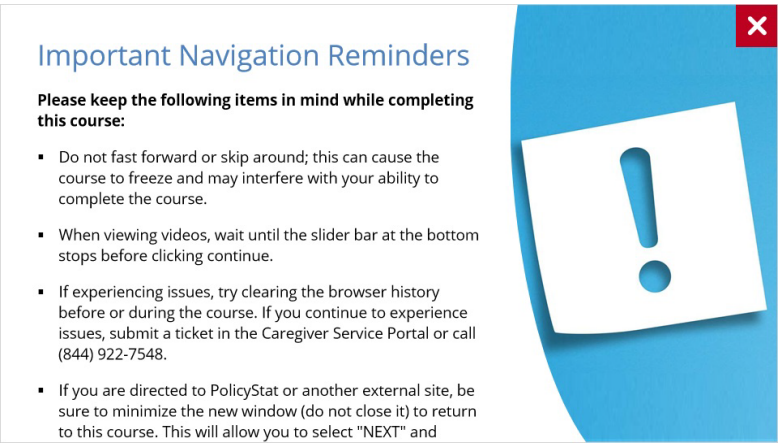
Course Expectations (Slide Layer)



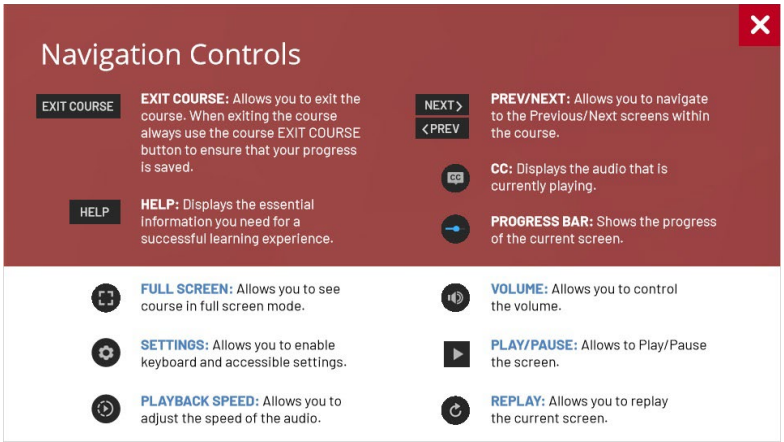
Technical Recommendations (Slide Layer)



Important Navigation Reminders (Slide Layer)

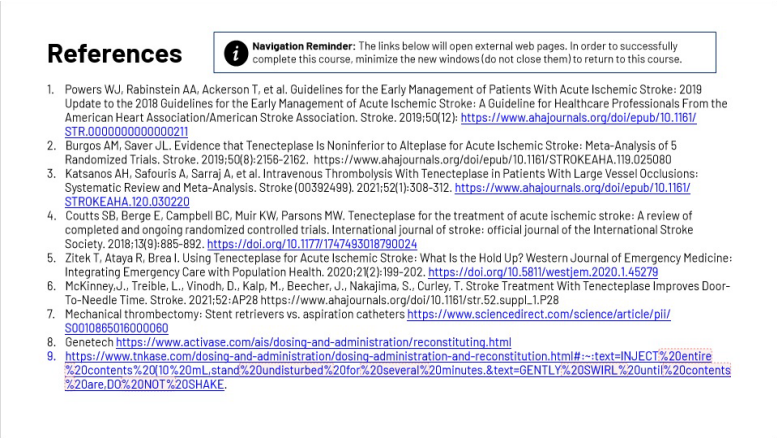


Navigation Controls (Slide Layer)



3. References

3.1 References



References

Navigation Reminder: The links below will open external web pages. In order to successfully complete this course, minimize the new windows (do not close them) to return to this course.

1. Powers WJ, Rabinstein AA, Ackerson T, et al. Guidelines for the Early Management of Patients With Acute Ischemic Stroke: 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. Stroke. 2019;50(12): https://www.ahajournals.org/doi/epub/10.1161/STR.0000000000000211
2. Burgos AM, Saver JL. Evidence that Tenecteplase Is Noninferior to Alteplase for Acute Ischemic Stroke: Meta-Analysis of 5 Randomized Trials. Stroke. 2019;50(8):2156-2162. https://www.ahajournals.org/doi/epub/10.1161/STROKEAHA.119.025080
3. Katsanos AH, Safouris A, Sarraj A, et al. Intravenous Thrombolysis With Tenecteplase in Patients With Large Vessel Occlusions: Systematic Review and Meta-Analysis. Stroke (00392499). 2021;52(1):308-312. https://www.ahajournals.org/doi/epub/10.1161/STROKEAHA.120.030220
4. Coutts SB, Berge E, Campbell BC, Muir KW, Parsons MW. Tenecteplase for the treatment of acute ischemic stroke: A review of completed and ongoing randomized controlled trials. International journal of stroke: official journal of the International Stroke Society. 2018;13(9):885-892. https://doi.org/10.1177/1747493018790024
5. Zitek T, Ataya R, Brea I. Using Tenecteplase for Acute Ischemic Stroke: What Is the Hold Up? Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health. 2020;21(2):199-202. https://doi.org/10.5811/westjem.2020.1.45279
6. McKinney,J., Treible, L., Vinodh, D., Kalp, M., Beecher, J., Nakajima, S., Curley, T. Stroke Treatment With Tenecteplase Improves Door-To-Needle Time. Stroke. 2021;52:AP28 https://www.ahajournals.org/doi/10.1161/str.52.suppl_1.P28
7. Mechanical thrombectomy: Stent retrievers vs. aspiration catheters https://www.sciencedirect.com/science/article/pii/S0010865016000060
8. Genetech https://www.activase.com/ais/dosing-and-administration/reconstituting.html
9. https://www.tnkase.com/dosing-and-administration/dosing-administration-and-reconstitution.html#:~:text=INJECT%20entire%20contents%20(10%20mL,stand%20undisturbed%20for%20several%20minutes.&text=GENTLY%20SWIRL%20until%20contents%20are,DO%20NOT%20SHAKE.

Saint John's Health Center
PROVIDENCE Health & Services

EVD Education and Guidelines Quick Sheet

EVD Monitoring Guidelines

- ****Review the chart thoroughly* for background on placement and monitoring guidelines****
  - Orders may be under "Precautions" (i.e. Stroke Management – ICH), "Monitor & Notify Provider," and "Nursing"
- Typical orders include:
  - **Neuro check frequency, NIH (if indicated)**
  - **"Ventriculostomy Management"**
  - **Notification parameters**
  - **Systolic BP goal range + PRN BP medications**
  - **Open to drain VS clamping and weaning**
  - **Follow up imaging (i.e. repeat head CT)**



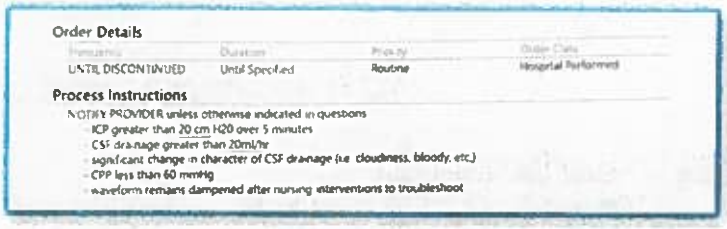
EVD Checks

- Adjusting EVD height
  - Reposition HOB to minimum of 30 degrees and ensure head is positioned for optimal draining of CSF (midline and straight).
  - Adjust the height of EVD on poll by leveling the transducer to the **tragus** of the ear.
  - Tighten the string to the pole to prevent EVD from falling.
  - **Lock HOB and bed height** to prevent the raising or lowering of the patient's head.
  - Add signage to prevent ancillary staff from adjusting height of bed.
- Once a shift:
  - Zero the EVD on the monitor by adjusting the stopcock so it is closed to patient, allowing a direct line from the monitor to the transducer to air.
  - Remove cap so transducer is open to environmental pressure.
  - Select "Zero ICP" on the monitor.
  - When complete, place a ***new*** sterile cap
  - *Print a strip containing the ICP waveform and add to EKG in paper chart.*



- Q1H and PRN
  - If the patient is receiving continuous drainage once an hour you will check the ICP.
  - ***The EVD will not measure continuous ICP when it is draining**
  - **Check your stopcocks carefully – ensure a clear line between the patient and the transducer (the stopcock will be off to drain).**
  - Allow at least 1 full minute for the monitor to register the pressure.
  - Observe waveform and document pressure.
  - Return stopcock to drain position.
  - Document output into drainage chamber and empty into bag.
  - ***After every turn/reposition, relevel the EVD to tragus***

Saint John's Health Center
PROVIDENCE Health & Services


Order Details

UNTIL DISCONTINUED	Until Specified	Routine	

Process Instructions
NOTIFY PROVIDER unless otherwise indicated in questions
- ICP greater than 20 cm H20 over 5 minutes
- CSF drainage greater than 20ml/hr
- significant change in character of CSF drainage (i.e. cloudiness, bloody, etc.)
- CPP less than 60 mmHg
- waveform remains dampened after nursing interventions to troubleshoot

When to Notify a physician

- Review the orders for specific notification parameters **as these may differ between patients**
- Typically, notify if:
  - ICP *sustains* greater than 20 over 5 minutes
  - CSF drainage greater than 20 ml/hr
  - If drainage stops unexpectedly
  - CSF changes i.e. color change, blood or cloudiness
  - CPP less than 60 or SBP less than 90
  - Change in ICP waveform
  - Significant decline in neurologic status, i.e. changes in LOC, pupils, unilateral weakness, or decline in brainstem reflexes (i.e. loss of cough/gag)
  - **When in doubt – discuss with Intensivist if condition warrants a call to neuro team**

Troubleshooting the EVD: Nursing Measures to Improve ICP

- If the ICP is high – address patient concerns first
  - BP within parameters
  - Control anxiety / decrease stimuli
  - Reposition head for optimal drainage
- Troubleshoot the monitor
  - Run your line – check for kinks, check stopcock directions
  - Check for clots in the line – **Do not flush EVD** – alert MD who will flush
  - Relevel and re-zero the EVD
  - Check the waveform for dampening

Terms:

- EVD: external ventricular device
- ICP: intracranial pressure
- CPP: cerebral perfusion pressure (pressure that drives blood into brain: CPP = MAP – ICP)

Scan here for more info on the Integra Accudrain Model

Scan here for more info on EVDs and ICP monitoring

Saint John's Health Center
PROVIDENCE Health & Services

EVD Education and Guidelines Quick Sheet

EVD Monitoring Guidelines

- ****Review the chart thoroughly* for background on placement and monitoring guidelines****
  - Orders may be under "Precautions" (i.e. Stroke Management – ICH), "Monitor & Notify Provider," and "Nursing"
- Typical orders include:
  - **Neuro check frequency, NIH (if indicated)**
  - **"Ventriculostomy Management"**
  - **Notification parameters**
  - **Systolic BP goal range + PRN BP medications**
  - **Open to drain VS clamping and weaning**
  - **Follow up imaging (i.e. repeat head CT)**



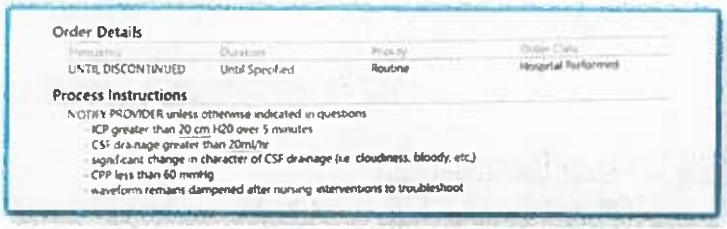
EVD Checks

- Adjusting EVD height
  - Reposition HOB to minimum of 30 degrees and ensure head is positioned for optimal draining of CSF (midline and straight).
  - Adjust the height of EVD on poll by leveling the transducer to the **tragus** of the ear.
  - Tighten the string to the pole to prevent EVD from falling.
  - **Lock HOB and bed height** to prevent the raising or lowering of the patient's head.
  - Add signage to prevent ancillary staff from adjusting height of bed.
- Once a shift:
  - Zero the EVD on the monitor by adjusting the stopcock so it is closed to patient, allowing a direct line from the monitor to the transducer to air.
  - Remove cap so transducer is open to environmental pressure.
  - Select "Zero ICP" on the monitor.
  - When complete, place a ***new*** sterile cap
  - *Print a strip containing the ICP waveform and add to EKG in paper chart.*



- Q1H and PRN
  - If the patient is receiving continuous drainage once an hour you will check the ICP.
  - ***The EVD will not measure continuous ICP when it is draining**
  - **Check your stopcocks carefully – ensure a clear line between the patient and the transducer (the stopcock will be off to drain).**
  - Allow at least 1 full minute for the monitor to register the pressure.
  - Observe waveform and document pressure.
  - Return stopcock to drain position.
  - Document output into drainage chamber and empty into bag.
  - ***After every turn/reposition, relevel the EVD to tragus***

Saint John's Health Center
PROVIDENCE Health & Services


Order Details

UNTIL DISCONTINUED	Until Specified	Routine	

Process Instructions
NOTIFY PROVIDER unless otherwise indicated in questions
- ICP greater than 20 cm H20 over 5 minutes
- CSF drainage greater than 20ml/hr
- significant change in character of CSF drainage (i.e. cloudiness, bloody, etc.)
- CPP less than 60 mmHg
- waveform remains dampened after nursing interventions to troubleshoot

When to Notify a physician

- Review the orders for specific notification parameters **as these may differ between patients**
- Typically, notify if:
  - ICP *sustains* greater than 20 over 5 minutes
  - CSF drainage greater than 20 ml/hr
  - If drainage stops unexpectedly
  - CSF changes i.e. color change, blood or cloudiness
  - CPP less than 60 or SBP less than 90
  - Change in ICP waveform
  - Significant decline in neurologic status, i.e. changes in LOC, pupils, unilateral weakness, or decline in brainstem reflexes (i.e. loss of cough/gag)
  - **When in doubt – discuss with Intensivist if condition warrants a call to neuro team**

Troubleshooting the EVD: Nursing Measures to Improve ICP

- If the ICP is high – address patient concerns first
  - BP within parameters
  - Control anxiety / decrease stimuli
  - Reposition head for optimal drainage
- Troubleshoot the monitor
  - Run your line – check for kinks, check stopcock directions
  - Check for clots in the line – **Do not flush EVD** – alert MD who will flush
  - Relevel and re-zero the EVD
  - Check the waveform for dampening

Terms:

- EVD: external ventricular device
- ICP: intracranial pressure
- CPP: cerebral perfusion pressure (pressure that drives blood into brain: CPP = MAP – ICP)

Scan here for more info on the Integra Accudrain Model

Scan here for more info on EVDs and ICP monitoring

PROVIDENCE
Saint John's
Health Center

CRITICAL CARE UNIT
CLINICAL STANDARDS OF PRACTICE

I have read the Clinical Standards of Practice for the Critical Care Unit at Saint John's Health Center. I acknowledge that I understand and accept these responsibilities to abide by these standards as adopted by the Critical Care Unit Council.

Critical Care Nurse: _____ Date: _____

CCU RN Signature: _____

Supervisor: _____ Date: _____

Critical Care Unit
Clinical Standards of Practice

1. Each Registered Nurse (RN) is responsible for total patient care on their assigned patient(s). This includes the assessment, planning, intervention, and evaluation of the patient's status and progress towards expected outcome given the anticipated length of stay on the Critical Care Unit.

2. Professional standards of practice are based on the American Association of Critical Care Nurses (AACN) *Standards for Acute and Critical Care Nursing Practice* available at aacn.org. Other resources for critical care nursing practice are provided at the *Clinical Practice* home page of the aacn.org website.

3. The AACN *Procedure Manual* for Critical Care provides the foundation for critical care nursing clinical procedures.

4. Lippincott Nursing Procedures and Skills is another resource for critical care nursing practice.

5. Providence Saint John's Health Center Policies are another resource and can be found on the Landing in PolicyStat.

6. The staff nurse in the Critical Care Unit is responsible and accountable for providing direct care to a variety of critically ill patients. The RN provides nursing care for 1 to 2 of the most complex patients, independently carrying out all nursing functions related to cardiac monitoring, treatments, medications, vasoactive infusions, and invasive monitoring modalities by implementing the nursing process. The RN is responsible to facilitate care through collaboration with the multidisciplinary care team.

7. The RN is responsible for daily communication with the attending physician, consultants, and other disciplines as indicated in order to coordinate care for the patient.

8. **PRIORITIZATION OF CARE** is based on the following:
   - 8.1. Addressing emergent or life-threatening conditions.
   - 8.2. Addressing needs necessary to ensure the safety of the patient.
   - 8.3. Addressing needs necessary to ensure the physical comfort of the patient.
   - 8.4. Addressing needs necessary to ensure psycho-social stability of the patient.
   - 8.5. Addressing needs necessary to assure safe and appropriate care following discharge or transfer to another level of care.

9. **ADMISSION TO THE CRITICAL CARE UNIT AND INITIAL ASSESSMENT**
   - 9.1. The RN is responsible to ensure appropriate equipment is available and functioning for patient care e.g. – ambu bag, suction/ oxygen regulators, bed zeroed, EKG electrodes.
   - 9.2. The initial EKG rhythm strip, vital signs including temperature, blood pressure, heart rate, respirations, Sp02 (if indicated by condition) and pain scale level will be obtained on admission.
   - 9.3. Review and discuss appropriate orders with physician as needed.
   - 9.4. The initial assessment will be completed and documented within 2 hours of admission to the unit.
   - 9.5. Patient identification is verified using two identifier methods.
   - 9.6. Assure appropriate armbands are on patient (e.g.: transfusion-free, allergies, and "do not use arm").
   - 9.7. Orientation of the patient to the room/unit/call system/care providers is expected to be completed within one hour of arrival to the unit unless the patient is unresponsive. Unit orientation for the family should be completed as soon as reasonably possible after their arrival.
   - 9.8. The Admission Documentation will be completed within 24 hours of the patient's arrival on the unit.

9.8.1. The RN completes the admit documentation with patient/significant other input if possible. If the admission documentation is not completed, the next shift is notified in order to ensure admission documentation completion.

9.8.2. Initial screening or assessment of the patient's physical, psychosocial, spiritual, nutritional, and functional status, and pain level is completed to determine the priorities for care in conjunction with physician orders and the need for further assessment and referrals.

9.9. During the admission procedure, the Plan of Care will be discussed with the patient/SO to their level of understanding.

9.10. Provide Critical Care Unit Brochure: discuss visiting policy and identify spokesperson. Inform about no flowers while in critical care.

10. REASSESSMENT:

10.1. A complete assessment will be done at least every 4 hours or more frequently, dependent on patient condition.

10.2. Vital signs will be obtained a minimum of every one hour or more frequently, depending on the patient condition and hemodynamic stability. These are documented in the EMR under Doc Flow sheets.

10.3. Temperature checks, Sp02 and pain assessment are done at least every 4 hours or more frequently, depending upon patient condition.

10.4. EKG strips are obtained and mounted on paper at the beginning of each shift. PR, QRS, QT intervals, and rhythm interpretation are documented in the EMR. Additional strips are to be obtained with significant rhythm changes, and condition changes, such as chest pain. Obtain 12 lead EKG if chest pain or ischemic changes are suspected. Obtain physician order.

10.5. Other hemodynamic waveforms are documented each shift. Additional waveforms should be obtained based upon abnormal changes in waveform and/or condition. All invasive lines are to be assessed for placement and patency.

10.6. The data obtained in the reassessment is integrated to identify and prioritize needs of care.

10.7. At the end of each shift, document in Care Plan Shift Summary & Review as well as Outcome to indicate:

10.8. Progress toward goals

10.9. Patient's comfort including response to pain medication

10.10. Pertinent changes/responses to interventions (e.g. titration of vasoactive drips, ventilator weaning, agitation, response to weaning, sedation, extubation, etc.)

10.11. Justification for use of restraints.

10.12. Review of / revision to the plan of care.

10.13. The Plan of Care will be initiated within 24 hours of admission to the hospital and reviewed/revised Q shift.

10.14. The plan of care is individualized to meet the patient's needs and the appropriate critical care interventions are initiated or completed as the patient condition indicates.

11. PATIENT EDUCATION

11.1. The RN is responsible for providing an initial assessment of patient/SO learning needs, barriers, preferences for learning, and establishing mutual priorities/goals with the patient/SO.

11.2. The interdisciplinary healthcare team provides ongoing education specific to the patient's assessed needs, abilities, and readiness, as appropriate to the patient's length of stay.

11.3. Initiate appropriate referrals to facilitate learning and meet post-discharge learning needs.

11.4. Document patient education and outcome in the EMR under Patient Education.

11.5.Instruct and assist patient/SO with maintaining good standards for personal hygiene and grooming including bathing, brushing teeth, caring for hair and nails and using the toilet.

11.6.Patient education resources such as the Krames on Demand via the intranet, Micromedex, unit resources, and

Health TV will be used to optimize patient/family understanding.

11.7. For core measures, provide appropriate patient education such as HF, Pneumonia, Stroke, SCIP and Acute MI.

12. ASSESSMENT OF AGITATION & DELIRIUM

12.1. The Richmond Agitation and Sedation Scale will be used to assess level of delirium/agitation/sedation Q 4 hours (8-12-1600-2000-2400-0400). Sedation should be titrated to a designated RASS goal.

13. PAIN & SYMPTOM ASSESSMENT

13.1. Pain will be assessed on initial admission.

13.2. Pain assessment and response to therapy will be documented on the Doc Flowsheet with full vital signs (Q 4 hours) and as needed for condition changes. Document pre- and post-intervention pain rating on the MAR using a numeric value.

13.3. The 0-10 scale (0 = no pain, 10= worst pain) will be used if the patient is able. Other pain scales include FACES, Word Scale, the Pain AD: for patients with advanced dementia, and Critical Care Pain Observation Tool (CPOT): for patients on mechanical ventilation.

13.4. Patients who cannot communicate should be assessed through use of Pain AD scale and physiological indicators (heart rate, blood pressure, respiratory rate) and the change in these parameters following analgesic or non-pharmacologic therapy.

13.5. Offer pain medication and consider alternative pain relief methods (music therapy, guided imagery, breathing techniques).

13.6. Consult Pain Pharmacist for complex pain issues at extension 7268.

13.7. Collaborate with physician to address symptom management for nausea, anxiety, dyspnea, breakthrough pain.

14. ALARMS

13.1 Monitors

13.1.1 At the beginning of EACH shift, each nurse is responsible to check the bedside and central monitor of assigned patients to ascertain ALL alarm parameters are appropriately set, functioning properly, audible, and sensing properly.

13.1.2 The alarms should be individualized for the patient specific needs.

13.1.3 ALL monitor alarms are to remain ON and continuously audible at ALL times while in use for patient monitoring.

13.1.4 The RN will ensure the alarms are synchronized with the Spectralink phone and the alarm light indicator's function.

13.1.5 Standby function is only used to correct immediate problems and should only be used while the nurse is in direct attendance with the patient.

13.1.6 The Comfort Care screen may be used to eliminate alarms in the room, only when the patient is on the Comfort Care protocol.

13.2 Ventilators

13.2.1. At the beginning of EACH shift and Q 2 hours, the Respiratory Therapist is responsible to check the ventilator of assigned patients to ascertain alarm parameters are appropriately set, functioning properly, and audible.

13.3. IV Pumps

13.3.1 Maintain audible alarm settings

15. WEIGHTS AND INTAKE AND OUTPUT

15.1. Obtain initial weight on admission and daily.

15.2. Monitor urine output q 2 hours or more frequently, if patient has a foley catheter, and for PRN urination, if patient using commode/urinal/bedpan/Bathroom.

15.3. Calculate I & O q 12 hours. Also include the I/O from pre-op, intra-op, post op, or and from

transferring floor within 12 hr. shift time-frame.

15.4. Include in the output any drainage tubes recording each one individually.
15.5. Assess and document bowel movements and obtain orders as indicated if no BM within 3 days.
15.6. Confer with MD to assure daily stool softener/laxative if patient on opioids.

16. NUTRITION

16.1. Collaborate with the physician and dietitian to optimize nutritional intake as soon as condition allows.
16.2. Check NG/GT residual Q 4hours for patients with tube feedings.
16.3. Change and label tube feeding and tubing at least Q 24 hours. Change and label Toomey syringe every 24 hours.
16.4. Verify NG placement Q shift and after any major movements – e.g. from bed to bed.
16.5. Verify all feeding tube placement with X-ray prior to use.
16.6. Monitor blood glucose as ordered and collaborate with physician to maintain optimal level for acutely ill patient.
16.7. Collaborate with physician to obtain and monitor pre-albumin levels.

17. HEMODYNAMIC MONITORING

16.1 Calibrate the system and level at the phlebostatic axis Q shift and PRN.
Mark the phlebostatic axis with a skin marking pen to assure consistency in leveling transducer. Change the tubing Q 96 hours.
16.2 Record hemodynamic waveforms on the Critical Care Rhythm Strips form Q shift, unless there is a change in the waveform or the patient's condition.
16.3 Monitor and document hemodynamic parameters (PAS, PAD ,CVP, Arterial Pressure) q 2 hours.
16.4 Obtain and document pulmonary wedge pressure and cardiac output per physician orders.
16.5 Validate accuracy of waveform and appropriate position continuously.
16.6 When using CCO/SVO2 catheters:
16.6.1 Document CCO/CCI Q 1 hour and with any drip titration, with any cardiac rhythm changes that affect hemodynamic, and/or with other interventions
16.6.2 Bolus Cardiac Outputs will be performed if large discrepancies develop between the CCO and patient's condition
16.6.3 Document SQI (signal quality indicator) on the flow sheet Q 1 hour and PRN changes. Troubleshoot if the signal goes to 3 or 4
16.6.4 Mixed-venous gases need not be done unless the patient clinically deteriorates, obtain physician order
16.6.5 Update the H/H on the Vigilance Monitor whenever new test results are obtained
16.7 Identify and document the PA line insertion length in centimeters at the cordis. Document in the EMR under LDAs.
16.8 Ensure the PCWP balloon is deflated, and stopcock is open at all times.
16.9 Advanced Hemodynamic Monitoring with Non-Invasive Cardiac Output Monitor (NICOM) may also be used.

17. VASOACTIVE DRIPS

17.1 Calculate, verify, and document drip factor Q shift using appropriate calculation (e.g. mcg/kg/min for Dopamine or mcg/min for Epinephrine). Use dry weight.
17.2 Document vital signs every 15 minutes when titrating vasoactive medication
Dose and q 1 hour when stable dose for 1 hour.
17.3 Correct hypovolemia by administration of appropriate volume expanders prior to initiation of vasoconstrictive therapy whenever possible.
17.4 Use Titration Guidelines for Intravenous Infusion. (Refer to Policy # 201.13 under Provisions of Care). Infusions included in these guidelines must be ordered as "titrate per guidelines," with parameter and goal. Titration instructions differing from these guidelines are permitted but must be specified in the order by the physician.
17.5 Infuse via central line when possible. CVAD is the preferred method of infusion to decrease the risk of

infiltration.

17.6 Monitor peripheral sites every 15 minutes for infiltration especially if infusing Vasoconstrictive drug and obtain order for appropriate antidote if infiltration occurs and follow infiltration protocol. Request central line placement from the physician.

17.7 Infuse all continuous drips via a controlled infusion device and utilize drug Library to automatically label and set safety dose parameters. (If pump can not be programmed, label and set aside for Biomed to fix. ONLY use programmable pumps).

17.7 Confirm settings on pump (Correct drug, concentration, dose, rate, patient weight).

18. VENTILATOR PATIENT MANAGEMENT

18.1 Ventilator Associated Pneumonia Prevention as patient condition allows

18.1.1 Maintain HOB >30 degrees

18.1.2 Provide daily sedation vacation to RASS 0 to -1

18.1.3 Collaborate with physician to address DVT and Peptic Ulcer prophylaxis

18.1.4 Collaborate daily with RT to assess readiness for weaning

18.2 Monitor SaO2, ABG's, patient respiratory pattern, and synchrony with ventilator. Collaborate with MD re: CXR results.

18.3 Utilize oral care kit; moisten mouth with swabs q 2 hours. Brush teeth Q shift and use suction toothbrush/swab for improved control of secretions during care.

18.4 Ensure subglottic ETT suction is connected and patent. RT will instill air Q 4 hours to ensure patency of suction system.

18.5 For patients receiving Propofol Drip

18.5.1 Consult with MD re: need for triglyceride level prior to the start of a Propofol Drip and Q 3 days. Collaborate with MD to establish appropriate sedation levels. Assess sedation using RASS q 4 hours and prn.

18.5.2 Change and re-label tubing Q 12 hours

18.6 For patients receiving paralytic agents

18.6.1 Assess patient response with nerve stimulator Q 4 hours

18.6.2 Assess patient for pain and medicate per MD order

18.6.3 Provide artificial tears to both eyes Q 6 Hrs

19. AGE SPECIFIC CARE

19.1 Appropriate age-specific care will be provided for all patients.

20. PSYCHOSOCIAL / EMOTIONAL/SPIRITUAL

20.1 Provide healing and caring environment for patient and family/SO.

20.2 Address emotional concerns and anxiety and make referrals as appropriate to social worker, pastoral care, CNS.

20.3 Proactively provide regular updates and facilitate communication to patient/ Family/SO.

20.4 Integrate family/SO into patient care as they prefer.

20.5 Integrate individual spiritual/faith/cultural practices and considerations into plan of care.

20.6 Notify family/SO of significant changes, transfer to a higher level of care, or transfer from unit.

21 ETHICAL ISSUES

21.1 Determine presence of advanced directive and agent/decision maker if patient does not have capacity to make decisions.

21.2 Identify patients that may benefit from patient care conference, ethics consultation, and palliative care and make referrals.

21.3 The RN is accountable for facilitating end-of-life decision making/communication and ensuring comfort and dignity for patients.

22 TRANSFUSION-FREE PATIENTS

22.1 Ensure armband on and sign posted at bedside.
22.2 Review consent to clarify which products patient will accept.

23 INFECTION PREVENTION

23.1 Hand hygiene: wash or sanitize hands before and after all patient contact.
23.2 Follow isolation precautions as indicated.
23.3 Use appropriate barrier precautions during invasive procedures/interventions to prevent infection transmission.
23.4 Change PICC line dressing and caps weekly per protocol. Change more frequently if integrity is compromised. Use Bio patch over the insertion site.
23.5 Use Standard Precautions, including appropriate use of personal protective equipment (PPE) with all patients.
23.6 Patients and family/visitors will be educated about role in infection prevention.

24 SHIFT REPORT

24.1 Each staff nurse is responsible for giving a shift report to the oncoming care giver using SBAR communication and the Professional Exchange Report (PER) in the EMR.

24.1.1 **Situation recorded on admission: should include:**

- **Name, MR#,** Age/Gender, Allergies/Adverse Drug Reactions, Admitting date/diagnosis, Communication Barriers, POA (present on admission).
- Update kardex evey shift.
- **Safety Alert/Situation: Shift to shift:**
- Room number/LOS and post – operative day if applicable
- Code Status
- Physicians
- Updated admission diagnosis/current diagnosis with dates
- Interventions/Responses
- Special Precautions/Needs: e.g. Isolation, Suicide, Psychosocial Status, Falls, Safety
- Concerns, Family issues, Major patient concerns, swallowing precautions, Hearing
- Impaired, Pressure Ulcers and treatment plan, use of Specialty Bed, Other
- Core Measures

24.1.2 **Background/History** should include:

- Medical History/past procedural history (major events)
- Medication Highlights/changes
- Family/SO status Spokesperson and numbers

24.1.3 **Assessment should include**:

- Systems Review (*Report Abnormal but assess every system)
- Vital Signs: BP, HR, RR, Temp, Pain, Pulse Ox, End tital CO2
- Neurological: Orientation status
- Respiratory: Support measures needed (e.g. .O_2, chest tubes)
- Cardiovascular: Tele, Rhythm
- GI: last BM, NPO, diet, special feedings, GT residuals
- GU: Foley, other
- Integumentary: Skin breakdown, Incisions, drains, photos
- Musculoskeletal: Activity, PT
- Endocrine/Accu-check
- Lab/test results (e.g.: WBC 26,000)

24.1.4 **Current Treatments**

- Pain/Controlled with – Pain scale
- IV / Lines: type, issues
- I&O, Weight
- Alarm review and any adjustments of yellow level alarms
- Document 12-hour check in chart each shift
- Perform **VISUAL ENDORSEMENT with each shift hand off**. Should include but not limited to: Verification that all IV drip medication is correct: include 5 rights (right patient, right drug, , right dose, right rate, and right total volume for that shift), - IV site with date & site integrity, IV tubing with date, Tube feedings, PCA dose, delay and rate, surgical dressings, vent settings, skin integrity, patient alarms ON, environmental room check and 12 hour chart check).

24.1.5 Pending: – Today / Tomorrow / Future

- Blood work/Radiology/Other
- Pending/due medications
- **Recommendations**
- The plan of care is: include patient education/discharge needs
- Goals/desired end state is:
- Consults/referrals needed:
- Outstanding issues that must be addressed are:
- Examples: Need PT referral, Incomplete documentation on Ticket to Ride, Admission Assessment, Medication, Reconciliation, Bowel Prep, confirmation of PICC line placement, needs Flu Vaccine, parents are coming in to sign consent form, etc.

25. BEDSIDE PROCEDURES

25.1 Assure site marking for all invasive surgery, radiologic and bedside procedures (site involving left or right, upper/lower, sections).
25.2 Assure TIMEOUT prior to the initiation an invasive procedure and complete the form.
25.3 Assure verification of informed consent is obtained.
25.4 Assure brief medical history, physical exam and ASA risk assessment is completed by MD prior to Procedure.
25.5 Assure patient education is provided and documented prior to procedure.
25.6 Document in the EMR under sedation navigator. (Includes Aldrete Score).

26. READ BACK to the MD all verbal and telephone orders.

27. TRANSFER/DC OF PATIENT

27.1 When transferring the patient to another floor/unit
27.1.1 Review current medication with the MD and Medication Reconciliation form to discuss potential prehospital medications to restart.
27.1.2 Obtain orders from Physician.
27.1.3 Notify family/SO of transfer plans
27.1.4 Provide report using the Professional Exchange Report (PER).
27.1.5 A patient may be transferred by the Transport Associate to another monitored unit without a transport monitor only if patient's rhythm has remained stable for twenty-four hours. The following patients will be transferred on a monitor and accompanied by an ACLS certified Nurse: Open Heart, Acute MI, Ventilator Dependent, patients receiving continuous antiarrhythmic medications and all patients with chest tubes.
27.1.6 If patient is not transferred within 2 hours, new transfer orders are released, and new patient status is entered into the system.
27.2 When discharging a patient:

27.2.1 Coordinate with Case Manager
27.2.2 Complete appropriate discharge teaching
27.2.3 Complete Medication Calendar
27.2.4 Utilize Krames on-demand patient teaching resources
27.2.5 Provide device information if indicated (pacemaker, stent, Etc.)
27.2.6 If transferring to another facility, provide report to receiving nurse and complete Intrafacility Nursing Transfer Form

27.3 Intrafacility transport to diagnostic/interventional areas:
27.3.1 Refer to Transfer of the Critically Ill Patient Policy and Procedure

References:

AACN.org – American Association of Critical Care Nurses Clinical Practice home page.

Reviewed and Revised: 09/26/2011
Reviewed and Revised 04/08/2013
Review and Revised: 11/18/2014
Review and Revised 1/26/2015
Review and Revised: 8/2/2017
Review and Revised: 1/3/2018
Review and revised 1/8/2020
Reviewed and revised 1/10/2022
Reviewed and revised 1/8/2024



STROKE HERO CHECKLIST



Time is Brain
ICU Checklist

Verify Correct Order Set :

DIAGNOSIS /INTERVENTION	CORRESPONDING ORDER SET
Intercerebral Hemorrhage	Stroke Admit ICH/SAH
Ischemic Stroke **(TNK ONLY)**	Stroke Admit Post Tenecteplase
Ischemic stroke **(TNK & EVT)**	Stroke Admit Post Tenecteplase and Endovascular Therapy
Ischemic Stroke **(EVT only)**	Stroke Admit Post Endovascular Therapy
Subarachnoid Hemorrhage	Stroke Admit ICH/SAH
Transient Ischemic Attack	Stroke Admit TIA

YALE Bedside Swallow Screening NO PO FLUIDS OR MEDS

- PASS or FAIL
- **RN MUST CONSULT WITH PHARMACY** TO CHANGE MED ROUTE TO NGT/OGT/PEG AS NEEDED

SCD's must be applied ASAP and documented **within 24 hours** of arrival**. Document any refusal or contraindication.**

Education must be documented starting ON DAY ONE and then once per shift:

5 elements **must be documented** before discharge education for patient and family!

Don't forget the AHA booklet "Explaining Stroke"

Include the following information in education:

1. EMS activation
2. Follow up post discharge
3. Medication prescribed at discharge
4. Risk factors for a stroke * Ensure all individual risk factors are documented in comment box!*
5. Warning signs and symptoms of a stroke
6. Smoking cessation if applicable – current or smoker within the last year!

Rehab Evaluation: PT, OT, SLP (**mRS** Modified Rankin score documented on **admit and discharge**)

ASA /antithrombotic by day 2 of admission → **UNLESS SPECIFIED BY PROVIDER**

Lipid panel completed and STATIN ordered

Blood pressure goals (see BP parameters guide/badge buddy) and order set

Radial compression device? → See checklist

Tenecteplase (TNK) monitoring :

- **VS completed** Q 15 min x 2 hr. Q 30 x 6 hr and hourly for total of 24 hours
- **Full NIHSS/Neuro** completed Q 15 min x 2 hr., Q 30 x 6 hr and hourly for total of 24 hours

Post Endovascular (includes Thrombectomy, Clippings, Coilings, Stents, and Diagnostic Angiograms):

- **Groin Checks** (Limb assessment) Q 15 min x 4 Q 30 min x 2 and Q 1 hr x 4
- **Neuro Checks post procedure** Q 15 min x 4, Q 30 min x 2, hourly x 22
- **Peripheral Neurovascular Assessment** Q 15 min x 4, Q 30 min x 2 and Q 1 hr x 4
- **NIHSS per unit routine, if ordered**

IV Thrombolytic for Acute Ischemic Stroke

Nursing Assessment and Documentation Checklist

(place patient label here)

Q 15 x 2 hrs. Q 30 x 6 hrs., Q 1 hr. X 16 hrs.

Blood Pressure: Keep STRICTLY below	
185/110	**180/105**
Before tNK	After tNK (x24 hours)

Goals

- **</= 2.5 min** Md/PA/NP evaluation
- **< 5 min** stroke team
- **< 10 min** for non-contrast CT head
- **≤ 25 min** for CT head results and interpretation
- **≤ 30 min** for arrival to IV Tenecteplase bolus

Or, record custom blood pressure goal:

Avoid

- No **heparin**, **warfarin**, **aspirin**, or other **anticoagulant** or **antiplatelet** drugs for 24 hours post-infusion.
- No NG tubes, Foleys, blood draws, or invasive procedures for at least 6 (preferably 24) hours.

Bolus over 5 seconds

Bedside Swallow

NIHSS Score Prior to TNK Bolus

	Assessment Date and Time	Documented in Epic flowsheet: Vitals	Documented in Epic flowsheet: NIHSS Neuro	Or, record the reason for no assessment: Cath Lab	Or, record the reason for no assessment: MRI	Or, record the reason for no assessment: OR	RN Initials
Q 15 Min	(+ 15m)	○	○	○	○	○	
	(+ 15m)	○	○	○	○	○	
	(+ 15m)	○	○	○	○	○	
	(+ 15m)	○	○	○	○	○	
Q 15 Min	(+ 15m)	○	○	○	○	○	
	(+ 15m)	○	○	○	○	○	
	(+ 15m)	○	○	○	○	○	
	(+ 15m)	○	○	○	○	○	
Assess every 30 minutes for 6 hours	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	

Please ensure that the "Stroke Admit – Post Tenecteplase" order set was used.

(form continues on other side)

Blood Pressure: Keep STRICTLY below		OR, custom blood pressure goal:	BSS Screening
185/110	180/105		Y/N Before PO
Before TNK	After TNK (x24 hours)		

	Assessment Date and Time	Documented in Epic flowsheet:		OR, reason for no assessment:			RN Initials
		Vitals	NIHSS Neuro	Cath Lab	MRI	OR	
Assess every 30 minutes for 6 hours	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	
Assess every 60 minutes until >24 hours after infusion completed.	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	

WHEN COMPLETE, PLEASE RETURN FORM TO STROKE COORDINATOR

Post Endovascular (includes Thrombectomy, Clippings, Coilings, Stents, and Diagnostic Angiograms):

- **Groin Checks** (Limb assessment) Q 15 min x 4, Q 30 min x 2 and Q 1 hr x 4
- **Neuro Checks post thrombectomy procedure** Q 15 min x 4, Q 30 min x 2 and Q 1 hr x 4
- **Peripheral Neurovascular Assessment** Q 15 min x 4, Q 30 min x 2 and Q 1 hr x 4
- Neuro checks Q 4 (begin 24 hours post procedure)

	BP GOAL **Assessment Date and Time**	**Documented in Epic flowsheet:**		**Or, record the reason for no assessment:**			**RN Initials**
		Vitals	**Neuro**	**Cath Lab**	**MRI**	**OR**	
Q 15 Min	(+ 15m)	○	○	○	○	○	
	(+ 15m)	○	○	○	○	○	
	(+ 15m)	○	○	○	○	○	
	(+ 15m)	○	○	○	○	○	
Q 30 min.	(+ 30m)	○	○	○	○	○	
	(+ 30m)	○	○	○	○	○	
Q 1 hr.	(+ 1hr)	○	○	○	○	○	

	BP GOAL Assessment Date and Time	Documented in Epic flowsheet:		Or, record the reason for no assessment:			RN Initials
				Cath Lab	MRI	OR	
Q 1 hr.	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	
	(+ 1hr)	○	○	○	○	○	

General Blood Pressure Parameters in Stroke

These are provided here as a general guideline. Always validate with order set and provider .

Diagnosis and/or Treatment	Rationale	BP Target	
Untreated (non-reperfused) ischemic stroke	Perfuse past occlusion	**SBP < 220**	
Ischemic stroke (prior to treatment with TNK/Thrombolytic)	Prevent reperfusion hemorrhage	**SBP < 185**	**DBP < 110**
Ischemic stroke (during and after treatment with TNK/Thombolytic)	Prevent reperfusion hemorrhage	**SBP < 180**	**DBP < 105**
Ischemic Stroke – After Thrombectomy	Prevent reperfusion hemorrhage	**SBP 100-160**	**DBP 50-100**
Intracerebral Hemorrhage	Prevent hemorrhage expansion	**SBP 130-150**	
Non-traumatic SAH/Ruptured cerebral aneurysm (not yet secured)	Prevent re-rupture	**SBP < 140**	**DBP <90**

Patient Identification. - -

Pt. Date of Birth / /

Hospital (-)

Date of Exam / /

Interval: [ ] Baseline [ ] 2 hours post treatment [ ] 24 hours post onset of symptoms ±20 minutes [ ] 7-10 days
[ ] 3 months [ ] Other (_ _)

Time: _ _ :_ _ [ ]am [ ]pm

Person Administering Scale

Administer stroke scale items in the order listed. Record performance in each category after each subscale exam. Do not go back and change scores. Follow directions provided for each exam technique. Scores should reflect what the patient does, not what the clinician thinks the patient can do. The clinician should record answers while administering the exam and work quickly. Except where indicated, the patient should not be coached (i.e., repeated requests to patient to make a special effort).

Instructions	Scale Definition	Score
1a. Level of Consciousness: The investigator must choose a response if a full evaluation is prevented by such obstacles as an endotracheal tube, language barrier, orotracheal trauma/bandages. A 3 is scored only if the patient makes no movement (other than reflexive posturing) in response to noxious stimulation.	0 = **Alert;** keenly responsive. 1 = **Not alert**; but arousable by minor stimulation to obey, answer, or respond. 2 = **Not alert**; requires repeated stimulation to attend, or is obtunded and requires strong or painful stimulation to make movements (not stereotyped). 3 = Responds only with reflex motor or autonomic effects or totally unresponsive, flaccid, and areflexic.	
1b. LOC Questions: The patient is asked the month and his/her age. The answer must be correct - there is no partial credit for being close. Aphasic and stuporous patients who do not comprehend the questions will score 2. Patients unable to speak because of endotracheal intubation, orotracheal trauma, severe dysarthria from any cause, language barrier, or any other problem not secondary to aphasia are given a 1. It is important that only the initial answer be graded and that the examiner not "help" the patient with verbal or non-verbal cues.	0 = **Answers** both questions correctly. 1 = **Answers** one question correctly. 2 = **Answers** neither question correctly.	_____
1c. LOC Commands: The patient is asked to open and close the eyes and then to grip and release the non-paretic hand. Substitute another one step command if the hands cannot be used. Credit is given if an unequivocal attempt is made but not completed due to weakness. If the patient does not respond to command, the task should be demonstrated to him or her (pantomime), and the result scored (i.e., follows none, one or two commands). Patients with trauma, amputation, or other physical impediments should be given suitable one-step commands. Only the first attempt is scored.	0 = **Performs** both tasks correctly. 1 = **Performs** one task correctly. 2 = **Performs** neither task correctly.	_____
2. Best Gaze: Only horizontal eye movements will be tested. Voluntary or reflexive (oculocephalic) eye movements will be scored, but caloric testing is not done. If the patient has a conjugate deviation of the eyes that can be overcome by voluntary or reflexive activity, the score will be 1. If a patient has an isolated peripheral nerve paresis (CN III, IV or VI), score a 1. Gaze is testable in all aphasic patients. Patients with ocular trauma, bandages, pre-existing blindness, or other disorder of visual acuity or fields should be tested with reflexive movements, and a choice made by the investigator. Establishing eye contact and then moving about the patient from side to side will occasionally clarify the presence of a partial gaze palsy.	0 = **Normal.** 1 = **Partial gaze palsy;** gaze is abnormal in one or both eyes, but forced deviation or total gaze paresis is not present. 2 = **Forced deviation,** or total gaze paresis not overcome by the oculocephalic maneuver.	

Patient Identification. - -

Pt. Date of Birth / /

Hospital (-)

Date of Exam / /

3. Visual: Visual fields (upper and lower quadrants) are tested by confrontation, using finger counting or visual threat, as appropriate. Patients may be encouraged, but if they look at the side of the moving fingers appropriately, this can be scored as normal. If there is unilateral blindness or enucleation, visual fields in the remaining eye are scored. Score 1 only if a clear-cut asymmetry, including quadrantanopia, is found. If patient is blind from any cause, score 3. Double simultaneous stimulation is performed at this point. If there is extinction, patient receives a 1, and the results are used to respond to item 11.	0 = **No visual loss.** 1 = **Partial hemianopia.** 2 = **Complete hemianopia.** 3 = **Bilateral hemianopia** (blind including cortical blindness).	_____
4. Facial Palsy: Ask – or use pantomime to encourage – the patient to show teeth or raise eyebrows and close eyes. Score symmetry of grimace in response to noxious stimuli in the poorly responsive or non-comprehending patient. If facial trauma/bandages, orotracheal tube, tape or other physical barriers obscure the face, these should be removed to the extent possible.	0 = **Normal** symmetrical movements. 1 = **Minor paralysis** (flattened nasolabial fold, asymmetry on smiling). 2 = **Partial paralysis** (total or near-total paralysis of lower face). 3 = **Complete paralysis** of one or both sides (absence of facial movement in the upper and lower face).	
5. Motor Arm: The limb is placed in the appropriate position: extend the arms (palms down) 90 degrees (if sitting) or 45 degrees (if supine). Drift is scored if the arm falls before 10 seconds. The aphasic patient is encouraged using urgency in the voice and pantomime, but not noxious stimulation. Each limb is tested in turn, beginning with the non-paretic arm. Only in the case of amputation or joint fusion at the shoulder, the examiner should record the score as untestable (UN), and clearly write the explanation for this choice.	0 = **No drift;** limb holds 90 (or 45) degrees for full 10 seconds. 1 = **Drift;** limb holds 90 (or 45) degrees, but drifts down before full 10 seconds; does not hit bed or other support. 2 = **Some effort against gravity;** limb cannot get to or maintain (if cued) 90 (or 45) degrees, drifts down to bed, but has some effort against gravity. 3 = **No effort against gravity;** limb falls. 4 = **No movement.** UN = **Amputation** or joint fusion, explain: **5a. Left Arm** **5b. Right Arm**	_____
6. Motor Leg: The limb is placed in the appropriate position: hold the leg at 30 degrees (always tested supine). Drift is scored if the leg falls before 5 seconds. The aphasic patient is encouraged using urgency in the voice and pantomime, but not noxious stimulation. Each limb is tested in turn, beginning with the non-paretic leg. Only in the case of amputation or joint fusion at the hip, the examiner should record the score as untestable (UN), and clearly write the explanation for this choice.	0 = **No drift;** leg holds 30-degree position for full 5 seconds. 1 = **Drift;** leg falls by the end of the 5-second period but does not hit bed. 2 = **Some effort against gravity;** leg falls to bed by 5 seconds, but has some effort against gravity. 3 = **No effort against gravity;** leg falls to bed immediately. 4 = **No movement.** UN = **Amputation** or joint fusion, explain: **6a. Left Leg** **6b. Right Leg**	_____

Patient Identification. - -

Pt. Date of Birth / /

Hospital (-)

Date of Exam / /

Interval: [ ] Baseline [ ] 2 hours post treatment [ ] 24 hours post onset of symptoms ±20 minutes [ ] 7-10 days
[ ] 3 months [ ] Other ( )

7. Limb Ataxia: This item is aimed at finding evidence of a unilateral cerebellar lesion. Test with eyes open. In case of visual defect, ensure testing is done in intact visual field. The finger- nose-finger and heel-shin tests are performed on both sides, and ataxia is scored only if present out of proportion to weakness. Ataxia is absent in the patient who cannot understand or is paralyzed. Only in the case of amputation or joint fusion, the examiner should record the score as untestable (UN), and clearly write the explanation for this choice. In case of blindness, test by having the patient touch nose from extended arm position.	0 = **Absent.** 1 = **Present in one limb.** 2 = **Present in two limbs.** UN = **Amputation** or joint fusion, explain:	_____
8. Sensory: Sensation or grimace to pinprick when tested, or withdrawal from noxious stimulus in the obtunded or aphasic patient. Only sensory loss attributed to stroke is scored as abnormal and the examiner should test as many body areas (arms [not hands], legs, trunk, face) as needed to accurately check for hemisensory loss. A score of 2, "severe or total sensory loss," should only be given when a severe or total loss of sensation can be clearly demonstrated. Stuporous and aphasic patients will, therefore, probably score 1 or 0. The patient with brainstem stroke who has bilateral loss of sensation is scored 2. If the patient does not respond and is quadriplegic, score 2. Patients in a coma (item 1a=3) are automatically given a 2 on this item.	0 = **Normal;** no sensory loss. 1 = **Mild-to-moderate sensory loss;** patient feels pinprick is less sharp or is dull on the affected side; or there is a loss of superficial pain with pinprick, but patient is aware of being touched. 2 = **Severe to total sensory loss;** patient is not aware of being touched in the face, arm, and leg.	_____
9. Best Language: A great deal of information about comprehension will be obtained during the preceding sections of the examination. For this scale item, the patient is asked to describe what is happening in the attached picture, to name the items on the attached naming sheet and to read from the attached list of sentences. Comprehension is judged from responses here, as well as to all of the commands in the preceding general neurological exam. If visual loss interferes with the tests, ask the patient to identify objects placed in the hand, repeat, and produce speech. The intubated patient should be asked to write. The patient in a coma (item 1a=3) will automatically score 3 on this item. The examiner must choose a score for the patient with stupor or limited cooperation, but a score of 3 should be used only if the patient is mute and follows no one-step commands.	0 = **No aphasia;** normal. 1 = **Mild-to-moderate aphasia;** some obvious loss of fluency or facility of comprehension, without significant limitation on ideas expressed or form of expression. Reduction of speech and/or comprehension, however, makes conversation about provided materials difficult or impossible. For example, in conversation about provided materials, examiner can identify picture or naming card content from patient's response. 2 = **Severe aphasia;** all communication is through fragmentary expression; great need for inference, questioning, and guessing by the listener. Range of information that can be exchanged is limited; listener carries burden of communication. Examiner cannot identify materials provided from patient response. 3 = **Mute, global aphasia;** no usable speech or auditory comprehension.	_____
10. Dysarthria: If patient is thought to be normal, an adequate sample of speech must be obtained by asking patient to read or repeat words from the attached list. If the patient has severe aphasia, the clarity of articulation of spontaneous speech can be rated. Only if the patient is intubated or has other physical barriers to producing speech, the examiner should record the score as untestable (UN), and clearly write an explanation for this choice. Do not tell the patient why he or she is being tested.	0 = **Normal.** 1 = **Mild-to-moderate dysarthria;** patient slurs at least some words and, at worst, can be understood with some difficulty. 2 = **Severe dysarthria;** patient's speech is so slurred as to be unintelligible in the absence of or out of proportion to any dysphasia, or is mute/anarthric. UN = **Intubated** or other physical barrier, explain:	_____

You know how.

Down to earth.

I got home from work.

Near the table in the dining room.

They heard him speak on the radio last night.

11. Extinction and Inattention (formerly Neglect): Sufficient information to identify neglect may be obtained during the prior testing. If the patient has a severe visual loss preventing visual double simultaneous stimulation, and the cutaneous stimuli are normal, the score is normal. If the patient has aphasia but does appear to attend to both sides, the score is normal. The presence of visual spatial neglect or anosagnosia may also be taken as evidence of abnormality. Since the abnormality is scored only if present, the item is never untestable.	0 = **No abnormality.** 1 = **Visual, tactile, auditory, spatial, or personal inattention** or extinction to bilateral simultaneous stimulation in one of the sensory modalities. 2 = **Profound hemi-inattention or extinction to more than one modality;** does not recognize own hand or orients to only one side of space.	



© Apex Innovations 2023

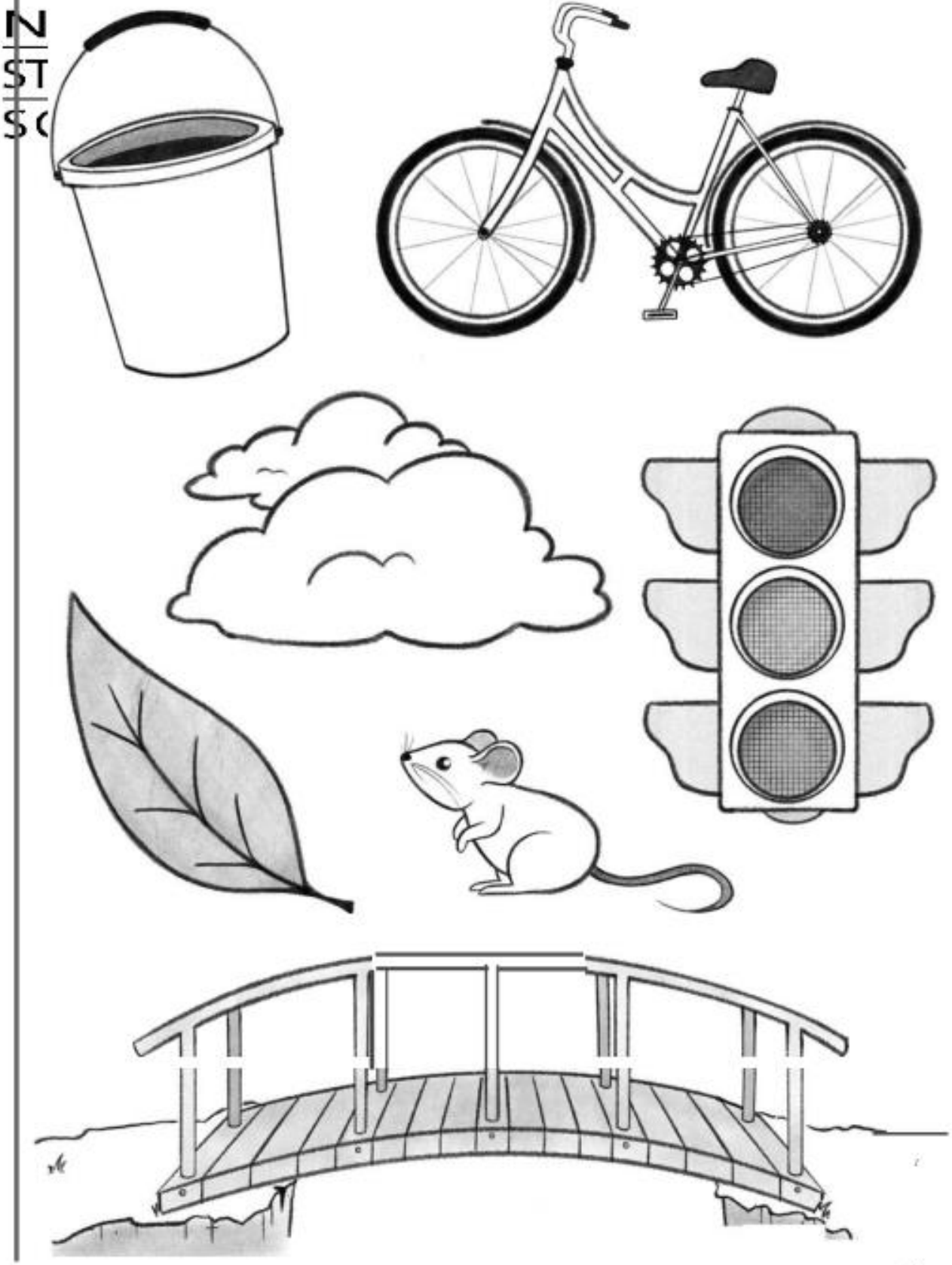
You know how.

Down to earth.

I got home from work.

Near the table in the dining room.

They heard him speak on the radio last night.



©Apex Innovations 2023

N I H
STROKE
SCALE

MAMA

TIP-TOP FIFTY-

FIFTY THANKS

HUCKLEBERRY

BASEBALL PLAYER

CATERPILLAR

NIHSS Scoring

Scale Item	Coma	Difficult or Confused	Tips
1a LOC Responsiveness	2 - for some movement 3 - Flaccid or no movement	0 - if awake, alert	Can usually tell score by greeting
1b LOC Questions	2	1 - ET tube, trauma, severe dysarthria; 2 - Aphasia,stupor, confusion	Score initial response; pt may write answers.
1c LOC Commands	2	2 - if unable to understand or follow the commands	You are not testing grip strength. May pantomime if pt doesn't respond to command; ok if impaired by weakness
2 Best Gaze	0 if normal eye movement noted	0 if patient able to track your movements	Coma - hold eyes open and turn head side-to-side. Confused - Make eye contact and move to other side of bed
3 Visual	0 if blinks to visual threat 3 if no blink in any field 3 if blind due to any cause	0 if blinks to visual threat 3 if no blink in any field 3 if blind due to any cause	Three ways to test - finger counting, finger movement or threat; test in 4 quads of each eye separately
4 Facial Palsy	3	If patient is verbal, observe for facial droop. If confused and nonverbal, use noxious stimulation to elicit grimace	Check NLF in advance; score 1 for minor asymmetry on smiling; score 2 major for asymmetry of smile; score 3 for absence of movement in upper **and** lower face
5a, 5b Motor arm	3 for no effort against gravity 4 for no movement at all	If unable to follow directions, use observation to score. Is the patient using the arm?	**UN**testable only with amputation or fusion.
6a, 6b Motor leg	3 for no effort against gravity 4 for no movement at all	If unable to follow directions, use observation to score. Is the patient moving the leg?	**UN**testable only with amputation or fusion.
7 Limb ataxia	0	0 if unable to follow directions	Absent if paralyzed or unable to understand. **UN**testable only with amputation or fusion
8 Sensory	2	Use pinprick and observe patient's reactions if patient unable to cooperate	Ask pt, "can you feel this, can you feel this, and does it feel the same on each side"; (do not ask if sharper/duller)
9 Best Language	3	Choose score for stupor/limited cooperation: 2 - listener carries burden of communication; 3 - garbled or mute AND not following commands	Best language and COMPREHENSION; describe scene, name objects and read phrases. If blind, place object in hand and have patient describe
10 Dysarthria	2	1 - Difficult to understand (regardless of cause), 2 - speech not understandable, garbled	Listen to their words; if they can't read - have them repeat words or listen to the words they do say **UN**testable only with physical barrier
11 Extinction and Inattention	0	Score only if present	Looking for lack of awareness with double tactile/visual stimulation

Reminders: a. Perform and score in numerical order. b. Accept first response. c. Do not coach.

NIH STROKE SCALE

Providence

NIH-SS Scoring Tips

#	Assessment	Scoring	Video	Comatose	Confused / Difficult	Intubated
1a	**1a. Level of Consciousness** Responsiveness *Is the patient alert or responding to stimuli?*	**0** = Alert **1** = Not alert, arouses with minimal stimuli **2** = Not alert, obtunded, requires repeated or painful stimuli **3** = Unarousable or responds with posturing **Tip:** Can usually tell score by greeting		3	0 = If awake, alert	Standard scoring. If unresponsive, use comatose column.
1b	**1b. LOC Questions** Orientation *Ask age and month*	**0** = Answers both questions correctly **1** = Answers one question correctly, ET tube, orotracheal trauma, language barrier, severe dysarthria **2** = Answers neither question correctly, aphasic, or stuporous		2	1 = ET tube, trauma, severe dysarthria 2 = Aphasia, stupor, confusion	1
1c	**1c. LOC Commands** Follow Commands *Open & close eyes* *Grip & release hand*	**0** = Performs both tasks correctly (credit given if attempt is made but not completed due to weakness **1** = Performs one task correctly **2** = Performs neither task correctly **Tip:** You are not testing grip strength. May pantomime if the patient does not respond to command. Okay if impaired by weakness.		2	2 = Unable to understand or follow the commands	Standard scoring
2	**2. Gaze** Horizontal movement *Left to right*	**0** = Normal **1** = Palsy in one or both eyes, can be overcome by voluntary or reflexive activity **2** = Forced deviation/total gaze paresis not overcome by oculocephalic maneuver		Standard scoring	0 = Able to track movements Tip: Make eye contact and move to other side of bed	Standard scoring
3	**3. Visual Fields** Upper & lower quadrants *Finger counting or visual threat*	**0** = No visual loss **1** = Partial hemianopia **2** = Complete hemianopia **3** = Bilateral hemianopia (including cortical blindness) **Tip:** Three ways to test: finger counting, finger movement or threat, test in four quadrants of each eye separately		Standard scoring Test by threat / confrontation	0 = Blinks to visual threat 3 = No blink in any field 3 = blind due to any cause	Standard scoring
4	**4. Facial Palsy** *Show me your teeth, close your eyes, raise your eyebrows, grimace to pain*	**0** = Normal symmetrical movement **1** = Minor paralysis (flattened nasolabial fold, asymmetrical smile) **2** = Partial paralysis (total or near paralysis of lower face) **3** = Complete paralysis (one or both sides, upper and lower)		3	If patient is verbal, observe for facial droop. If confused and nonverbal, use noxious stimulation to elicit grimace.	Standard scoring
5a **5b**	**5. Motor Arms** *Extend arms 90° while sitting or 45° while supine for 10 seconds*	**0** = No drift **1** = Drifts down before 10 seconds but does not hit bed or support. **2** = Some effort against gravity, hits bed by 10 seconds **3** = No effort against gravity **4** = No movement **UN** = Untestable only for amputation / joint fusion at the shoulder. Explain.		4	If unable to follow directions, use observation to score. Is the patient using the arm?	If unable to follow directions, use observation to score. Is the patient using the arm?

NIH STROKE SCALE

Providence

NIH-SS Scoring Tips

#	Assessment	Scoring	Video	Comatose	Confused / Difficult	Intubated
6a 6b	**6. Motor Legs** *Hold legs up 30° while supine for 5 seconds*	**0** = No drift **1** = Drifts down before 5 seconds but does not hit bed or support **2** = Some effort against gravity, hits bed by 5 seconds **3** = No effort against gravity **4** = No movement **UN** = Untestable only for amputation / joint fusion at the hip. Explain.		4	If unable to follow directions, use observation to score. Is the patient using the leg?	If unable to follow directions, use observation to score. Is the patient using the leg?
7	**7. Limb Ataxia** *Finger-nose-finger* *Heel down shin* *Blind: extend & touch nose*	**0** = Absent (For patient who cannot understand or is paralyzed) **1** = Present in one limb **2** = Present in two limbs **UN** = Untestable only for amputation / joint fusion. Explain:		0	0 = Unable to follow directions	Standard scoring
8	**8. Sensory** *Legs, arms, trunk, & face* Obtunded/aphasic: grimace or withdrawal from stimuli	**0** = Normal **1** = Mild to moderate loss (feels pinprick as dull or pain as pressure) **2** = Severe to total loss (unaware of touch on face, arm, & leg) or no response to stimuli (Patients in a coma or 1a = 3) **Tip:** Ask, "can you feel this?" And ask, "does it feel the same on each side?" Do not ask if sharper or duller.		2	Use pinprick and observe patient's reactions if patient is unable to cooperate	As the patient to point where they are being touched.
9	**9. Best Language** Intubated: Ask to write Blind: feel item placed in hand	**0** = No aphasia **1** = Mild to moderate (loss of fluency, some conversation) **2** = Severe (difficulty conveying thoughts / responding) **3** = Mute / global aphasia (no usable speech / comprehension) (Coma 1a=3)		3	Choose score for stupor / limited cooperation 2 = Listener carries burden of communication 3 = Garbled or mute AND not following commands	Show the patient the pictures and have them write their answer
10	**10. Dysarthria** Articulation *Read / repeat words*	**0** = Normal **1** = Mild to moderate (slurred speech) **2** = Severe (so slurred, unintelligible) **UN** = Intubated, barrier. Explain.		2	1 = Difficult to understand (regardless of cause) 2 = Speech not understandable, garbled	UN = Unable to test
11	**11. Extinction/Inattention**	**0** = No abnormality **1** = Visual, tactile, auditory, spatial, or personal inattention **2** = Profound hemi-inattention or extinction to > 1 modality **Tip:** Observe for lack of awareness with double tactile or visual stimulation		2	Use observation. Is the patient attending to both sides? Assess using two modalities.	Standard scoring

POST RADIAL COMPRESSION DEVICE (TR BAND) CHECKLIST QUICK TIP

Date/Time of Radial Sheath Removal:_____Air in TR Band:_____mL Pulse Ox _____%

(If applicable) reason Radial Sheath to remain in place per MD: _____

DOCUMENT NEUROVASCULAR (NV), PULSE, AND SITE ASSESSMENTS
Q15 MIN X 4, Q 30 MIN X 2, Q 1 HR X 4 FOLLOWING SHEATH REMOVAL
(Verify MD order in EHR)

Q 15 MIN x 4	Q 30 MIN x 2	Q 1 HR x 4
Time:_____ ☐ NV ☐ Pulse ☐ Site	**Time:_____** ☐ NV ☐ Pulse ☐ Site:	**Time:_____** ☐ NV ☐ Pulse ☐ Site
Time:_____ ☐ NV ☐ Pulse ☐ Site	**Time:_____** ☐ NV ☐ Pulse ☐ Site	**Time:_____** ☐ NV ☐ Pulse ☐ Site
Time:_____ ☐ NV ☐ Pulse ☐ Site		**Time:_____** ☐ NV ☐ Pulse ☐ Site
Time:_____ ☐ NV ☐ Pulse ☐ Site		**Time:_____** ☐ NV ☐ Pulse ☐ Site
TR Band removal date/time _____		

PROCEDURE ASSESSMENT DURING HAND-OFF ON ARRIVAL TO UNIT

- Handoff to include total heparin dose and time of last dose
- How many mL's of air injected into the TR Band
- Location of TR Band application/injector syringe
- Reason radial sheath to remain in place post procedure & removal date/time/instructions **(as applicable)**

POST-PROCEDURE PATIENT CARE WITH TR BAND IN PLACE

- Instruct the patient to keep wrist straight and refrain from lifting, bending, or pushing with the affected arm to decrease bleeding risk.
- Assess & document neurovascular checks to include color, capillary refill, temperature & sensation, pain, finger movement, and site of the affected hand/entire arm for hematoma with each vital signs.
- Post a sign at the bedside to alert staff:
  - No BP X 24 hours
  - No venous draws x 24 hours
  - No IVs X 24 hours
  - No radial arterial sticks

*Not part of the permanent medical record- Resource tool to be used in the care of patients with TR Bands- From Saint Joseph's Medical Center, Burbank. Modified for Saint John's Health Center, Santa Monica by mreich 10/2023

- Place a pulse oximeter probe on the thumb or index finger of the affected hand to assess if O2 sat level is consistent with baseline readings; the reading from the thumb or first digit is specific to the radial artery and will be lower than baseline if radial circulation is impaired.
- Verify perfusion with the pulse oximeter's plethysmography wave form and oxygen saturation. **A drop in saturation of less than 90% or change in the pulse oximeter plethysmography wave form may indicate an arterial occlusion and loss of circulation to the hand. Ensure the pulse oximeter probe remains on the thumb or index finger of the affected hand to monitor oxygen saturation and wave form quality.**

POST-PROCEDURE CARE – TR BAND REMOVAL

- Begin removal of the TR BAND, as ordered by physician:
    - Heparin 50 units/kg **or** less- **band remains in place for 60 minutes** or per Provider order.
    - Heparin (or comparable agent) greater than 50 units/kg- **band remains in place for 120 minutes** or per Provider order.
- Obtain supplies for TR band removal- gloves, sterile gauze, injector syringe, small Tegaderm to cover site.
- Start by slowly withdrawing 3ml of air from the inflated balloon over 15 minutes. Observe for any signs of bleeding at puncture site.
    - If no bleeding observed, continue to slowly withdraw 3ml of air every 15 minutes and continue to monitor for bleeding at puncture site.
    - If bleeding occurs during removal, insert enough air to restore hemostasis & then confirm. patient hemostasis. *Note:* Do not use more than 18ml of air in the balloon.
    - **Wait 15 minutes and then repeating removal of air slowly at 3ml every 15 minutes**
- Once air completely removed from band, confirm bleeding has stopped & monitor for another 5 minutes with compression device in place.
    - If used, remove the arm brace & keep at bedside for 24 hrs. to immobilize the arm in case of bleeding.
    - Unfasten the adjustable band while stabilizing access site with gentle pressure.
    - Remove band by lifting slowly toward palm of hand.
    - Using gloves, clean the site and apply 4x4 & transparent dressing.

POST-PROCEURE CARE – AFTER REMOVAL OF TR BAND

- Instruct patient not to perform any forceful movements of the affected arm or hand for 24 hrs., and to notify RN if bleeding occurs.
- Assess pulse ox waveform, peripheral vascular & neurovascular status, and puncture site every 5 minutes x 4, every 30 minutes x 2, & every 60 minutes x 4 or per Provider order. Document in EMR
- **If loss of circulation or bleeding after TR BAND removal**, don sterile gloves and hold manual pressure until hemostasis is achieved and notify the interventional cardiologist/interventional radiologist/ICU Intensivist.

DOCUMENTATION IN THE ELECTRONIC HEALTH RECORD (EHR)

- Assessments as outlined above.
- Removal of TR Band

PATIENT EDUCATION FOR POST-CARE

- Do not move the affected wrist while the TR BAND device is in place.
- Limit use of affected arm for 6 hrs. after sheath removal
- Do not lift anything greater than 5 pounds with the affected arm for 3-5 days. Do not submerge in water x 3 days.

Resources: Refer to: AACN Procedure Manual Procedure: 77: Radial Arterial Sheath Removal for additional information.
Lippincott Procedure Manual- Radial Artery Access Care
Terumo Website for manufacturer guidelines and education training resource

*Not part of the permanent medical record- Resource tool to be used in the care of patients with TR Bands- From Saint Joseph's Medical Center, Burbank. Modified for Saint John's Health Center, Santa Monica by mreich 10/2023

Inpatient Pathway

Saint John's Health Center
Providence

Goal ≤ 10 min

Patient with new onset focal neurological deficit

RN activates RR□□310□3□2□192□
Primary RN remains available
Charge RN to act as additional resource

RRT RN

Calls E□ □□C to activate overhead Code Stro□e alert if appropriate□310□□29□□212 x 1
Provide: Pt name/DOB, MRN, Local MD, and LKWT if available
□esignate local □ □ Participant □ie Neurohospitalist, IC□ intensivist□
Initiate Code Stro□e RR□ order set
Enter RR□ call bac□□ in C□ order comments for wet read

ED HUC

5 p□m□□ □a□m□Call □elestro□e at□□□□252□9954
Provide: Pt name/DOB, MRN, Local MD, and LKWT if available
Activate Local neurohospitalist /□ □ or telestro□e to respond to code in C□ scanner□
□ □ can spea□with RR□ RN □□29□□905□
Send Everbridge alert
Activate overhead alert
□obili□e Penny to C□ scanner

RRT RN

□ather □PI, pertinent history, medication list, L□□ □
NI□SS
S□AR to □ □ □s□
Perform setup for telestro□e encounter in C□ hallway
□et stro□e □it
Admin□□N□ase if needed

RT

Clear C□ Scanner
Calculate □ □R
Send code stro□e images to □elehealth PACCs
Prioriti□e cue to push before non□ urgent images

Neurohospitalist/ TeleStroke

Assess patient
Review C□P, C□A □ead, C□A Nec□
Recommend if pt□is candidate for thrombolysis or endovascular

Local MD

Carry out □elestro□e recommendations as indicated □ie□□hrombolytic order set, if cath lab candidate, delegate □□C to activate interventionalist and cath lab per protocol□

Recommendations

Goal ≤ 30 min

Thrombolytic TNKase

- Local □ □ enters order
- Administer per protocol
- Admit to IC□ or transfer to Cath Lab if indicated

Endovascular Therapy

- E□ □□C activates cath lab and interventionalist ≤ 30 min
- □ransfer to Cath Lab

Hemorrhagic

- □ollow hemorrhagic pathway
- Consult on□call subacute stro□e neurologist
- Consult neurosurgery
- Admit to IC□

No Stroke

Place as appropriate

Update 11.16.2021

Reviewed L. Arnold R.N. 7.15.2024

Saint John's Health Center
PROVIDENCE Health & Services

Lumbar Drain Education and Guidelines Quick Sheet

Lumbar Drain Monitoring Guidelines

- ****Review the chart thoroughly* for background on placement and monitoring guidelines****
  - Orders may be under "Precautions", "Monitor & Notify Provider," and "Nursing"
- Typical orders include:
  - **Neuro check frequency, i.e. Q1H – Q4H**
  - **Neurovascular assessment frequency**
  - **Notification parameters**
  - **Drain Goal, i.e. "20 ml every 2 hours"**



Draining

- Level the drainage to **hip level** or **insertion site** when draining
- Open the stopcocks to drain, remain in the patient's room to monitor
- The Limitorr will cap the drainage at 20 ml
- Close the stopcock to the patient
- Drain the Limitorr into the bag

Nursing Practice

- **Always** keep the stopcock nearest the patient closed, esp when ambulating, PT/OT
- **Never** raise drainage system above hip level, to prevent backflow
- Implement *all* of your high fall risk bundle elements

If Not Draining:

- Run the line to check for kinks
- Ensure stopcocks are all facing the right direction
- ***Briefly*** lower the drain and assess the drip chamber for flow

When to Contact MD:

- If drainage is < 20 ml in 2 hours (or otherwise specified in order
- Change in neurologic or neurovascular assessment (i.e. LOC, numbness/tingling)
- Signs of local or systemic infection
- Leakage on dressing

Scan here for more info on Limitorr lumbar drain

Saint John's Health Center
Providence

Tracheostoma and Tube Care

Edugram

INTENDED AUDIENCE

All registered nurses involved in direct patient care.

RECOMMENDED ACTIONS

Room setup for Respiratory Emergency or Trach Suctioning:

- Ensure wall suction is set up
- Open technique
  - Sterile water, sterile gloves, disposable suction catheter/Yankauer.
- Closed technique
  - Closed suction setup with a catheter of appropriate size (In line).
  - Sterile solution (prepackaged bullets may be used to loosen some secretions PRN, not routine)
- Set up wall oxygen, Ambu bag, and trach emergency supplies, including an obturator, lubricant, and a trach kit of the same size or smaller.

Continue to provide tracheostomy tube management per unit's standards of care:

- Perform trach care every shift:
  - Implement the VAP prevention bundle with all Ventilator patients.
  - Complete stoma care and inner cannula clean or switch out non-disposable cannula using the proper supplies (sterile water, disposable inner cannula, and trach cleaning trays).
  - Set up both open & closed suction for PRN tracheobronchial and oral suctioning.
  - Change the Polymem dressing every shift. (The dressing may be cut to fit the patient's trach).
  - Aspirate any oral and/or gastric secretions from the evac lumen as needed.
- Conduct a wound assessment every 4 hours:
  - Document the trach skin assessment in Epic under LDA.
  - If the skin appears red, swollen, or irritated, notify the surgeon or intensivist (If ICU pt), document in Quick Charts under communication, and place a wound care consult.
- Trach suture removal requires an order:
  - If no order present to remove sutures by day 7-10 RT must follow up with Cardiothoracic (CT) team or ICU intensivist.
  - RT will remove the sutures per order.
  - RT communication to be placed by CA or intensivist MD in the ICU to remove the sutures.
  - Call CT team or ICU intensivist for any concerns related to the trach or removal of the stiches. CT Team available during business days Monday – Friday Office 310-829-8618 or PA Anna Jungs Cell 626-484-6419. ICU Intensivist Ascom phone 24/7 at 310-829-8736

ADDITIONAL RESOURCES AND REFERENCES

Lippincott Procedures, AACN Manual, & Policy Stat	

• Lippincott:
  ○ Tracheostomy suctioning
  ○ Tracheostomy evacuation tube use
  ○ Tracheostomy tube change
  ○ Tracheostomy ties change
  ○ Tracheostomy tube cannula and stoma care
	• AACN Procedure 8: Suctioning: Endotracheal or Tracheostomy Tube PG. 261.
	• AACN Procedure 11: Tracheostomy Cuff and Tube Care PG. 314
	• Providence Saint John's Policy Stat: Tracheostomy Care

For more information and process review, please visit the Providence system library and review processes on Lippincott or AACN Manual. (Scan QR code above or click on hyperlink).

Status **Active** PolicyStat ID **8381652**

Providence St. Joseph Medical Center

Origination	08/2017
Last Approved	09/2022
Effective	09/2022
Last Revised	09/2022
Next Review	09/2025
Owner	Kristen Mayberry: Director Nursing
Policy Area	Patient Care Services
Applicability	CA - Providence Saint Joseph MC, Burbank

Alcohol Withdrawal Management, CIWA

COPY

POLICY/PURPOSE

In keeping with the mission and values of Providence Health & Services, it is the policy of Providence Saint Joseph Medical Center to ensure those patients exhibiting early or acute signs of alcohol withdrawal will not experience acceleration of the syndrome or physiologic complications.

IMPORTANT CONSIDERATIONS

The habitual alcohol user has a physical dependence. Sudden abstinence will result in withdrawal symptoms. There are three (3) phases of withdrawal:

Phase 1: Onset of symptoms may occur within 8-24 hours after last alcohol intake

Phase 2: Begins as early as 12-14 hours after Phase 1. Symptoms are now more extreme in this phase, with more physical deterioration.

Phase 3: Begins 2-4 days after last alcohol intake. This phase includes delirium tremors. These patients are very ill, and the mortality rate is high.

Note: Patients who are recovering alcoholics and are hospitalized may go through withdrawal due to medications we have given them such as anesthesia, Halcion, Dalmane, Valium, Ativan, Librium and Versed.

Caution: Antidepressants may be contraindicated during withdrawal therapy. Polysubstance withdrawal may occur.

PROCEDURE

Protocol Assessment:

If the nurse has concerns that patient has Alcohol abuse or History of Alcohol use, the nurse may perform CIWA assessment in Epic. Notify the provider of the CIWA score. The Clinical Institute Withdrawal Assessment-Alcohol (CIWA-Ar) Scale using a 0-67 scale will be used. A reliable, brief, uncomplicated and clinically useful scale is needed to assess severity of alcohol withdrawal and to monitor response to treatment. We will be this tool to score our patients at risk of experiencing alcohol withdrawal.

- Use Alcohol Withdrawal--ICU (aka CIWA) order set #1739 for patients who require ICU level of care.
- Use Alcohol Withdrawal (aka CIWA) order set #1736 for patients who do not require ICU level of care.

Assessments need to be done as follows:

1. Upon initiation of protocol.
2. At least Q4 hours while on protocol.
3. Assess more frequently based on reassessment interval specified in medication orders or in response to clinical deterioration.
4. Q 1 hour assessment is to be done for risk score of greater than 31. If Q1 hour assessments are needed transfer patient to the appropriate level of care.

COPY

Once the patient is scored, you will be able to give the appropriate medications per the alcohol withdrawal order set. The following areas (1-10) are a clarification of the assessment tool.

Continual monitoring for hemodynamic and respiratory decompensation due to alcohol withdrawal and/or treatment.

Nausea/Vomiting

Patients are scored only with a 0, 1, 4 or 7 depending on the severity of symptoms. For the patients who are under anesthesia and/or unable to communicate, they will be observed for signs and symptoms of nausea/vomiting. Patients with nasogastric tubes should be observed for nausea and vomiting. Moderate and large amounts of NG output should be rated as 4 and 7 respectively.

Tremor

Patients are observed for tremor and are scored only with a 0, 1, 4 or 7 depending on the severity of symptoms. Seizures are not scored under this scale category.

Paroxysmal Sweats

Patients are observed for *sweating* and are scored only with a 0, 1, 4 or 7 depending on the severity of

symptoms. List caution with patients who may be diaphoretic as a result of a febrile state or other illnesses.

Anxiety

Patients are observed for anxiety and are scored only with a 0, 1, 4 or 7 depending on the severity of symptoms.

0 = no anxiety stated or observed

1 = mild anxiety as reported by questioning only, and not observed in behavior

4 = Moderate anxiety – actually observed in behavior

7 = severe anxiety – acute panic

Agitation

Patients are observed for agitation and are scored only with a 0, 1, 4 or 7 depending on the severity of symptoms.

0 = no agitation stated or observed

1 = mild agitation as reported by questioning

4 = Moderate agitation – observed in physical restlessness (i.e., picking at linen, gowns, dressing, etc.)

7 = severe agitation – observed by constantly thrashing about

COPY

Tactile Disturbance

Definitions:

Hallucinations: a disturbance of any of the sensing where you believe something is there which really is not.

Delusions: a disturbance of any of the senses where you misinterpret something that is present.

Distancing: may or may not be able to recognize they are hallucinating, but are able to reorient.

Patients are observed for *tactile disturbance* and are scored only with a 1- 7 depending on the severity of symptoms:

0-3 are as stated on scale.

4 = transient hallucinations with distancing possible

5 = frequent hallucinations with distancing possible

6 = nearly **continuous** hallucinations with distancing possible at times

7 = **continuous** hallucinations with no distancing possible

Auditory Disturbances

Patients are observed for *auditory disturbances* and are scored 1-7 depending on the severity of symptoms.

0-3 are as stated on scale.

4 = transient hallucinations with distancing possible

5 = frequent hallucinations with distancing possible

6 = nearly permanent hallucinations with distancing possible at times

7 = permanent hallucinations with no distancing possible

Visual Disturbances

Patients are observed for *visual disturbances* and are scored 1-7 depending on the severity of symptoms.

0-3 are as stated on scale.

4 = transient hallucinations with distancing possible

5 = frequent hallucinations with distancing possible

6 = nearly permanent hallucinations with distancing possible at times

7 = permanent hallucinations with no distancing possible

COPY

Note: FOR PATIENTS REQUIRING MECHANICAL VENTILATION, ASSESSING FOR HALLUCINATIONS OF ANY KIND MAY BE DIFFICULT. THE NURSE SHOULD ASSESS AS BEST AS SHE/HE IS ABLE, ASK THE PATIENT CLOSED-ENDED QUESTIONS TO ASSESS SEVERITY OF SYMPTOMS, AND SCORE AS BEST AS SHE/HE CAN.

Headache

Patients will be scored on a scale of 1-7 depending on the severity of symptoms. Patients should be asked, "Do you have a headache?" If yes, ask patient, "On a scale of 1-7, with seven being the most severe, how do you rate your pain?"

Orientation and Clouding of Sensorium

Patients will be scored on a scale of 0-4 depending on the severity of symptoms. The nurse is assessing for changes in sensorium from one scoring to the next. Remember that changes in sensorium may be the first sign(s) of a withdrawal syndrome.

NURSING INTERVENTIONS:

The CIWA-Ar scoring system is divided into three phases of alcohol withdrawal:

1. Mild
2. Moderate
3. Severe

NOTE: THE NURSE WILL SCORE THE PATIENT AS OUTLINED IN PROCEDURE AND FOLLOW PHYSICIAN'S ORDERS DEPENDENT UPON PHASE OF WITHDRAWAL.

Mild withdrawal – Phase I	0-10
Moderate withdrawal – Phase II	10-15
Severe withdrawal – Phase III	16-67

CIWA-Ar score is used for treatment of alcohol withdrawal in conjunction with the standard alcohol withdrawal physician order set.

MEDICATE:

- See benzodiazepine orders (lorazepam/Ativan, diazepam/Valium, or chlordiazepoxide/ Librium) for details
- If both PO and IV options are available, always use PO first if tolerating PO and patient safe to swallow.
- Do NOT administer both PO and IV dosing at the same time
- If CIWA score reassessed earlier than specified for worsening symptoms, give additional dose of ordered benzodiazepine if indicated
- If patient assessed and medicated q30min x 4 without reduction in score, NOTIFY PROVIDER

COPY

The goal of therapy is for the patient to be medicated according to the standard order set to prevent acceleration of the withdrawal syndrome.

To protect the patient from harm, consider the following:

1. Initiating and maintaining seizure precautions
2. Initiating and maintaining aspiration precautions
3. If restraint criteria is met, refer to the regional policy regarding the use of restraints.
4. Consider MD order for sitter to remain at bedside.

Nutritional evaluation

(Consider nutritional services consult)

Psychosocial evaluation

1. Consider case management consult
2. Consider social work consult
3. Consider spiritual services consult.

4. PRN psychosocial support for:
    a. Nurse
    b. Patient
    c. Family/significant other

NOTIFY PROVIDER

(Always medicate as ordered prior to notifying provider). Patient may require transfer to ICU if:

- CIWA score not reduced after patient assessed and medicated q30min x 2 doses.
- CIWA <8 and patient agitated, anxious, or tremulous & not responding to treatment.
- CIWA >20 for first time or as a new score.
- CIWA increases by 10 or more suddenly.
- Patient becomes a safety risk to self/others or has severe agitation/confusion/hallucinations not responding to treatment.
- Seizures

(See medication orders for additional notification parameters)

COPY

WITHHOLD SEDATION AND NOTIFY PROVIDER FOR ANY OF THE FOLLOWING:

- O2 saturation <90%
- RR <10
- Hypotension (SBP <90 or MAP <65)
- Difficulty arousing patient
- Any other signs of toxicity or over-medication/sedation

REFERENCES

Horinek, E., Kisher, T.H., Fish, D.N., & MacLaren, R. (2009). Propylene glycol accumulation in critically ill patients receiving continuous intravenous Lorazepam infusions. *The Annals of Pharmacotherapy*, *43*(12), pp. 1964-1971. doi: 10.1345/aph.1M313.

Riddle, E., et al. (2010). Alcohol withdrawal: Development of a standing order set.

Critical Care Nurse 20 (3), pp.38-47.

Wouters Kluwer Health. (2014). Lippincott Procedures

Approval Signatures

Step Description	Approver	Date
Board	Anita Aragon: Director Risk Management [RN]	09/2022
MEC	Mino Izaguirre: Coord Medical Staff [RN]	07/2022
CNO	Courtnay Caufield: Chief Nursing Officer	02/2022
CPC	Ashley Castleberg: Clinical Nurse IV	10/2021
ICU Manager/ICU UBC	Kristen Mayberry: Mgr Nursing	08/2021
ICU Clinical Education Specialist	Lillian Davis: Clinical Education Spec	08/2021

COPY

Applicability

CA - Providence Saint Joseph MC, Burbank

Standards

No standards are associated with this document

Status Active PolicyStat ID 13910708

Origination	01/2014
Last Approved	07/2023
Effective	07/2023
Last Revised	07/2023
Next Review	07/2026

Owner	Victoria Looper: Executive Director Clinical Education RN
Policy Area	Assessment, Documentation Standards & Orders
Applicability	CA - Divisional/ Regional
References	LA Region

To find another policy, use the browser BACK button to return to your Ministry.

Assessment and Documentation Guidelines

COPY

POLICY

In keeping with the mission and values of Providence, all patients in the acute care setting will be assessed in a timely manner utilizing the evidence-based resources for assessment and documentation in the electronic health record (EHR). Observation patients will be monitored as follows: non-telemetry patients are monitored according to Medical/Surgical guidelines and telemetry patients are monitored according to the Telemetry/ step down requirements and Observation unit guidelines. This policy does not apply to emergency department or post acute care patients.

PROCEDURE/GENERAL INSTRUCTIONS

Assessment frequency and documentation standards are accessible by clicking on Addendum A.

The nurse will assess the patient:

A. Utilizing the assessment tools and definitions of 'WDL' (within defined limits) in the EHR. When findings are consistent with the 'WDL', no further documentation is required. If they are not consistent with the standard for 'WDL', they are considered ABNORMAL and are documented.

B. LDA - Lines, Drains, Airway (LDAs) in the EHR (Electronic Health Record):

1. Document any device as 'present' that is currently present. If an LDA remains in place at the time of discharge, complete the LDA and document within the comments section that the patient is transferring to another facility with the LDA in place.
2. If a device appears as present in the EHR (it was not discontinued in the previous EHR) but is NOT present on admission, document as "REMOVED" and enter as the date and time, the date and time of admission. In addition, in narrative notes, document the device(s) was/were not present on admission (when available, may select "Not present on Admission" instead of a narrative note).

C. Perform assessments based on diagnosis and condition. Exceptions:
    1. Order from an LIP (licensed independent practitioner)/physician – the order supersedes these standards.
    2. Standards incorporated into a policy specific to a procedure or intervention - the specific standards supersede these standards.
    3. Emergency treatment exception applies when it is reasonable to believe that urgent interventions should supercede routine assessments.

D. Document as soon as practically possible following the care rendered.

E. Initiate the plan of care is per **Plan of Care regional policy.**

DEFINITIONS

Admission: The time the provider writes an order for an inpatient admission.

Individualized focused assessment: assessment based on patient's current diagnosis, chief complaints, history, present condition, potential complications and any other factors that may affect the patient condition.

LDA – Lines. Drains, Airway (intravenous, gastric, orthopedic devices, wounds/incisions, etc…).

Upon Assumption of Care: when a different nurse is assigned to continue the care of the patient (excludes coverage time)

COPY

WDL – within defined limits.

Coverage time – period of time when one nurse observes and intervenes because the assigned nurse is on break or off the unit.

EHR – electronic health record.

LIP – licensed independent practitioner/physician/provider

Pediatric – newborn to age 13; Pediatric Intensive Care - 37 weeks gestation and/or two kilograms to 21 years.

REFERENCE(S)/RELATED POLICIES

Perry, A. and Potter, P. (2006) Critical Nursing Skills & Techniques, Sixth Edition. St Louis, MO: Elsevier/Mosby.

Craven H. (2009) AMSN Core Curriculum for Medical-Surgical Nursing. 4th ed. Pitman, NJ: Jannetti Publications Inc.

Smeltzer, S. Bare, B.G. & Hinkle, J.L. (2008) *Brunner and Suddarth's Textbook of Medical-Surgical Nursing* 11th ed. Philadelphia: Lippincott Williams & Wilkins.

Lippincott Nursing Procedures and Skills. (Accessed online 2012).

Chulay, M and Burns, SM. (2006) *AACN Essential of Critical Care Nursing*. McGraw Hill.

Wiegand, DJ, ed. (2010) *AACN Procedure Manual for Critical Care*. St Louis, MO: Elsevier/Mosby.

Schulman, CS and Staul, L. (2010) Standards for Frequency of Measurement and Documentation of Vital Signs and Physical Assessments. Crit Care Nurse June 2010 vol. 30 no. 3 74-76.

Hardin SR. Introduction to the AACN Synergy model for patient care. In: Hardin SR, Kaplow R, eds. Synergy for

Clinical Excellence: The AACN Synergy Model for Patient Care. Sudbury, MA: Jones & Barlett; 2005:5–13.

Mitchell IA, et al. (2010) A prospective controlled trial of the effect of a multi-faceted intervention on early recognition and intervention in deteriorating hospital patients. Resuscitation. 2010 Jun;81(6):658-66. (Accessed online 2012) http://www.ncbi.nlm.nih.gov/pubmed/20378235.

Hravnak, M. et al. (2008) Defining the Incidence of Cardiorespiratory Instability in Patients in Step-down Units Using an Electronic Integrated Monitoring System. Arch Intern Med June 23 168(12).

Sharda, S. et al. (2001) Monitoring Vital Signs in a Bone Marrow Transplant Unit: Are They Needed in the Middle of the Night? Bone Marrow Transplantation (2001) 27, 1197–1200.

Mariani, P. (2006) Ineffectiveness of the Measurement of 'Routine' Vital Signs for Adult Inpatients with Community-Acquired Pneumonia. International Journal of Nursing Practice 12:105–109.

Considine, J, and Botti M. (2004) Who, when and where? Identification of patients at risk of an in-hospital adverse event: Implications for nursing practice. International Journal of Nursing Practice. 10: 21–31.

INS Position Papers: (2012) Recommendations for Frequency of Assessment of the Short Peripheral Catheter Site 07/05/12 (Accessed online 2012). https://www.learningcenter.ins1.org/products/recommendations-for-frequency-of-assessment-of-the-short-peripheral-catheter-site-position-paper

Women's Health Obstetric and Neonatal Nurses, Jul 30, 2010.

The Joint Commission Standards Interpretation Group: Response June 07, 2013

- **Original Question:** PC.01.03.01 relates to patient care plans. EP 23 states "The hospital revises plans and goals for care, treatment, and services based on the patient's needs." Would it be acceptable for the patient's individualized nursing care plan to be reviewed and the review documented once a day, or must it be reviewed and the review documented every shift?
- **SIG Response:** Thank you for your inquiry. It would need to be revised based on the changes with the patient. If there is a change in the patient's condition and needs only daily or every two or three days then that is when it would be revised. There is no requirement for revisions every shift or even daily. It is dependent on when it needs to be changed, or your hospital's policy.

California Code of Regulations: Article 6, 70537 Title 22 Pediatric patient definition: new born to age of 13.

California Children's Services (CCS): CCS manual of procedures: chapter 3.3.3 – 1 Pediatric patient definition for Critical Care: adolescents 14 years up to 21 years of age.

Tian DH, Smyth C, Keijzers G, Macdonald SP, Peake S, Udy A, Delaney A. Safety of peripheral administration of vasopressor medications: A systematic review. Emerg Med Australas. 2020 Apr;32(2):220-227. doi: 10.1111/1742-6723.13406. Epub 2019 Nov 7. PMID: 31698544. **This one is a systematic review and includes studies that had both the Q1Hr and Q2Hr reassessments.**

Pancaro C, Shah N, Pasma W, Saager L, Cassidy R, van Klei W, Kooij F, Vittali D, Hollmann MW, Kheterpal S, Lirk P. Risk of Major Complications After Perioperative Norepinephrine Infusion Through Peripheral Intravenous Lines in a Multicenter Study. Anesth Analg. 2020 Oct;131(4):1060-1065. doi: 10.1213/ANE.0000000000004445. PMID: 32925324.

Permpikul C, Tongyoo S, Viarasilpa T, Trainarongsakul T, Chakorn T, Udompanturak S. Early Use of Norepinephrine in Septic Shock Resuscitation (CENSER). A Randomized Trial. Am J Respir Crit Care Med. 2019 May 1;199(9):1097-1105. doi: 10.1164/rccm.201806-1034OC. PMID: 30704260.

Manaker, S. (2020, July 3). Use of vasopressors and inotropes. UpToDate. Retrieved November 3, 2021, from

COPY

https://www.uptodate.com/contents/use-of-vasopressors-and-inotropes?search=vasopressors+peripheral+IV&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2.

Medlej K, Kazzi AA, El Hajj Chehade A, Saad Eldine M, Chami A, Bachir R, Zebian D, Abou Dagher G. Complications from Administration of Vasopressors Through Peripheral Venous Catheters: An Observational Study. J Emerg Med. 2018 Jan;54(1):47-53. doi: 10.1016/j.jemermed.2017.09.007. Epub 2017 Oct 27. PMID: 29110979.

Lewis T, Merchan C, Altshuler D, Papadopoulos J. Safety of the Peripheral Administration of Vasopressor Agents. J Intensive Care Med. 2019 Jan;34(1):26-33. doi: 10.1177/0885066616686035. Epub 2017 Jan 11. PMID: 28073314.

Padmanaban, A., Venkataraman, R., Rajagopal, S., Devaprasad, D., & Ramakrishnan, N. (2020). Feasibility and Safety of Peripheral Intravenous Administration of Vasopressor Agents in Resource-limited Settings. Journal of critical care medicine (Universitatea de Medicina si Farmacie din Targu-Mures), 6(4), 210–216. https://doi.org/10.2478/jccm-2020-0030

Padrone, L., Galiczewski, J., Amitrano, B., Koenig, S., Narasimhan, M., & Mayo, P. H. (n.d.). The development of a nurse-driven protocol for the safe administration of vasopressors through peripheral intravenous catheters. International Journal of Healthcare. Retrieved November 3, 2021, from https://sciedupress.com/journal/index.php/ijh/article/view/12677/0.

COLLABORATION

This policy was developed in collaboration with the following involved Departments:

Regional Nursing Standards and Professional Practice; PTZ and PLCM-T Pediatrics; Perinatal Excellence Council; Regional Performance Improvement and Risk Management Council; Acute Rehabilitation Centers, PLCM-SP and PHC; Clinical Informatics Specialists

COPY

Attachments

Assessment Frequency and Doc Guidelines Addendum A.pdf

Approval Signatures

Step Description	Approver	Date
Regional Site Adminsitrator	Wen Yun Chang: Senior Business Analyst	07/2023
Division CNO - South	Daniel Kelly: Division Chief Nursing Officer - South	07/2023
Exec Dir Clin Ops SoCal Reg	Kevin Streeter: Executive Director Clinical Operations	06/2023

Regional Site Adminsitrator	Wen Yun Chang: Senior Business Analyst	06/2023
Regional Policy Owner	Victoria Looper: Executive Director Clinical Education RN	06/2023

Applicability

CA - Regional/Divisional

Standards

No standards are associated with this document

COPY

Status **Active** PolicyStat ID **9491936**

Providence St. Joseph Medical Center

Origination	05/2018
Last Approved	09/2022
Effective	09/2022
Last Revised	09/2022
Next Review	09/2025

Owner	Kristen Mayberry: Director Nursing
Policy Area	Critical Care
Applicability	CA - Providence Saint Joseph MC, Burbank

Code Sepsis

COPY

POLICY

A. In keeping with the mission and values of Providence Health & Services, it is the policy of Providence Medical Centers to deliver consistent care to all patients exhibiting clinical evidence of Severe Sepsis or Septic Shock based on Sepsis Core Measure Guidelines of the Centers for Medicaid & Medicare (CMS).

B. The Code Sepsis Team responds to all Severe Sepsis or Septic Shock patients in the Emergency Department and inpatient setting 24 hours a day, 365 days a year.

PURPOSE

A. To outline the role of the Code Sepsis Team responding to any with suspected Severe Sepsis or Septic Shock.

B. To outline the standardized treatment approach to Severe Sepsis and Septic Shock that focuses on achieving pre-established clinical goals in a prescribed time sensitive manner for all patients in which Code Sepsis is called.

DEFINITIONS

1. **Code Sepsis Team**: Comprised of an Rapid Response (RRT) nurse, respiratory therapist, nursing supervisor, laboratory technician who are available 24/7 to evaluate and intervene for hospitalized inpatients demonstrating evidence of Severe Sepsis or Septic Shock.
    1. **RRT RN-** Rapid Response Team Registered Nurse who is deemed competent can perform the emergency interventions for any patient. Competency is defined as receiving education on rapid response team interventions from the ICU Clinical Educator, having a valid RRT CAC Competency on file, and/or completing the required learning management module online. See *Rapid Response Team Standardized Procedure Policy* for additional details.
2. **MEWS** – Modified Early Warning System – The Modified Early Warning System, (MEWS), is a

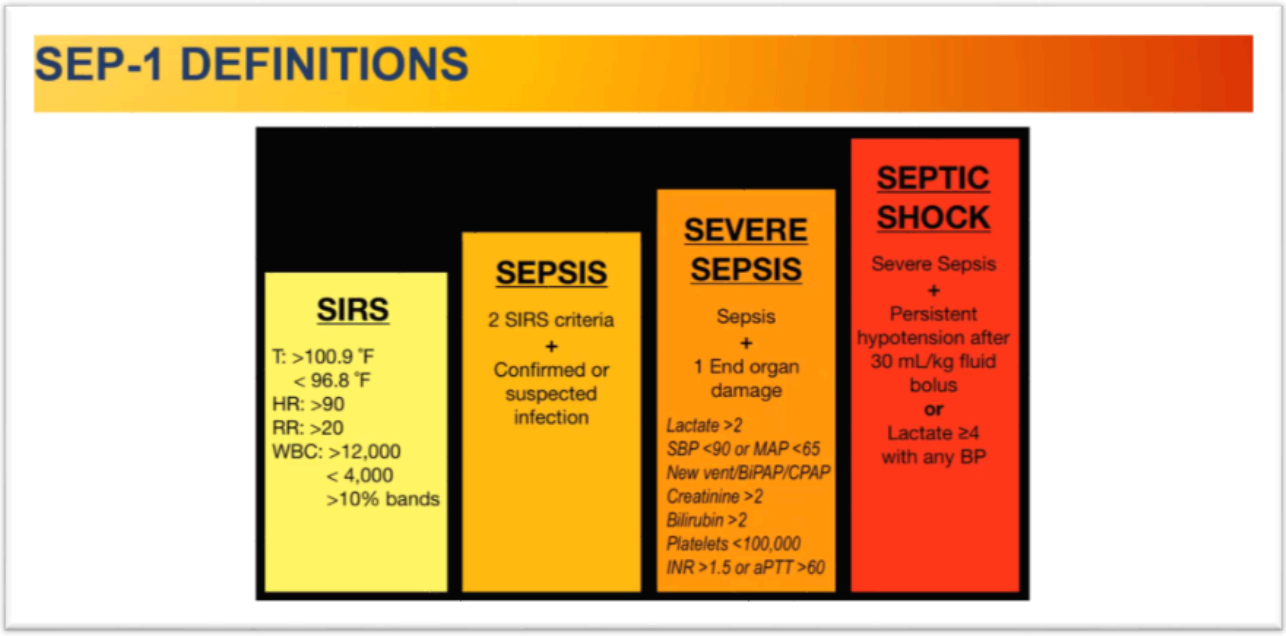
simple, validated physiological scoring system that identifies high-risk patients. The score is calculated based on data already documented by nursing or support staff. Physiological parameters include heart rate, blood pressure, respiratory rate, temperature, and central nervous system status. These values are measured routinely in hospitalized patients, and the score enables nurses and physicians to identify patients who are deteriorating and who need urgent intervention. See *Rapid Response Team Standardized Procedure Policy* for additional details.

1. **MEWS rounding:** In addition to the above roles and responsibilities, a Rapid Response Team RN may review any inpatient electronic medical record for patients who may have clinical concerns. See *Rapid Response Team Standardized Procedure Policy* for additional details.

3. **SIRS:** A systemic inflammatory response.
4. **Sepsis**: A systemic inflammatory response to a documented or presumed infection.
5. **Severe Sepsis**: Sepsis with acute organ dysfunction.
6. **Septic Shock**: Sepsis with persistent hypotension or lactate greater than 4.

PROCEDURE/GENERAL INSTRUCTIONS

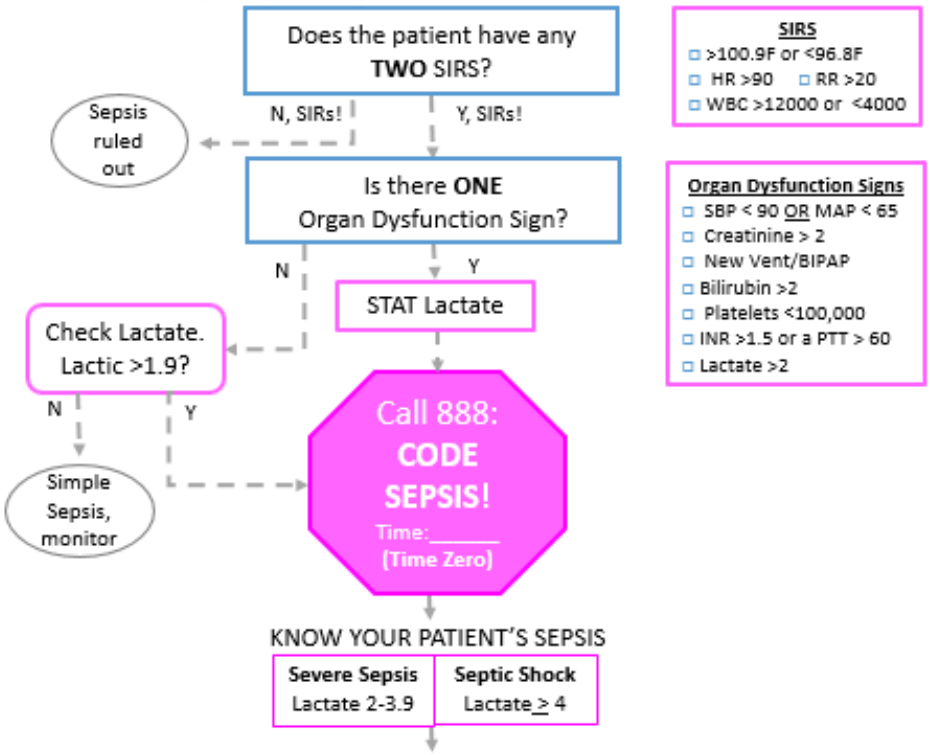
Sepsis- 1 Definitions



A Code Sepsis is described in the work flow below.

RRT SEPSIS ALGORITHM

If COVID+ or Comfort Care - Do no proceed with Sepsis Assessment
If prior Sepsis Workup in <24hrs. Call MD for re-assessment

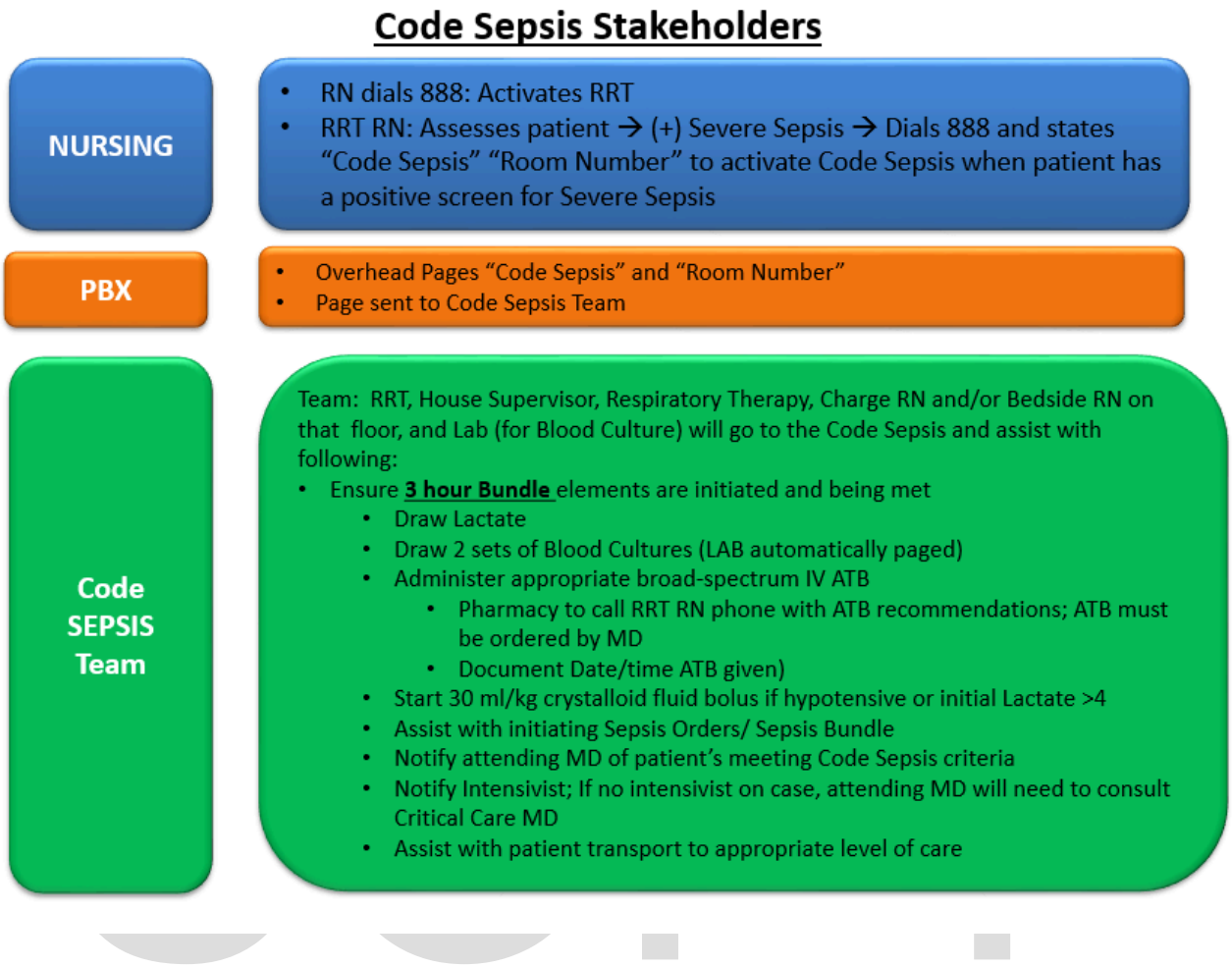


KNOW YOUR PATIENT'S SEPSIS

Severe Sepsis	Septic Shock
Lactate 2-3.9	Lactate ≥ 4

FOLLOW THE SEPSIS STEPS:

1.	**Initiate 3hr Sepsis Bundle**	□ **STAT Blood cultures** (prior to antibiotics) □ **Fluid bolus NS 0.9% 30ml/kg:** Septic Shock **OR** hypotensive Severe Sepsis □ **Antibiotic.** Ordered by MD
2.	**Contact ICU MD/NP**	□ **No ICU MD?** Inform Attending of sepsis criteria met & ask for ICU MD consulted to contact □ Assess **Level of care** needed
3.	**Assess fluid bolus response**	□ **Normotensive** post-bolus: monitor q1h x 2 □ **Persistent hypotension** post-bolus: monitor BP q15 x2 & call MD/NP
4.	**Handoff 6hr Bundle**	□ Aid in facilitating **transfer** with appropriate nurse □ **Repeat lactate** between 4-6hrs □ **Persistent hypotension** (x2 SBP<90 or MAP <65) initiate pressors per MD/NP



REFERENCE(S)/RELATED POLICIES

Dellinger, R.P., Levy, Mitchell M., Rhodes, Andrew, Annane, Djillali, Gerlach, Herwig, et al. (2013). Surviving sepsis campaign: International guidelines for management of severe sepsis and septic shock: 2012. *Critical Care Medicine* and *Intensive Care Medicine.*

Institute for Healthcare Improvement (*IHI*) Surviving Sepsis Campaign

Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock, 2012 Critical Care Medicine, Feb. 2013 Vol 41. No. 2, pp 580 – 637

Attachments

code sepsis algorithm (1).pdf

Code Sepsis Stakeholders

Sepsis Antibiotic (ATB) List

Approval Signatures

Step Description	Approver	Date
Board	Anita Aragon: Director Risk Management [RN]	09/2022
MEC	Mino Izaguirre: Coord Medical Staff [RN]	07/2022
CNO	Courtnay Caufield: Chief Nursing Officer	02/2022
CPC	Ashley Castleberg: Clinical Nurse IV	05/2021
ICU Manager/ICU UBC	Kristen Mayberry: Mgr Nursing	05/2021
ICU Clinical Education Specialist	Lillian Davis: Clinical Education Spec	05/2021

COPY

Applicability

CA - Providence Saint Joseph MC, Burbank

Standards

No standards are associated with this document

Status **Active** PolicyStat ID **10837680**

Providence St. Joseph Medical Center

Origination	04/2016
Last Approved	03/2025
Effective	03/2025
Last Revised	03/2025
Next Review	03/2028
Owner	Kristen Mayberry: Director Nursing
Policy Area	Patient Care Services
Applicability	CA - Providence Saint Joseph MC, Burbank

Continuous Renal Replacement Therapy (CRRT)

PSJ-ICU-C1

COPY

POLICY

In keeping with the mission and values of Providence Saint Joseph Medical Center, Continuous Renal Replacement Therapy is utilized to replace, as best possible, the lost function of kidneys. It is our policy to ensure there is an approach for setting up, maintaining, and discontinuing Continuous Renal Replacement Therapy (CRRT) to provide slow and balanced fluid removal.

PURPOSE

CRRT (Continuous Renal Replacement Therapy) is artificial kidney support provided continuously over a 24 hour period. Management of the CRRT system includes set up, filter changes, assessment for efficiency & patency, monitoring fluid removal, following electrolytes, and monitoring patient's response to treatment.

DEFINITIONS

a. Slow Continuous Ultrafiltration (SCUF): Conservative removal of plasma water and minimal solutes through an extracorporeal circuit using convection principle only. The Ultrafiltration rate is 100-400 mL/hr, and total fluid volume removed is 2-7 liters in 24 hours.

b. Continuous Veno-venous Hemofiltration (CVVH): Increased filtration rate, moderate fluid removal, and enhanced solute removal through an extracorporeal circuit using the principle of convection only. The ultrafiltration rate is increased to 500-800 mL/hr and 12-20 liters of fluid can be removed in 24 hours. Replacement fluid is given to maintain the desired fluid balance.

c. Continuous Veno-venous Hemodialysis (CVVHD): The addition of dialysate solution maximizes the solute removal in the ulrafiltration process. Fluid removal may be increased or decreased,

as tolerated, by adjusting the ultrafiltration rate. This therapy utilizes the principles of both convection and diffusion.

d. Continuous Veno-venous Hemodiafiltration (CVVHDF): This option combines the therapies described in a, b, and c with the addition of replacement fluid based on individual fluid and electrolyte needs.

GENERAL INSTRUCTIONS

A. The CRRT procedure will only be performed in the Critical Care setting.

B. Nephrologists will evaluate each CRRT candidate and be responsible for initiating, monitoring, and discontinuing CRRT orders.

C. Informed consent is to be obtained for Continuous Renal Replacement Therapy AND vascular access by the physician prior to initiating the procedure. The nurse confirms the consent by ensuring patient or surrogate signature on the hospital consent form.

1. A physician will insert a hemodialysis catheter. If the catheter is placed in the internal jugular vein or subclavian vein, there must be a chest x-ray to confirm line placement and the absence of a pneumothorax or hemothorax.
2. The Dialysis RN and/or Critical Care RN who has completed training and demonstrated competency will perform the CRRT procedure with the exception of Dialysis RN managing the machine during maintenance phase
3. Appropriate infection prevention practices are utilized during all phases of CRRT care. Aseptic technique always when accessing HD catheter. Clean external surfaces with Oxivir, screen and ports with alcohol every 24 hours while in use, when machine not in use again wipe external surfaces and place plastic covering.

COPY

REFERENCE(S)/RELATED POLICIES

Dirkes, S., & Hodge, K. (2007). Continuous renal replacement therapy in the adult intensive care unit: History and current trends. *Critical Care Nurse, 27*(2), 61-80.

GAMBRO Inc. (2006). PRISMA System: An integrated system for continuous fluid management, renal replacement therapies, and therapeutic plasma exchange. Operator's Manual. Retrieved from http://www.crrtonline.com/docs/OperatorsPrismaEng.pdf

Kellum, J., Bellomo, R., & Ronco, C. (2013). *Continuous Renal Replacement Therapy* (1st ed.) [Electronic Version]. New York, NY: Oxford University Press. doi: 10.1093/med/9780195392784.001.0001

Macias, W., Mueller, B. et al. (2014). Continuous Veno-Venous Hemofiltration. An alternative to Continuous Hemofiltration in Acute Renal Failure. *American Journal of Kidney Diseases, 18* (4), 451-458.

COLLABORATION

This policy was developed in collaboration with the following involved departments:

- Critical Care

- Respiratory Therapy
- Risk Management
- Pharmacy

APPROVALS:

CPC: 07-08-2015

P&T Committee: 11-19-2015, 08-10-2015 (Dr. Glick)

ICU Committee: 08-26-2015

MEC: 03-16-2016

AD, PSJ-ICU-C1, 03-16-2016, Continuous Renal Replacement Therapy (CRRT).

Attachments

ANITCOAGULATION .docx

PROCEDURAL PHASES.docx

Trouble shooting alarms and emergency shut down .docx

COPY

Approval Signatures

Step Description	Approver	Date
Board	Marisa Simile: Senior Executive Assistant [CP]	03/2025
MEC	Donald Sandoval: Senior Manager Medical Staff Services	08/2024
QA/I Committee	Mino Izaguirre: Medical Staff Coordinator	07/2024
ICU Committee	Mino Izaguirre: Medical Staff Coordinator	05/2024
CNO	Grady Williams: Director Nursing	02/2024
CPC	Chona Roa: Manager Nursing	02/2024
Executive Director Critical Care Services	Kristen Mayberry: Director Nursing	09/2023

Applicability

CA - Providence Saint Joseph MC, Burbank

Standards

No standards are associated with this document

COPY

Status **Active** PolicyStat ID **10226417**

Providence St. Joseph Medical Center

Origination	04/2009
Last Approved	09/2022
Effective	09/2022
Last Revised	09/2022
Next Review	09/2025
Owner	Kristen Mayberry: Director Nursing
Policy Area	Critical Care
Applicability	CA - Providence Saint Joseph MC, Burbank

Intra-Aortic Balloon Pump Protocol (IABP)

COPY

POLICY/PURPOSE

In keeping with the mission and values of Providence Health and Services, it is the policy of Providence Saint Joseph Medical Center to assist the patient to achieve hemodynamic stability with Intra-Aortic Balloon Pump (IABP) therapy, and to be weaned in a timely manner without complications. To provide mechanical cardiac support; generating blood flow and reducing the workload of the heart.

IMPORTANT CONSIDERATIONS

1. The IABP patient is monitored and assessed by a Registered Nurse, perfusionist, or technician who is IABP competent.
2. The IABP catheter placement verification by the physician is done through chest x-ray/ fluoroscopy.
3. For patients with aortic insufficiency and/or severe peripheral vascular disease, the choice to initiate IABP treatment is made by the physician, based upon patient risk/benefit ratios. Other contraindications may include: Abdominal or Thoracic Aneurysm. Aortic Valve Incompetence, Severe Peripheral Vascular Disease, and sheath-less insertion for morbid obesity.
4. The patient's Intra-Aortic Balloon **(**IAB**)** catheter should not remain inactive in the patient, (not inflating or deflating) for more than thirty minutes. If longer than thirty minutes, the balloon catheter must be removed. Surgical removal may be required if resistance is met.
5. Blood for laboratory testing is **NOT** drawn from the IAB arterial line unless there is no other access available, or an emergency situation exists.
6. Discontinuation may only be done by a physician.
7. A arterial compression device should be kept at the bedside in case of accidental or emergency removal. The use of an arterial compression device (i.e. Femostop) requires a physician order.

8. Normal saline flush solution is used to flush the central lumen of the IAB and pressure tubing.

PROCEDURE:

Insertion Equipment:

1. Balloon pump with cables
2. Line Cart
3. Arterial line set up
4. Lightwave IAB catheter

Pre-Insertion Phase:

1. MD to obtain informed consent.
2. RN to obtain written consent.
3. Begin patient and family education.
4. Assess the patient prior to IABP insertion for the following:
    a. Baseline assessment (Head to toe).
    b. Evaluate and document the peripheral vascular status including, but not limited to, distal pulses, warmth, color, sensation, paresthesia, or paralysis.
5. Connect the patient to the IABP EKG, pulse oximetry, and non-invasive blood pressure cuff. Obtain pre-procedure vital signs.
6. Assess need for sedation/pain medication, and medicate as ordered.
7. Final time out procedure is done and documented.

COPY

Insertion Phase:

1. Prepare both groins and prep.
2. The line and catheter are placed using maximum barrier technique.
3. Cover the procedure table (bedside table) using sterile technique.
4. Connect the arterial transducer (if needed). Flush with heparinized solution to eliminate air in the system.
5. Connect the fiber optic sensor to the pump.
6. Assist the physician with the procedure as needed.
7. Once the IAB catheter is in place, the IABP RN connects the gas line to the IABP console.

IAB Insertion Complete:

1. Order chest x-ray. Physician to verify proper position. Obtain order for daily chest x-ray for duration of IAB therapy.

2. Dress insertion site.
3. Assess and document distal circulation in all extremities every hour, or as ordered by the physician.

Weaning Criteria:

1. Monitor hemodynamic stability using the parameters ordered by the physician.
2. Assess for neurological changes during the weaning period.
3. Decrease the IAB pumping ratio and/or decrease balloon volume per physician's order. Assess patient tolerance, as evidenced by stable hemodynamic status.
4. If patient decompensates during the weaning period, prior settings are resumed immediately, timing is reassessed, and the physician is notified.
5. Do not remove any other arterial sheaths while balloon pump is in use.

Catheter Removal Equipment:

1. 4x4 sterile gauze, sterile gloves, occlusive tape, suture removal kit, bed protective pad and PPE (Personal Protective Equipment).
2. Ten (10) pound sand bag, if needed.
3. Femoral compression device, if needed.
4. Pain medication.

COPY

Catheter Removal Procedure:

D/C anticoagulant therapy several hours prior to removal as ordered by the physician.

1. Maintain hemodynamic stability.
2. Assist the physician with removal:
    a. Pre-medicate PRN.
    b. Turn the IABP to off or place in standby.
    c. Disconnect the IAB catheter from the console**.**
    d. Physician withdraws the catheter and/or sheath.
    e. Refer to procedure for Sheath Removal, Femoral Arterial and Venous PSJ-PC-S4
    f. Reassess patient status:
        1. Assess adequate blood flow to affected extremity. Record the presence/ absence of peripheral pulses. Record color, warmth, and sensation of lower extremities
        2. Obtain baseline hemodynamic profile
        3. Answer patient's questions and offer support throughout the removal of the IABP catheter
        4. Continue to monitor for signs and symptoms of complications &/or

hemodynamic compromise.

Documentation:

1. Record vital signs a minimum of every 15 minutes if titrating medications. If no medications are being titrated, then record vital signs every hour.
2. Augmented diastolic pressure, systolic**,** diastolic mean pressures, augmentation ratio**,** peripheral pulses, hemodynamics and assessments are documented in the Electronic Health Record (EHR).
3. Assess and document the condition of the sheath insertion site every hour and as needed.
4. Obtain IAB waveform strip and place on rhythm/waveform record in chart once per shift and PRN.
5. Document any patient and family teaching in the EHR.

Patient/Family Education:

1. Explain the need for the IABP and provide written materials (as needed).

Interventions may include, but not limited to, the following:

COPY

Addendum A

Complications	*Interventions*
Vascular limb ischemia	• Prepare for removal of IABP sheath or change of insertion site • Vascular physician intervention if needed
Compartment **s**yndrome	• Measure calf/leg girth • Maintain colloid pressure
Acute aortic dissection, **a**ortic vessel damage	• Assess for back pain • Note acute change in distal pulses • Check hemoglobin and hematocrit • Prepare for immediate physician intervention
Infection	• Observe insertion site, temperature • Dressing change(s)/sterile technique • Culture as ordered • Check WBC • Administer antibiotics as ordered

Immobility, pressure ulcer (decubitus) formation, atelectasis	• Turn Q 2 hours • Maintain proper body alignment • Restraint as ordered • Incentive Spirometry & deep breathe • Frequent back care
Excessive bleeding	• Observe insertion site for hematoma • Monitor anticoagulation • Apply pressure/sandbag • Notify the physician • Administer blood products as ordered
Thrombocytopenia	• Check platelet count • Avoid excess heparin • Platelet transfusion if ordered by MD
Mesenteric ischemia	• Assess abdominal firmness, shape, & tenderness • Inform the physician
Balloon leak/entrapment	• Note blood in IAB tubing • Assess patient stability & discontinue pumping • Inform the physician • Prepare for immediate removal, possible reinsertion

COPY

References:

1. Maquet Getinge Group. (2012). "Quick reference guide: IAB insertion/Cardiosave IABP operation". http://ca.maquet.com/file_assets/educational-materials/en/Quick-Reference-Guide-IAB-Insertion-CARDIOSAVE-IABP-Operation.pdf
2. Maquet Troubleshooting Hotline: 1(800) 777-4222
3. Khan, J.K., MD, ***Intra-aortic Balloon Pumping: Theory and clinical applications: A monogram for the clinician.*** Communications Media for Education, Inc.
4. Quaal, S.J., (1993). ***Comprehensive intra-aortic balloon counter pulsation, 2nd ed.*** Mosby Yearbook, Inc.
5. Clinical Procedure: Sheath Removal, Femoral Arterial & Venous (PSJ-PCP-S4)

Approval Signatures

Step Description	Approver	Date
Board	Anita Aragon: Director Risk Management [RN]	09/2022
MEC	Mino Izaguirre: Coord Medical Staff [RN]	07/2022
CNO	Courtnay Caufield: Chief Nursing Officer	02/2022
CPC	Ashley Castleberg: Clinical Nurse IV	10/2021
ICU Manager/ICU UBC	Kristen Mayberry: Mgr Nursing	10/2021
ICU Clinical Education Specialist	Lillian Davis: Clinical Education Spec	10/2021

COPY

Applicability

CA - Providence Saint Joseph MC, Burbank

Standards

No standards are associated with this document

Status **Active** PolicyStat ID **10226417**

Providence St. Joseph Medical Center

Origination	04/2009
Last Approved	09/2022
Effective	09/2022
Last Revised	09/2022
Next Review	09/2025
Owner	Kristen Mayberry: Director Nursing
Policy Area	Critical Care
Applicability	CA - Providence Saint Joseph MC, Burbank

Intra-Aortic Balloon Pump Protocol (IABP)

COPY

POLICY/PURPOSE

In keeping with the mission and values of Providence Health and Services, it is the policy of Providence Saint Joseph Medical Center to assist the patient to achieve hemodynamic stability with Intra-Aortic Balloon Pump (IABP) therapy, and to be weaned in a timely manner without complications. To provide mechanical cardiac support; generating blood flow and reducing the workload of the heart.

IMPORTANT CONSIDERATIONS

1. The IABP patient is monitored and assessed by a Registered Nurse, perfusionist, or technician who is IABP competent.
2. The IABP catheter placement verification by the physician is done through chest x-ray/ fluoroscopy.
3. For patients with aortic insufficiency and/or severe peripheral vascular disease, the choice to initiate IABP treatment is made by the physician, based upon patient risk/benefit ratios. Other contraindications may include: Abdominal or Thoracic Aneurysm. Aortic Valve Incompetence, Severe Peripheral Vascular Disease, and sheath-less insertion for morbid obesity.
4. The patient's Intra-Aortic Balloon **(**IAB**)** catheter should not remain inactive in the patient, (not inflating or deflating) for more than thirty minutes. If longer than thirty minutes, the balloon catheter must be removed. Surgical removal may be required if resistance is met.
5. Blood for laboratory testing is **NOT** drawn from the IAB arterial line unless there is no other access available, or an emergency situation exists.
6. Discontinuation may only be done by a physician.
7. A arterial compression device should be kept at the bedside in case of accidental or emergency removal. The use of an arterial compression device (i.e. Femostop) requires a physician order.

8. Normal saline flush solution is used to flush the central lumen of the IAB and pressure tubing.

PROCEDURE:

Insertion Equipment:

1. Balloon pump with cables
2. Line Cart
3. Arterial line set up
4. Lightwave IAB catheter

Pre-Insertion Phase:

1. MD to obtain informed consent.
2. RN to obtain written consent.
3. Begin patient and family education.
4. Assess the patient prior to IABP insertion for the following:
    a. Baseline assessment (Head to toe).
    b. Evaluate and document the peripheral vascular status including, but not limited to, distal pulses, warmth, color, sensation, paresthesia, or paralysis.
5. Connect the patient to the IABP EKG, pulse oximetry, and non-invasive blood pressure cuff. Obtain pre-procedure vital signs.
6. Assess need for sedation/pain medication, and medicate as ordered.
7. Final time out procedure is done and documented.

COPY

Insertion Phase:

1. Prepare both groins and prep.
2. The line and catheter are placed using maximum barrier technique.
3. Cover the procedure table (bedside table) using sterile technique.
4. Connect the arterial transducer (if needed). Flush with heparinized solution to eliminate air in the system.
5. Connect the fiber optic sensor to the pump.
6. Assist the physician with the procedure as needed.
7. Once the IAB catheter is in place, the IABP RN connects the gas line to the IABP console.

IAB Insertion Complete:

1. Order chest x-ray. Physician to verify proper position. Obtain order for daily chest x-ray for duration of IAB therapy.

2. Dress insertion site.
3. Assess and document distal circulation in all extremities every hour, or as ordered by the physician.

Weaning Criteria:

1. Monitor hemodynamic stability using the parameters ordered by the physician.
2. Assess for neurological changes during the weaning period.
3. Decrease the IAB pumping ratio and/or decrease balloon volume per physician's order. Assess patient tolerance, as evidenced by stable hemodynamic status.
4. If patient decompensates during the weaning period, prior settings are resumed immediately, timing is reassessed, and the physician is notified.
5. Do not remove any other arterial sheaths while balloon pump is in use.

Catheter Removal Equipment:

1. 4x4 sterile gauze, sterile gloves, occlusive tape, suture removal kit, bed protective pad and PPE (Personal Protective Equipment).
2. Ten (10) pound sand bag, if needed.
3. Femoral compression device, if needed.
4. Pain medication.

COPY

Catheter Removal Procedure:

D/C anticoagulant therapy several hours prior to removal as ordered by the physician.

1. Maintain hemodynamic stability.
2. Assist the physician with removal:
    a. Pre-medicate PRN.
    b. Turn the IABP to off or place in standby.
    c. Disconnect the IAB catheter from the console**.**
    d. Physician withdraws the catheter and/or sheath.
    e. Refer to procedure for Sheath Removal, Femoral Arterial and Venous PSJ-PC-S4
    f. Reassess patient status:
        1. Assess adequate blood flow to affected extremity. Record the presence/ absence of peripheral pulses. Record color, warmth, and sensation of lower extremities
        2. Obtain baseline hemodynamic profile
        3. Answer patient's questions and offer support throughout the removal of the IABP catheter
        4. Continue to monitor for signs and symptoms of complications &/or

hemodynamic compromise.

Documentation:

1. Record vital signs a minimum of every 15 minutes if titrating medications. If no medications are being titrated, then record vital signs every hour.
2. Augmented diastolic pressure, systolic**,** diastolic mean pressures, augmentation ratio**,** peripheral pulses, hemodynamics and assessments are documented in the Electronic Health Record (EHR).
3. Assess and document the condition of the sheath insertion site every hour and as needed.
4. Obtain IAB waveform strip and place on rhythm/waveform record in chart once per shift and PRN.
5. Document any patient and family teaching in the EHR.

Patient/Family Education:

1. Explain the need for the IABP and provide written materials (as needed).

Interventions may include, but not limited to, the following:

COPY

Addendum A

Complications	*Interventions*
Vascular limb ischemia	• Prepare for removal of IABP sheath or change of insertion site • Vascular physician intervention if needed
Compartment **s**yndrome	• Measure calf/leg girth • Maintain colloid pressure
Acute aortic dissection, **a**ortic vessel damage	• Assess for back pain • Note acute change in distal pulses • Check hemoglobin and hematocrit • Prepare for immediate physician intervention
Infection	• Observe insertion site, temperature • Dressing change(s)/sterile technique • Culture as ordered • Check WBC • Administer antibiotics as ordered

Immobility, pressure ulcer (decubitus) formation, atelectasis	• Turn Q 2 hours • Maintain proper body alignment • Restraint as ordered • Incentive Spirometry & deep breathe • Frequent back care
Excessive bleeding	• Observe insertion site for hematoma • Monitor anticoagulation • Apply pressure/sandbag • Notify the physician • Administer blood products as ordered
Thrombocytopenia	• Check platelet count • Avoid excess heparin • Platelet transfusion if ordered by MD
Mesenteric ischemia	• Assess abdominal firmness, shape, & tenderness • Inform the physician
Balloon leak/entrapment	• Note blood in IAB tubing • Assess patient stability & discontinue pumping • Inform the physician • Prepare for immediate removal, possible reinsertion

COPY

References:

1. Maquet Getinge Group. (2012). "Quick reference guide: IAB insertion/Cardiosave IABP operation". http://ca.maquet.com/file_assets/educational-materials/en/Quick-Reference-Guide-IAB-Insertion-CARDIOSAVE-IABP-Operation.pdf
2. Maquet Troubleshooting Hotline: 1(800) 777-4222
3. Khan, J.K., MD, ***Intra-aortic Balloon Pumping: Theory and clinical applications: A monogram for the clinician.*** Communications Media for Education, Inc.
4. Quaal, S.J., (1993). ***Comprehensive intra-aortic balloon counter pulsation, 2nd ed.*** Mosby Yearbook, Inc.
5. Clinical Procedure: Sheath Removal, Femoral Arterial & Venous (PSJ-PCP-S4)

Approval Signatures

Step Description	Approver	Date
Board	Anita Aragon: Director Risk Management [RN]	09/2022
MEC	Mino Izaguirre: Coord Medical Staff [RN]	07/2022
CNO	Courtnay Caufield: Chief Nursing Officer	02/2022
CPC	Ashley Castleberg: Clinical Nurse IV	10/2021
ICU Manager/ICU UBC	Kristen Mayberry: Mgr Nursing	10/2021
ICU Clinical Education Specialist	Lillian Davis: Clinical Education Spec	10/2021

COPY

Applicability

CA - Providence Saint Joseph MC, Burbank

Standards

No standards are associated with this document

Status **Active** PolicyStat ID **11391150**

Providence St. Joseph Medical Center

Origination	11/2023
Last Approved	11/2023
Effective	11/2023
Last Revised	11/2023
Next Review	11/2026
Owner	Kristen Mayberry: Director Nursing
Policy Area	Critical Care
Applicability	CA - Providence Saint Joseph MC, Burbank

Manual Pronation Therapy

COPY

POLICY

In keeping with the mission and values of Providence Health & Services the policy seeks to provide a structured process for the use of manual pronation therapy for patients when clinically indicated, to include team member responsibilities, patient assessment, safety considerations and required documentation.

PURPOSE

INCLUSION CRITERIA:

A. Patients should meet all 5 criteria, as determined by the ordering LIP:
   1. P/F ratio ≤ 150
   2. FiO_2 ≥ 0.6
   3. PEEP ≥ 7
   4. Patient has ARDS
   5. Lung Protective Ventilation with tidal volumes ≤ 6 mL/kg

B. **CONTRAINDICATIONS:**
   1. Facial/neck trauma or spinal instability
   2. Recent sternotomy or large ventral-surface burn
   3. Elevated ICP
   4. Massive hemoptysis or GI Bleed

5. High risk of requiring CPR or defibrillation

PROCEDURE/GENERAL INSTRUCTIONS

DURATION:

A. Strong recommendation for prone position >12 hours/ day
    1. Consider proning for 16 consecutive hours
B. Planned supine positioning coordinated with complete care team (MD, RT, RNs, etc.)

DE-ESCALATION:

A. Notify provider to consider de-escalation or discontinuing pronation therapy for the following:
    1. P/F ratio > 150 mm Hg 4 hours after supinating
    2. With $FiO_2 \leq 60\%$
    3. With PEEP ≤ 10 cm H_2O

ASSESSMENT:

COPY

A. When pronation therapy is under consideration, collaborate with the provider to ensure that contraindications are not present and that risks and benefits have been discussed.
B. Calculate P/F ratio with every ABG. Equation: PaO_2/FiO_2 x100= P/F ratio
C. In general, the therapy should be stopped as ordered to allow assessment of the patient in the supine position. At this time:
    1. Perform appropriate systems' assessments
    2. Perform sedation vacation as indicated
    3. Carefully examine skin for evidence of early pressure-related injury and intervene as indicated by findings
    4. Perform range-of-motion exercises
    5. Cleanse eyes and face
    6. Perform other hygienic care as needed (daily Chlorhexidine bath, catheter care, etc.)
D. Collaborate with Radiology and other departments as needed regarding timing and positioning needed for diagnostic testing and coordinate with therapy schedule as able
E. Collaborate with the attending critical care/pulmonary provider to determine changes to settings and discontinuation of therapy.

SAFETY CONCERNS:

General Nursing

A. Oral care every 2 hours

B. Eye care:
    1. Every 2 hour lubrication
    2. Avoid direct pressure on eyes
    3. Ensure eyes are closed to avoid abrasions (may require taping eyes closed)

C. OK to continue to full enteral feedings while prone unless contraindicated.

Skin Care

A. Order wound care consult

B. Assess skin at frequent intervals depending on patient condition (minimally once every 2 hours).

C. During skin assessment, pay close attention to skin over pressure points. While in the prone position patients have pressure points in areas that are not typically assessed. Examine skin covering ***all*** bony prominences (specifically knees, toes, hips, with special focus on the face). Give extra attention to locations where incontinence may occur and/ or where moisture may collect.

D. Early intervention may be essential to preventing serious skin breakdown.

E. Do not leave patient in a stationary position for more than 2 hours.

F. Elevate LEs on pillows while supine to decrease dependent edema acquired while prone

G. Facial edema:
    1. Consider using a side-lying or facial ring headrest pillow which allows for offloading of ETT to prevent pressure injury.
        a. Change headrest pillow every 72 hours
        b. May consider using positioning aids to align the head and neck
    2. Turn patients head every 2 hours
    3. Consider reverse Trendelenburg positioning to offload head and neck

H. Consider placing dry absorbent pads under head and neck region, prior to turning, to absorb secretions

COPY

Patient Position

A. Head, arms, and body should be repositioned every 2 hours to avoid pressure and tissue damage.

B. Maintain body alignment to avoid nerve damage and contractures:
    1. Ulnar nerve – Avoid pressure on elbows
    2. Brachial plexus nerves – Keep shoulders flexed forward
    3. Femoral nerve – Maintain hip flexion

C. Reverse Trendelenburg -11 degrees unless contraindicated

D. "Swimmers' position" - Head turned to one side with same arm flexed at the elbow with hand pointing towards head; other arm long body (alternating every 2 hours).
E. Passive range of motion every 2 hours.
F. Keep knees floated off bed using pillows placed under thigh area and under shins.
G. Keep toes floated off bed using pillows placed under shins.

Tube and Line Management

A. Any lines/tubes originating from above the waist line should be aligned up towards the patient's head for turning purposes.
B. Any lines/tubes originating below the waistline should be routed towards the patient's feet.
C. Float the nasogastric tube to prevent injuries

Ventilator Management

A. Always rotate the patient from the supine position toward the ventilator to reduce the risk of unplanned extubation. To avoid confusion, use "toward ventilator" and "away from ventilator" instead of "left" and "right".
B. To avoid unplanned extubation, it is important to have the Respiratory Therapist at the head of bed to maintain patency of ETT during position changes.
C. Monitor ETCO2 to help ensure proper positioning of the ETT

COPY

Sedation

A. Patient must be adequately sedated and/or medically paralyzed using a Neuromuscular Blocking Agent (NMBA) per LIP orders
B. Maintain RASS of -3 or as ordered while patient is in prone position
C. Daily sedation vacation should be performed while the patient is in the supine position unless contraindicated (i.e. patients on a NMBAs)

Hemodynamic and Oxygenation Stability

A. Primary RN judgment should be used to determine if it is safe to remove EKG leads
B. Arterial line and pulse oximetry will allow for monitoring while EKG leads are off

Aspiration

A. If using gastric feedings, turn off the tube feeding 1 hour before the prone position turn
B. Enteral feeding can be continued during the prone position; use of prokinetic agents or postpyloric feedings is recommended to prevent complications associated with vomiting.
C. Reverse Trendelenburg positioning

Cardiopulmonary Resuscitation

A. Call Code Blue to rapidly gather necessary staff to return to supine position as quickly as possible

B. If unable to return to supine position being CPR in the prone position (see attachment A, page 2).

REPORTABLE CONCERNS:

A. Inability to tolerate treatment:
    1. Signs of hemodynamic instability
        a. Expect and/or allow 5-10 minutes of adaption postposition change before determining tolerance
    2. Desaturation of SaO_2

B. Evidence of skin breakdown:
    1. Document per protocol

C. Increasing demand for sedation and/or pain control

D. Neurologic or CMS changes of extremities

COPY

PATIENT AND FAMILY EDUCATION:

A. Risks and potential benefits of treatment

B. Explain process and encourage the reporting of any concerns regarding therapy

C. Reinforce and explain pathophysiology of disease process including potential length of treatment

D. Expectations (timing, appearance of patient, sedation management, facial swelling)

DOCUMENTATION:

A. Document the following in EMR (Electronic Medical Record) by the medical team:
    1. Patient and family education
    2. P/F ratio (per RT)
    3. Response to treatment
    4. Turns/repositioning
    5. Hours of proning therapy
    6. Skin condition
    7. Reportable concerns

Required Elements of Documentation – All	Where to Document in the	Considerations

Patients	Epic EMR	
Position	Flow sheet – Quick Chart	Face placement, eye pressure point check, ETT securement Q2H Turns, arm in swimmers position, pressure point checks Q2H (elbows, shoulders, hips)
P/F ratio	Flow sheet - Mechanical Ventilation	With each ABG
Hours of Proning Therapy and Response to Treatment	RN Progress Note	Document time of initiation of therapy and time when patient was returned to supine position, as well as patient's response to all position changes
Skin Condition	Flow sheet – Adult PCS	Add LDA for any wounds noted
Vital Signs	Flow sheet – Vital Signs	During proning record VS Q15 minutes x 4, then Q30 minutes x 2 or until stable, then per ICU standards.
Patient and Family Education	Education Flow sheet	Comment required to describe specific education provided
Reportable Concerns	Flow sheet – Quick Chart	Notifications

COPY

REFERENCE(S)/RELATED POLICIES

A. Lippincott Procedures: Prone Positioning Last accessed 5/2019

B. Fan, E. et al. An official american thoracic society/ european society of intensive care medicine/ society of critical care medicine clinical practice guideline: mechanical ventilation in adult patients with acute respiratory distress syndrome. *Am J Resp Crit Care Med*. 2017: 195(9): 1253-1263.

C. Scholten, EL, et al. Chest. 2017: 151(1): 215-224.

D. Wiegland, D.L. (2017). AACN procedure manual for high acuity, progressive, and critical care (7th ed). St. Louis, MO: Elsevier.

E. Vollman, KM and Dickinson, SP. AACN Critical Care Webinar Series "Why Prone? Why Now? Improving Outcomes for ARDS patients" June 2017.

Approval Signatures

Step Description	Approver	Date

Board	Marisa Simile: Senior Executive Assistant [CP]	11/2023
MEC	Mino Izaguirre: Medical Staff Coordinator	08/2023
QA/I Committee	Mino Izaguirre: Medical Staff Coordinator	08/2023
CNO	Katherine Doll: Chief Nursing Officer	03/2023
CPC	Kristen Mayberry: Mgr Nursing	03/2022

Applicability

CA - Providence Saint Joseph MC, Burbank

Standards

No standards are associated with this document

COPY

Status **Active** PolicyStat ID **11051002**

Origination	05/2014
Last Approved	08/2022
Effective	08/2022
Last Revised	08/2022
Next Review	08/2025
Owner	Julie Hilsenbeck: AVP Nursing Operations
Policy Area	Critical Care
Applicability	CA - Divisional/ Regional
References	SoCal Region

To find another policy, use the browser BACK button to return to your Ministry.

MEWS - Automated Modified Early Warning System

COPY

Number: CA-CLIN-20003

POLICY

In keeping with the mission and values of Providence Saint Joseph Health, the MEWS scoring will be performed, using vital sign data, to identify high-risk patients.

PURPOSE

The purpose is to decrease deaths and Code Blues occurring outside the Critical Care areas, increase notifications to the RRT, and respond early to patients with evidence of high-risk clinical deterioration.

DEFINITIONS

MEWS – The Modified Early Warning System, (MEWS), is a simple, validated physiological scoring system that identifies high-risk patients. The score is calculated based on data already documented by nursing or support staff. Physiological parameters include heart rate, blood pressure, respiratory rate, temperature. These values are measured routinely in hospitalized patients, and the score enables nurses and physicians to identify patients who are deteriorating and who may need urgent intervention.

RRT – Rapid Response Team

MEWS Algorithm – the mechanism by which MEWS scores are auto calculated within EPIC Electronic Health Record (EHR). Please refer to chart.

CA Region MEWS Algorithm

The most accurate MEWS score is generated when vital signs data are entered concurrently, within 60

minutes of being measured or assessed

Score	3	2	1	0	1	2	3
Systolic BP	<=70	71-80	81-100	101-199	—	>=200	—
Heart rate (HR)	—	<=40	41-50	51-100	101-110	111-129	>=130
Respiratory rate (RR)	—	<=8	—	9-14	15-20	21-29	>=30
Temperature (°Fahrenheit)	—	<95	—	95-101.2	—	>=101.3	—

PROCEDURE/GENERAL INSTRUCTIONS

1. MEWS scoring is for the adult inpatient areas (excludes ED, ICU, Psych units, Acute Rehab, Post Acute, Women's/Children departments).
2. MEWS scores are generated using available vital sign data. Frequency of assessment is per standard of care for the patient designated level of care vital sign frequencies, or at least once per 12-hour shift.
3. The nurse may calculate the MEWS score based on vital sign parameters.
4. MEWS scores are auto calculated and may generate alerts when **2 or more VS parameters are documented at the same time and result in a score of 4 or higher.** Vital sign parameters of temperature, RR, HR, BP are used to calculate and obtain the score. MEWS scores are auto-calculated in EPIC EHR.
5. Follow inpatient actions based on scoring calculation. Primary assigned RN documents MEWS action items in the electronic health record.(EHR) utilizing the provider notification screen in **Adult PCS Doc Flowsheet or Quick-Chart flowsheet.**
6. Alternative Call Parameters
    - If a provider has specified alternative call parameters for a patient with known stable abnormal vitals (e.g., alcohol withdrawal, chronic liver or heart disease), the nurse may document text such as “No MEWS notification, alternative call parameters in place” on the Flow Sheet “Adult PCS” section “Notification” in the “Provider Name/ Title” row; this will meet the Provider Notification criteria.
    - If vital signs were entered in error, the nurse may document “No MEWS notification, vital signs entry error” on the Flow Sheet “Adult PCS” section “Notification” in the row “Provider Name/Title”; this will meet the Provider Notification criteria.
7. MEWS actions are to be excluded on patients with comfort care or Hospice Status.
8. RRT activation documentation is completed as directed by ministry policy in the EHR utilizing the Rapid Response Team tab under the **Doc Flowsheets** under attending MD notified.
9. During computer down time, MEWS scores are not generated and available. The single clinical trigger indicators for initiating the RRT activation are utilized.

ACTION:

Based on the MEWS score, the nurse does the following:

COPY

Score	Intervention/Action (excludes comfort care and Hospice patients)
0 to 3	Continue routine/ordered vital signs.
4	At first reading, inform charge nurse and physician of patient status. Increase vital status frequency; include pulse ox, to 1hr x 2. Calculate MEWS score each time.
5	**Activate RRT**; inform physician of patient status. Increase vital signs frequency to every 1 hour x2, include pulse ox. If patient remains 5 for three consecutive readings, request order for possible transfer to higher level of care. Consider end of life discussion with patient/ family.

REMEMBER: Never hesitate to call RRT if you feel something is "just not right"

REFERENCE(S)/RELATED POLICIES

Donohue, L. A., & Endacott, R. (2010). Track, trigger and teamwork: Communication of deterioration in acute medical and surgical wards, *Intensive and Critical Care Nursing, 26*(1), 10-17.

Gao, H., McDonnell, A., Harrison, D. A., Moore, T., Adam, S., Daly, K., . . . Harvey, S. (2007). Systematic review and evaluation of physiological track and trigger warning systems for identifying at-risk patients on the ward. *Intensive Care Medicine, 33*(4), 667-679.

Gardner-Thorpe, J., Love, N., Wrightson, J., Walsh, S., & Keeling, N. (2006). The value of Modified Early Warning Score (MEWS) in surgical in-patients: a prospective observational study. *Annals of the Royal College of Surgeons of England, 88*(6), 571-575.

Guay, C., Murphree, P., Steele-Moses, S. (2011). Developing an automated RRT trigger. *Nursing Management, 42*(2), 50-52.

Higgins, Y., Maries-Tillott, C., Quinton, S., & Richmond, J. (2008). Promoting patient safety using an early warning scoring system. *Nursing Standard, 22*(44), 35-40.

Maupin, J. M., Roth, D. J., & Krapes, J. M. (2009). Use of modified early warning score decreases code blue events. *Joint Commission Journal on Quality and Patient Safety, 35*(12), 598-603.

Odell, M., Forster, A., Rudman, K., & Bass, F. (2002). The critical care outreach service and the early warning system on surgical wards. *Nursing in Critical Care, 7*(3), 132-135.

Patel, M. S., Jones, M. A., Jiggins, M., & Williams, S. C. (2011). Does the use of a "track and trigger" warning system reduce mortality in trauma patients? *Injury, 42*(5), 478-482.

Subbe, C. P., Kunger, M., Rutherford, P., & Gemmel, L. (2001). Validation of a modified early warning score in medical admissions. *Quarterly Journal of Medicine, 94*(10), 521-526.

Wolfenden, J., Dunn, A., Holmes, A., Davies, C., & Buchan, J. (2010). Track and trigger system for use in community hospitals. *Nursing Standard, 24*(45), 35-39.

COPY

Attachments

MEWS Alert Tip Sheet.pdf

Approval Signatures

Step Description	Approver	Date
Regional Site Adminsitrator	Wen Yun Chang: Business Data Analyst	08/2022
Regional CNO	Julie Hilsenbeck: Regional Chief Nursing Officer Southern California	08/2022
Exec Dir Clin Ops SoCal Reg	Kevin Streeter: Executive Director Clinical Operations	08/2022

Applicability

CA - Regional/Divisional

COPY

Standards

No standards are associated with this document

Status **Active** PolicyStat ID **13336033**

Origination	03/2025
Last Approved	03/2025
Effective	03/2025
Last Revised	03/2025
Next Review	03/2028

Owner	Kristen Mayberry: Director Nursing
Policy Area	Patient Care Services
Applicability	CA - Providence Saint Joseph MC, Burbank

Rapid Response Team (RRT) Scope and Services

COPY

RAPID RESPONSE TEAM (RRT)

POLICY

In keeping with the mission and values of Providence Health & Services, Providence Saint Joseph Medical Center (PSJMC) has selected Rapid Response Team (RRT) as a method that enables health care staff members to directly request additional assistance when the patient's condition appears to be worsening.

PURPOSE

The Rapid Response Team (RRT) is to serve as an in-house team, available 24 hours a day, 7 days a week, that provides early intervention and deliver urgent, emergent treatment for the patients whose condition may be deteriorating in order to promote better outcomes. Research has shown that warning signs may precede many critical events several hours before an adverse event.

1. Assess patient condition and needs.
2. Provide early intervention.
3. Stabilize patient condition.
4. Assist with communication to physicians.
5. Education and support.
6. Prevent clinical deterioration or arrest.
7. Reduce the number of hospital unexpected deaths outside intensive care unit (ICU).
8. Provide a timelier transfer of appropriate patients to a higher level of care.

9. Minimize unnecessary transfers to a higher level of care.

DEFINITIONS

1. Rapid Response Team (RRT) consists of:
    a. A RRT nurse or ICU Charge Nurse (or designee).
    b. Lead Respiratory Therapist (or designee).
    c. House Supervisor.
2. Rapid Response Team Registered Nurse who is deemed competent and either assigned in the role of RRT or is asked to respond to a call based on increased volume of calls or simultaneous RRT calls.
3. The Rapid Response Team is available 24 hours a day, 7 days a week, in all acute areas of the Medical Center.
4. Clinical indicators include, but are not limited to:
    a. Staff worry/concern.
    b. Family worry/concern.
    c. Acute changes in vital signs:
        i. Systolic blood pressure (SBP) < 90mmHg or >180mmHg and symptomatic
        ii. Heart rate (HR) < 50 beats per minute (bpm) or > 130 bpm and symptomatic
        iii. Respiratory rate (RR) <10 breaths per minute or >30 breaths per minute
        iv. Oxygen saturation < 90% despite supplemental oxygen administration (consider chronic CO2 retainers and patient baseline).
    d. Respiratory distress and or/progressive or prolonged dyspnea.
    e. Threatened airway.
    f. Acute change in mental status or level of consciousness. A new onset of decrease in responsiveness.
    g. Acute neurological change (increase in NIHSS ≥ 4 points).
    h. Repeated, prolonged, or new onset of seizures.
    i. Sudden onset of chest pain.
    j. Any symptomatic arrhythmia with hemodynamic instability.
    k. Acute, unrelenting pain, despite treatment.
    l. Acute bleeding or any significant bleeding.
    m. Possible life-threatening allergic reaction.
    n. MEWS alert >=5.
    o. Respond and initiate Massive Transfusion Protocol (MTP) throughout the medical center.

COPY

5. The RRT nurse utilizes a Standardized Procedure and nurse-initiated orders to perform rapid assessment and provide interventions during periods of clinical deterioration when cardiac arrest is not the emergency and a physician is not immediately available.
6. The Rapid Response Team responds within a few minutes of notification; goal less than five minutes.
7. The Rapid Response Team, and the patient's nurse will provide:
    a. Assessment of patient condition and prioritization of care.
    b. Early intervention when a physician is not present or readily available.
    c. Reasonable efforts to stabilize patient condition.
    d. Reasonable attempts to prevent clinical deterioration or arrest.
    e. Assistance with communication to physicians.
        i. Communication – RRT RN performing the Standardized Procedure notifies the MD/ licensed independent practitioner (LIP) by phone promptly, when first safe to do so after initial, immediate assessment is performed. The RRT RN may, in the event of an emergency, delegate this notification to a peer RN who will inform the MD/LIP that a Rapid Response activation is occurring and assist with communicating pertinent updated information.
8. The RRT RN is responsible for initiating emergency codes through the operator system per corresponding code polices: code blue, code stroke, and code sepsis.

COPY

PROCEDURE/GENERAL INSTRUCTIONS

1. Staff Nurse
    a. Notifies charge RN to assess patient declining condition and makes clinical decision to overhead page for the Rapid Response Team by calling the PBX operator at 888. The staff RN communicates the unit and the room number to the operator.
    b. Initiates contacting the attending physician or appropriate consultant regarding the patient's condition.
    c. Works with the RRT team at the bedside to provide report of the concerns, observations, patient history, pertinent lab values, code status, and actively participate with the Rapid Response Team to assess and stabilize the patient.
    d. Ensures all documentation on the electronic health record (EHR) is current.
2. Charge RN
    a. Assesses the patient with the staff nurse and make clinical decision to initiate Rapid Response Team.
    b. The Charge RN ensures that the staff nurse remains with the RRT RN throughout the encounter until the end of the call, providing support to the primary nurse's other patients.
3. Rapid Response Team
    a. Once the page is received, the Rapid Response Team members simultaneously

respond to the room/location within minutes.

b. The Rapid Response Team members speak directly with the patient's primary nurse and the nurse in charge of that unit in the patent's room, collaborating to get background information/history.
c. Assessment and appropriate interventions will be performed by the Rapid Response Team in collaboration with the primary care nurse.
d. Reviews the EHR for pertinent information including but not limited to vital signs, neuro exam with GCS score, lung sounds, pain level, 02 Sat, patient history and physical, laboratory results, radiology results, physician and nursing documentation and notes.
e. Assesses the patient.
f. The physician is notified at earliest opportunity regarding patient change of status and provided an update that includes current assessment of patient, orders placed, interventions already implemented, and response to those interventions.
g. If the return call from the physician is not received within 15 minutes, and another call is made, with a 15-minute deadline, the RRT RN implements the appropriate chain of command.
h. The RRT evaluates the patient using resources and actions within their scope and intervenes, if indicated.
i. RRT stabilizes the patients.
j. The RRT orders appropriate diagnostic tests or treatment per Rapid Response Standardized Procedure for Nurse Initiated Orders or as indicated or as per physician order.
k. Bedside cardiac monitoring may be initiated for any patient on an unmonitored floor for purposes of assessment during an RRT assessment period.
l. RRT RN notifies the House Supervisor if higher level of care is indicated.
m. The RRT RN documents the assessment, subsequent relevant data, and communications in the electronic health record (EHR) using both of the following tools in Epic:
    i. The Rapid Response flowsheet.
    ii. A detailed significant event note including pertinent data to summarize the encounter.
    iii. Physician Notification.
n. When not responding to patient emergencies, MEWS alerts, or current rapid response call, the RRT RN:
    i. Rounds on the acute care units and actively screens for patient with declining clinical condition.
    ii. Follows up with patients transferred from the ICU within the last 24 hours and recent RRT calls.
    iii. Offer assistance to ICU staff RN for breaks and other unit needs especially

COPY

during staff shortage.

TRAINING AND EDUCATION REQUIREMENT FOR RAPID RESPONSE TEAM RN

1. The standardized procedure is performed by a Critical Care Registered Nurse who has validated CA RN license and has completed competencies for Critical Care and the role of RRT RN.
2. Initial competency:
    1. Required
        a. Completion of the online-learning module specific to the standardized procedure
        b. Completion of an in-person/ virtual, training class
        c. Completion of the RRT competency assessment checklist via direct observation/training with an experienced rapid response team RN.
    2. Preferred:
        a. A minimum of two years of critical care experience
3. Continued competency is assessed annually using a multimodal approach involving education and evaluation and access to resources/information pertinent to practice.
4. Record-keeping is maintained through the learning management system and a written record of who is authorized to perform as a RRT RN.

COPY

REFERENCE(S)/RELATED POLICIES

California Board of Registered Nursing. (2014). Subsection (b)(4) of Section 2725 of California Nurse Practice Act. California BRN Title 16, California Code of Regulations (CCR) section 1474; Medical Board of California, Title 16, CCR Section 1379.

Dellinger, R.P., et.al (2012). Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock. *Critical Care Medicine, 41*(2), 580-637. Retrieved from http://www.sccm.org/Documents/SSC-Guidelines.pdf

Field, J., et al. (2010). American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation, 122*(suppl 3), S640-S656. doi: 10.1161/CIRCTHOU/CMMATIONAHA.110.970889. Retrieved from http://circ.ahajournals.org/content/122/18_suppl_3/S640.fthou/cmml

Howell MD, Stevens JP. Rapid Response Systems. UpToDate.com Jun 29, 2016

Institute for Clinical Systems Improvement (ICSI). Rapid response team. Health care protocol. Bloomington (MN): Institute for Clinical

Systems Improvement (ICSI); 2011 Jul. 45 p.

Jones DA, DeVita MA, Bellomo R. N Engl J Med. Rapid Response Teams. 2011;365:139-146.

Mitchell, A., Schatz, M., & Francis, H. (2014). Designing a critical care nurse-led rapid response team using only available resources: 6 years later. *Critical Care Nurse, 34*(3), 41-55. Retrieved from http://www.aacn.org/wd/Cetests/media/C1433.pdf

Rapid Response Team, Accessing, Providence Portland Medical Center (2003). Rapid Response Teams: Heading off the medical crisis. *Institute for Healthcare Improvement . Saving 100,000 lives* (2005). Benefits of a Rapid Response System at a Community Hospital, *The Joint Commission Journal on Quality and Patient Safety* (June 2007). Rapid Response Team: Challenges, Solutions, Benefits, *Critical Care Nurse* (2007).

Solomon RS, Corwin GS, Barclay DC, Quddusi SF, Dannenberg MD. Effectiveness of rapid response teams on rates of in-hospital cardiopulmonary arrest and mortality: A systematic review and meta-analysis. J Hosp Med. 2016 Jun; 11(6): 438-45.

Approval Signatures

Step Description	Approver	Date
Board	Marisa Simile: Senior Executive Assistant [CP]	03/2025
MEC	Donald Sandoval: Senior Manager Medical Staff Services	08/2024
QA/I Committee	Mino Izaguirre: Medical Staff Coordinator	07/2024
ICU Committee	Mino Izaguirre: Medical Staff Coordinator	05/2024
CPC	Chona Roa: Manager Nursing [AA]	11/2023
Executive Director Critical Care Services	Kristen Mayberry: Director Nursing	10/2023

Applicability

CA - Providence Saint Joseph MC, Burbank

Standards

No standards are associated with this document

COPY

Status **Active** PolicyStat ID **8141691**

Providence St. Joseph Medical Center

Origination	07/2014
Last Approved	03/2025
Effective	03/2025
Last Revised	03/2025
Next Review	03/2027

Owner	Kristen Mayberry: Director Nursing
Policy Area	Standardized Procedures
Applicability	CA - Providence Saint Joseph MC, Burbank

Rapid Response Team Standardized Procedure

COPY

POLICY

1. In keeping with the mission and values of Providence Health & Services, Providence Saint Joseph Medical Center (PSJMC) has selected Rapid Response Team (RRT) as a method that enables health care staff members to directly request additional assistance when the patient's condition appears to be worsening.
2. Only RNs with validated Rapid Response Team competency and acting in the role of RRT RN may initiate the orders and interventions as described in this policy (Appendix A).

PURPOSE

The Rapid Response Team (RRT) is to serve as an in-house team, available 24 hours a day, 7 days a week, that provides early intervention and deliver urgent/emergent treatment for the patients whose condition may be deteriorating in order to promote better outcomes. Research has shown that warning signs may precede many critical events several hours before an adverse event.

The purpose of this standardized procedure and nurse-initiated orders for Rapid Response is to enable prompt initiation of diagnostic tests and implementation of interventions intended to treat specific clinical conditions when the physician is not immediately available. It is also intended for use by the Rapid Response RN when cardiac arrest is identified and awaiting physician arrival to that event. Failure to provide or delay in providing certain interventions while awaiting contact with a physician could contribute to occurrence of cardiac arrest. The physician is notified at earliest opportunity regarding patient change of status and provided an update which includes current assessment of patient, interventions already implemented and response to those interventions.

DEFINITIONS

MEWS – Modified Early Warning System – The Modified Early Warning System, (MEWS), is a simple, validated physiological scoring system that identifies high-risk patients. The score is calculated based on data already documented by nursing or support staff. Physiological parameters include heart rate, blood pressure, respiratory rate, temperature, and central nervous system status. These values are measured routinely in hospitalized patients, and the score enables nurses and physicians to identify patients who are deteriorating and who need urgent intervention. Modified Early Warning System – is a simple, validated physiological scoring system that identifies high risk patients. (Refer to LA Regional policy: CA-Clin-20003 MEWS - Automated Early Warning System)

MEWS rounding: In addition to the above roles and responsibilities, a RRT RN may review any inpatient electronic medical record for patients who may have clinical concerns.

RRT - Rapid Response Team – A team comprised of an ICU nurse, respiratory therapist, and house supervisor who are available 24/7 to evaluate and intervene for inpatients demonstrating evidence of any clinical deterioration.

RRT RN- Rapid Response Team Registered Nurse who is deemed competent and either assigned in the role of RRT or is asked to respond to a call based on increased volume of calls or simultaneous RRT calls.

COPY

FUNCTIONS/SCOPE OF RAPID RESPONSE TEAM REGISTERED NURSE

The RRT RN utilizes a Standardized Procedure and nurse-initiated orders to perform rapid assessment and provide interventions during periods of clinical deterioration when cardiac arrest is not the emergency and a physician is not immediately available.

1. The RRT RN scope includes:
    a. Assessment of patient condition and prioritization of care.
    b. Early intervention when a physician is not present or readily available.
    c. Reasonable efforts to stabilize patient condition.
    d. Reasonable attempts to prevent clinical deterioration or arrest.
    e. Assist with communication to physicians.
        i. Communication - RN performing the Standardized Procedure notifies the MD/licensed independent practitioner (LIP) by phone promptly, when first safe to do so after initial, immediate assessment is performed. The RRT RN may, in the event of an emergency, delegate this notification to a peer RN who will inform the MD that a Rapid Response activation is occurring and assist with communicating pertinent updated information to provider.
    f. Mentoring/education and support as appropriate and/or indicated.
    g. Assist with transfer to critical care or facilitate movement to a higher level of care.

h. The RRT RN is responsible for initiating emergency codes through the operator system per corresponding code polices (i.e. code blue, code stroke, code sepsis, code MTP, etc.).

2. Clinical indicators include, but are not limited to:
    a. Staff worry/concern
    b. Family worry/concern
    c. MEWs alert >/= 5
    d. Acute change in mental status or level of consciousness; new onset of decreased responsiveness
    e. Acute neurological change (increase in NIHSS ≥ 4 points) or new acute aphasia
    f. Acute changes in vital signs:
        i. Systolic blood pressure (SBP) < 90mmHg or >180mmHg and symptomatic
        ii. Heart rate (HR) < 50 beats per minute (bpm) or > 130 bpm and symptomatic
        iii. Respiratory rate (RR) <10 breaths per minute or >30 breaths per minute
        iv. Oxygen saturation < 90% despite supplemental oxygen administration (consider chronic CO2 retainers and patient baseline
    g. Any symptomatic arrhythmia with hemodynamic instability.
    h. Respiratory distress and or/progressive or prolonged dyspnea.
    i. Threatended airway.
    j. Sudden onset of chest pain
    k. Acute bleeding or any significant bleeding
    l. Possible life-threatening allergic reaction
    m. Repeated, prolonged, or new onset seizure

3. General actions:
    a. The RRT RN responds to the patient location and gets report from the primary RN
    b. The RRT RN evaluates the patient using resources and actions within their scope
    c. The RRT RN may review pertinent information using the following elements:
        i. patient history and physical
        ii. physician notes
        iii. laboratory results
        iv. radiology results
        v. nursing documentation and notes
    d. If applicable, the RRT RN enters/initiates the orders and interventions ("per protocol—Cosign required"). (Appendix A.)

COPY

e. Bedside cardiac monitoring may be initiated for any patient on an unmonitored floor for purposes of assessment during an RRT assessment period.

f. Inform the physician that the Rapid Response Team has been initiated, orders placed and interventions completed

    a. If the return call from the physician is not received within 15minutes, and another call is made, with a 15-minute deadline, the RRT RN implements the appropriate chain of command.

    b. RRT RN notifies the House Supervisor if higher level of care is indicated.

g. Stabilizes the patient.

4. Preventive actions:
    1. Rounds on the units throughout the ministry to actively screens for patients with declining clinical condition.
    2. Follows up with patients transferred from the ICU within the last 24 hours and recent RRT calls
    3. Other actions, as time permits:
        a. Offer assistance to ICU staff RN for breaks and other unit need

COPY

PROCEDURE/GENERAL INSTRUCTIONS FOR STAFF NURSE AND CHARGE RN INITIATING RRT CALL

A. Staff Nurse

1. Notifies charge RN to assess patient declining condition and makes clinical decision to overhead page for the Rapid Response Team by calling 888. The staff RN communicates the unit and the room number to the operator.
2. Staff RN initiates contacting the attending physician or appropriate consultant regarding the patient's condition.
3. Works with the RRT team at the bedside to provide report of the concerns, observations, patient history, pertinent lab values, code status, and actively participate with the Rapid Response Team to assess and stabilize the patient.
4. Ensures all documentation on the electronic health record (EHR) is current.

B. Charge RN

1. Assesses the patient with the staff nurse and make clinical decision to initiate Rapid Response Team.
2. The Charge RN ensures that the staff nurse remains with the RRT RN throughout the encounter until the end of the call, providing support to the primary nurse's other patients.
3. Will be alerted for a patient who has a Modified Early Warning System (MEWS) score

of 4 or greater and follow MEWs policy (Refer to LA Regional policy: CA-Clin-20003 MEWS - Automated Early Warning System)

TRAINING AND EDUCATION REQUIREMENT FOR RAPID RESPONSE TEAM RN

1. The standardized procedure is performed by a Critical Care Registered Nurse who has validated CA RN license and has completed competencies for Critical Care and the role of RRT RN.
2. Initial competency:
    a. A minimum of two years of critical care experience is preferred
    b. Completion of the online-learning module specific to the standardized procedure
    c. Completion of a two hour, in-person, training class.
    d. Completion of the RRT competency assessment checklist via direct observation/ training with an experienced rapid response team RN.
3. Continued competency is assessed annually using a multimodal approach involving education and evaluation and access to resources/information pertinent to practice.
4. Record-keeping is maintained through the learning management system and a written record of who is authorized to perform as a RRT RN.

COPY

DOCUMENTATION

1. If applicable, the RRT RN enters/initiates the orders and interventions ("per protocol—Cosign required") as described in this policy. See Appendix A.
2. The assessment, subsequent relevant data, and communications are documented by the RRT RN and/or the primary RN in the electronic health record (EHR) using both of the following tools:
    a. The Rapid Response flowsheet
    b. A detailed significant event note including pertinent data to summarize the encounter
3. Physician Notification:
    a. The physician is notified at earliest opportunity regarding patient change of status and provided an update that includes current assessment of patient, interventions already implemented, and response to those interventions
    b. Notification must be documented in the EHR per the identified tools above

DEVELOPMENT AND APPROVAL OF THE STANDARDIZED PROCEDURE

1. This standardized procedure developed in collaboration with:

a. Critical Care (leadership and education)
b. RRT RNs
c. Respiratory Therapy
d. Stroke Program Coordinator
e. Risk Management
f. Sepsis Coordinator

2. The standardized procedure is reviewed and approved by identified medical and interdisciplinary committees identified in the approval pathway.
3. This standardized procedure will be reviewed at least **annually.**
4. Practitioners function under this standardized procedure; a current list of authorized personnel are on file in the office of the Medical Group Administrator and critical care department manager.

REFERENCE(S)/RELATED POLICIES

California Board of Registered Nursing. (2014). Subsection (b)(4) of Section 2725 of California Nurse Practice Act. California BRN Title 16, California Code of Regulations (CCR) section 1474; Medical Board of California, Title 16, CCR Section 1379.

Dellinger, R.P., et.al (2012). Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock. *Critical Care Medicine, 41*(2), 580-637. Retrieved from http://www.sccm.org/Documents/SSC-Guidelines.pdf

Field, J., et al. (2010). American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation, 122*(suppl 3), S640-S656. doi: 10.1161/CIRCTHOU/CMMATIONAHA.110.970889. Retrieved from http://circ.ahajournals.org/content/122/18_suppl_3/S640.fthou/cmml

Mitchell, A., Schatz, M., & Francis, H. (2014). Designing a critical care nurse-led rapid response team using only available resources: 6 years later. *Critical Care Nurse, 34*(3), 41-55. Retrieved from http://www.aacn.org/wd/Cetests/media/C1433.pdf

COPY

Appendix A

CHEST PAIN/ ANGINA	**CHEST PAIN, AND/OR EKG CHANGES SUGGESTING ISCHEMIA**
	1. Oxygen @ 2 L/min via nasal cannula PRN to keep SPO2 ≥ 94% 2. Pulse oximetry 3. ABG PRN 4. Order a12 Lead EKG STAT, prior to treating a new episode of chest pain. 5. Troponins STAT, and every 4 hours x 3 for suspected AMI.

	6. CBC, BMP, Magnesium and LDL levels STAT 7. ASA 162 mg (81 mg x2) chewable 8. Nitroglycerin 0.4 mg sublingual tablet x 1, May repeat every five minutes x 3 PRN for persistent chest pain. Hold for systolic BP <100 mm Hg. 9. Morphine 2 mg IVP PRN chest pain not relieved by Nitroglycerin. May repeat if chest pain unrelieved to a maximum of 6 mg over 10 minutes. 10. If suspected narcotic induced respiratory distress, give Naloxone 0.4 mg diluted in 10mL normal saline IVP slowly PRN; may repeat x1. 11. Arrhythmias: For sustained and/or symptomatic cardiac rhythm disturbance, obtain: • Serum Potassium & Magnesium levels STAT • Order a 12 lead EKG STAT • Check capillary blood glucose
RESPIRATORY DISTRESS	**ACUTE SEVERE RESPIRATORY DISTRESS WITH SUSPECTED HYPOXEMIA**
	1. Oxygen PRN via nasal cannula or mask to keep SPO2 ≥ 94%. 2. Pulse oximetry 3. ABG STAT 4. Maintain airway patency with oral or nasal airway PRN 5. CXR STAT with STAT reading 6. HHN with 1 dose of 2.5 mg Albuterol and 0.5 mg Atrovent (Duoneb) 7. For suspected Benzodiazepine induced respiratory distress (not for chronic Benzodiazepine patients or those with seizure disorder) administer: Flumazenil 0.2 mg IVP over 15 seconds • If no improvement in level of consciousness after 45 seconds, may give additional Flumazenil 0.2 mg IVP over 15 seconds to max dose of 1mg 1. If suspected narcotic induced respiratory distress, administer Naloxone 0.4 mg diluted in 10 mL NS IVP slowly PRN; may repeat x1
HYPOTENSION	**ASSOCIATED WITH OR WITHOUT SIGNS OF SHOCK**

COPY

SBP <90 mmHg	
	1. CBC, BMP, PT/INR, PTT, Lactate Levels STAT 2. Administer fluid resuscitation of 250mL NS IV over 15 minutes; may repeat x1 3. Hold any sedation and antihypertensive medications during hypotension episode. Call MD to clarify how long these medications should be on hold. 4. If applicable, assess the patient's surgical site 5. For SBP <90 mmHg non-responsive to the above, start Dopamine 400mg in 500mL D5W. Start at 5mcg/kg/min and titrate to keep SBP >90mmHg
SHOCK	**IF SIGNS AND SYMPTOMS OF SHOCK (DEFINED AS A SYSTOLIC BP BELOW 80mm/HG ASSOCIATED WITH A PULSE ABOVE 120, AND/ OR DIAPHORESIS)**
	1. If indicated, Oxygen @ 2 L/min via nasal cannula PRN to keep SPO2 ≥ 94% 2. Obtain CBC and BMP 3. Administer fluid resuscitation of 250mL NS 0.9% IV; may repeat x1
SEPSIS ****Refer to Code Sepsis Policy***	**SIRS Criteria suspected infection plus any two of the following:** • T >100.9°F or <96.8°F • HR > 90 bpm • RR > 20 • WBC > 12,000cm³ or < 4,000 cm³ or > 10% Bands
	<u>3 HOUR BUNDLE</u> 1. Obtain lactate level STAT 2. Phlebotomist to obtain blood cultures STAT from two different sites and draw them 5 minutes apart 3. Obtain order to administer NS 0.9% *or* LR 30 mL/kg IV bolus if hypotensive and/or lactate equal to or greater than 4 mmol/L with a normal blood pressure. 4. If lactate >2, please discuss fluid bolus with MD. 5. Check blood pressure *immediately after bolus*, and document in the EMR a. Normotensive SBP> or equal to 90 AND MAP > or equal to 65, check vitals signs Q1hour x2

COPY

	b. Hypotensive SBP<90 OR MAP <65, check vital signs q15 min and obtain order for vasopressors 6. Call MD STAT to initiate antibiotics. Antibiotics must be initiated within 1 hour of order and AFTER blood cultures x2 are obtained **<u>6 HOUR BUNDLE</u>** 1. Repeat lactate if initial lactate >2. Ensure lactate is resulted *before* 6 hours of time zero. Goal is to repeat in 2 hours. 2. If hypotension persists, consider calling MD for vasopressors to keep SBP > or equal to 90 **AND** MAP > or equal to 65 mmHg.
HYPERKALEMIA ***K+ >5.5 mEq***	**ASSOCIATED WITH EKG CHANGES: PEAKED T WAVES, WIDE QRS, PROLONGED Q-T, BRADYCARDIA, HEART BLOCK OR JUNCTIONAL RHYTHM**
	1. Obtain an I-STAT potassium to confirm high level. 2. Order a 12 Lead EKG STAT 3. Calcium Gluconate 10 mL of 10% IV solution IVP over 5 minutes. • DO NOT ADMINISTER IF PATIENT IS ON DIGOXIN 1. Dextrose 50% 50 mL IVP and 10 units Regular Insulin IVP 2. Nebulized Albuterol 10 mg over 15 minutes 3. Sodium Bicarbonate 50 mEq IVP over 5 minutes 4. Repeat BMP after Medications 5. Digoxin & Magnesium levels 6. If patient has Potassium running in IV fluids, hold and call MD for clarification
HYPOKALEMIA ***K+ <3.2 mEq***	**ASSOCIATED WITH NEW ONSET OR SYMPTOMATIC PREMATURE VENTRICULAR CONTRACTIONSS OR VENTRICULAR TACHYCARDIA**
	1. Obtain an I-STAT potassium to confirm low level. 2. Order a 12 Lead EKG STAT 3. Administer Potassium Chloride (KCL) as follows: 4. Central line only: 20mEq KCL in 50mL Sterile Water over 1 hour. 5. Peripheral line only: 10mEq KCL in 100mL Sterile Water over 1 hour.

COPY

	6. Magnesium level STAT. 7. If <1.8 administer 2gms IVPB in 50 mL D5W over 1 hour
WIDE COMPLEX TACHYCARDIA	**IN THE SYMPTOMATIC CONSCIOUS PATIENT WITH HYPOTENSION**
	1. Initiate Code Blue 2. Potassium and Magnesium levels STAT 3. Order a 12 lead EKG STAT 4. Prepare for synchronized cardioversion by physician or ACLS Nurse 5. Follow ACLS protocol for ventricular tachycardia
BRADYCARDIA	**PULSE DECREASED TO LESS THAN 50 BEATS/MINUTE AND THE PATIENT IS SYMPTOMATIC WITH A DROP IN BLOOD PRESSURE AND/OR SHOCK.**
	1. Order a 12 lead EKG STAT 2. Atropine 0.5mg IVP for patient ≤60 kg 3. Atropine 1mg IVP for patient >60 kg 4. External cardiac pacing if unresponsive to Atropine. Prepare for emergent transvenous pacing. 5. Dopamine 400mg in 500mL D5W starting at 5mcg/kg/min for SBP <90mmHg Titrate to keep SBP >90mmHg. 6. Epinephrine 20mcg/ml concentration mixed in NS if the above strategies are ineffective, start @ 2 mcg/min and titrate for SBP >90 mmHg
HYPOGLYCEMIA	**BLOOD GLUCOSE LESS THAN 70 MG/DL**
	1. Unconscious, with IV: Give 1 amp (50 mL) D50 IVP followed by IV D5W@ 100 mL/hr 2. Unconscious, No IV: Give 1 mg/1 mL glucagon IM & start IV D5W@ 100 mL/hr 3. Conscious: Give PO 15gm of carbohydrate (one tube glucose gel or one ⅓ oz honey packet or 4 oz fruit juice or regular soda, or 8 oz non-fat milk) 4. Repeat capillary blood glucose in 15 minutes & hourly until glucose ≥ 70 mg/dl x 2
SEIZURE	**GRAND MAL SEIZURE WITH TONIC-CLONIC ACTIVITY**

COPY

	1. Oxygen@ 2 L/min via nasal cannula PRN to keep SPO2 ≥ 94% 2. Ativan 1mg IVP STAT; may repeat x1 3. Check capillary blood glucose 4. Calcium and Magnesium levels STAT 5. Pad bed rails
ANAPHYLAXIS	**SEVERE ALLERGIC REACTION WITH SKIN AND/OR RESPIRATORY SYMPTOMS** • **SUCH AS BUT NOT LIMITED TO: WHEEZING, STRIDOR, AIR HUNGER, BRONCHOSPASM**
	1. Airway: Check for obstructed airway. If ineffective airway clearance, suction PRN. Insert oral airway if needed. 2. Position of Comfort: Position pt in semi-Fowler's or recumbent. 3. Take & record vital signs every 5-15 min, including Pulse Ox. 4. Oxygen @ 2 L/min via nasal cannula PRN to keep SPO2 ≥ 94% 5. Stop all IV medications. Save all IV tubing & medication containers. 6. Start IV (with new tubing) NS IV at 150mL/hr. 7. Epinephrine 0.3 mg (1 mg/mL) IM/SQ; repeat Q5 min to a MAX dose of 2mL (2mg). 8. If bronchoconstriction persists >5 min, give diphenhydramine (Benadryl) 25mg IVP or deep IM & call MD STAT. 9. If pt currently has breathing treatments ordered, call RCP for STAT treatment.
STROKE **S/S include the following but not limited to:**	• **FACIAL DROOPING, SLURRED SPEECH** • **ACUTE ONSET OF WEAKNESS IN ONE OR MORE EXTREMITIES** • **COMPLAINTS OF NUMBNESS IN ONE OR MORE EXTREMITIES** • **ACUTE DECREASED SENSATION IN ONE OR MORE EXTREMITIES** • **LOSS OF CONSCIOUSNESS**

COPY

	• **ACUTE ALTERED MENTAL STATUS or ACUTE CONFUSION** • **ACUTE CHANGE IN GLASGOW COMA SCALE OF MORE THAN 1 POINT** • **NIHSS CHANGE OF 4 OR MORE** • **NEW ACUTE APHASIA**
	1. Perform a baseline NIHSS exam and document 2. Check capillary blood glucose 3. Dial 888 to activate a code stroke and the stroke team 4. Notify on-call TeleStroke Neurologist. 5. Obtain a STAT non-Contrast CT Brain, reason: Acute Stroke. • If NIH is greater than or equal to 6, obtain stat CT angiogram (CTA Head and Neck) immediately after CT head non-contrast. *** If creatinine >1.5, it will be per physician discretion (the physician must document that its benefits outweigh the risks) and contraindicated for patients with anaphylactic reaction to contrast material. 6. Labs: STAT CBC, BMP, PT/INR, PTT 7. Order a 12 lead EKG STAT 8. Oxygen @ 2 L/min via nasal cannula PRN to keep SPO2 ≥ 94% 9. Contact admitting physician and advise of patient's Code Stroke status. 10. If patient is a candidate for IV thrombolytic, the RRT RN obtains an accurate weight and enters weight into the EHR. The LIP places orders for thrombolytic therapy. For inpatients only, pharmacy doses, prepares, and dispenses the thrombolytic. Any RN must be deemed competent in IV thrombolytic therapy to administer the medication. Refer to the medication management policy for independent double checks (PSJ-PCP-M1). If patient does not require IV thrombolytics or ICU care, transfer patient to 4N only.

COPY

Attachments

- RRT Code Sepsis algorithm.pptx
- RRT Maternal Sepsis Algorithm.pptx

Approval Signatures

Step Description	Approver	Date
Board	Marisa Simile: Senior Executive Assistant [CP]	03/2025
MEC	Donald Sandoval: Senior Manager Medical Staff Services	08/2024
QA/I Committee	Mino Izaguirre: Medical Staff Coordinator	07/2024
P & T Committee	Chidinma Esomonu: Director Pharmacy	05/2024
CNO	Grady Williams: Director Nursing	05/2024
ICU Committee	Mino Izaguirre: Medical Staff Coordinator	05/2024
CPC	Chona Roa: Manager Nursing	02/2024
CPC	Kristen Mayberry: Director Nursing	12/2023

Applicability

CA - Providence Saint Joseph MC, Burbank

Standards

No standards are associated with this document

Status **Active** PolicyStat ID **11893037**

Origination	06/2019
Last Approved	08/2022
Effective	08/2022
Last Revised	08/2022
Next Review	08/2025
Owner	Deborah Carver: Chief Nursing Officer
Policy Area	Administration
Applicability	CA - Providence Cedars-Sinai Tarzana MC

Administration: Code Blue/Code White-Internal

PTMC-ADMIN-E4

COPY

POLICY

In keeping with the mission and values of Providence Health & Services, it is the policy of Providence Cedars-Sinai Tarzana Medical Center (PCSTMC) that when cardiac and/or respiratory arrest is recognized in an individual, cardiopulmonary resuscitation (CPR) is immediately initiated, unless there is a written physician order and/or Advance Directive to the contrary.

All patients will be resuscitated according to the standards and procedures approved by the Medical Staff using standards of the American Heart Association Basic Life Support (BLS)/Advanced Cardiac Life Support (ACLS) for adults, American Academy of Pediatrics (AAP) Textbook of Pediatric Advance Life Support (PALS) or Neonatal Resuscitation as age appropriate.

The purpose of this policy is to provide prompt emergency treatment for any person who experiences a cardiopulmonary arrest.

IMPORTANT CONSIDERATIONS

A. Code Status**:** CPR is initiated automatically on all patients, unless specifically ordered by the physician as 'No Code/ Do Not Resuscitate (DNR)'.
    1. No Code/DNR status is documented in the medical record by physician's order reflecting the Advance Directive &/or family/patient discussion.
    2. Refer to policies:
        a. PCSTMC: Do Not Resuscitate, No CPR or No-Code
        b. PCSTMC: Do Not Resuscitate - Pediatrics
        c. CA-RM-9008 Physician Orders for Life Sustaining Treatment (POLST)

d. CA-RM-9009 Advance Directive

PROCEDURE/GENERAL INSTRUCTIONS

A. The critical decision to call a code can only be made by the employee, physician, or volunteer who is at the scene and witnesses the event. The decision to terminate the code may only be done by a licensed medical staff member who is at the scene of the event, and is supervising the code or the patient's attending physician or consultant involved in the patient's care.

B. A code is called for any individual who is in cardiac and/or respiratory arrest. The code words used are listed below.

1. **Code Blue:** Adult cardiopulmonary arrest (>13 years old)
2. **Code White:** Pediatric cardiopulmonary arrest (≤13 years old)

C. Refer to Lippincott Procedures: Code Management

CODE BLUE/WHITE NOTIFICATION PROTOCOL

A. Cardiac/respiratory arrests in patient care departments should be reported by pressing the "Code Blue/White" button and calling PBX by dialing extension 333.

B. When calling PBX, the responder should identify the location of the arrest, by naming the department/location and the patient room number/location.

C. To expedite the code response, the patient care department should only report the cardiac arrest to PBX once.

D. Any issues during a Code Blue/White response should be reported to the House Supervisor.

E. PBX will notify the Code Blue/White Response Team of the arrest via overhead paging system and the designated Code Blue/White pagers.

F. Three overhead pages will state: "Code Blue/White, Department/Location, Room #."

COPY

CODE RESPONSE TEAM

A. Pagers – Members of the Code Blue/White Team are responsible for carrying a designated phone while on duty.

B. Team Members:

1. Emergency Department (ED) physician(s) or Licensed Independent Practitioner; critical care trained (Code Blue and Code White)
2. Neonatologist, Pediatric Hospitalist and/or Pediatric Intensivist (when available), as appropriate (Code White)
3. Primary Registered Nurse (RN)
4. Charge RN
5. Critical Care RN (from each adult unit for Code Blue; from PICU or NICU for Code White)
6. Appropriate Nurse Manager &/or House Supervisor (Nursing Supervisor)
7. Pharmacist

8. Rapid Response RN
9. Respiratory Therapist (RT) (adult, pediatric or neonate as appropriate)
10. EKG Technician
11. Laboratory Technician
12. Security
13. Social Services (during business hours)
14. Spiritual Care (except nights, then on-call)

C. Pediatric Considerations:
    1. The Neonatal Intensive Care Unit (NICU) Team will respond to a Code White in the newborn nursery, postpartum, or Labor & Delivery
    2. The Pediatric Intensive Care Unit (PICU) Team should respond to a Code White in other departments.
    3. The Pediatric Intensivist or Pediatric Hospitalist will be notified of Code Whites and should respond, if in-house.
    4. The Emergency Department physician will respond to all Code Whites.
    5. It is not necessary to call a code in NICU or PICU if there are adequate personnel present to handle the situation.

COPY

COMMUNICATION

A. Assure patient's primary attending physician is notified of the code.
B. The Nurse Manager or Charge Nurse designates a person to assist in communicating with family/caregiver during the code in person or by telephone.
    a. Spiritual Care staff may assist in communication with family/caregiver as needed.
    b. If family is present they are offered to remain in the room, when appropriate, during the code accompanied by staff, Nursing Supervisor, or spiritual care.

POST-RESUSCITATION CARE

A. For inpatients outside of the critical care area who survive the Code Blue/White:
    1. Assess patient's acuity/stability
    2. Determine the appropriate level of care for the patient
    3. Every effort should be made to immediately transfer patients requiring critical care to the ICU/PICU/NICU
B. Notify patient's attending physician (if not already notified)
C. Obtain post-resuscitation physician orders (e.g. transfer orders, medications, treatment, monitoring, etc)
D. Transporting patient post-resuscitation:
    1. Transfer to a critical care unit requires at least one ACLS certified clinical personnel
    2. Continuous EKG monitoring with portable defibrillator/pacemaker is required

3. Continuous oxygen therapy to support the patient's oxygenation needs (e.g. oxygen tank, equipment, additional personnel to administer oxygen via ambu bag)
4. Assure vascular access is patent prior to transfer
5. Emergency medications should be available during transport

E. The Nursing Supervisor to ensure post-Code Blue/White debrief is performed, and that the following documentation is complete and appropriately submitted to the PI department:
    1. Cardiac Arrest Record (copy sent to PI, original on Medical Record)
    2. Cardiac Arrest Evaluation
    3. Unusual Occurrence Report (UOR)

F. For patients who expire, refer to the PTMC policies:
    1. Decedent Affairs - Death of a Patient
    2. Patient Death/Coroner's Case

EXTERNAL MAIN HOSPITAL EMERGENCY MEDICAL RESPONSE (Rapid Response Team (RRT)/CODE BLUE/ CODE WHITE)

COPY

A. Emergency Medical Treatment and Active Labor Act (EMTALA) includes language (250 yard rule) that holds hospitals responsible for responding to potential emergency conditions on the grounds of the hospital. The 250 yard rule includes the entire main hospital campus, parking lots, sidewalks (with-in the property) and any buildings owned by the hospital within 250 yards of the main building.
    1. Appropriate hospital staff will respond to any person on hospital property and within 250 yards of the main campus who is in need of assistance as a result of injury or illness including cardiac/respiratory arrest.
    2. The staff member who becomes aware of the situation will dial 333 (or 818-881-0800) and indicated the appropriate code: RRT or Code Blue/White External with the code location.
    3. The RRT nurse, the Nursing Supervisor and Security will respond to the code location.
    4. If there is a Code Blue/White, the ED physician and the ED RN will respond as well.
    5. The Nursing Supervisor will request assistance from appropriate caregivers as necessary.
    6. If the patient is in need of extrication from a vehicle or site of injury, Emergency Medical Services (911) may be called to assist, however, this should not delay delivery of care to the patient.
    7. The patient is to be moved to the ED for definitive care and treatment by hospital staff when necessary, and when the patient consents (or would reasonably consent if able).

REFERENCE(S)/RELATED POLICIES

Wolters Kluwer Health. (2019). Lippincott Procedures: Code Management (Revised: August 17, 2018)

Wolters Kluwer Health. (2019). Lippincott Procedures: Code Management - Pediatric (Introduced: December 14, 2018)

ACLS Advanced Cardiovascular Life Support Provider Manual-Professional, American Heart Association, May 2011

Pediatric Advanced Life Support, American Heart Association, October 2011.

Institute for Healthcare Improvement—5 Million Lives Campaign.

The American Hospital Association National Hospital Survey for 2005.

PTMC policy: Do Not Resuscitate, No CPR or No-Code

PTMC policy: Do Not Resuscitate - Pediatrics

PTMC policy: Decedent Affairs - Death of a Patient

PTMC policy: Patient Death/Coroner's Case

CA-RM-9008 Physician Orders for Life Sustaining Treatment (POLST)

CA-RM-9009 Advance Directive

COPY

Approval Signatures

Step Description	Approver	Date
Governing Board	Marian Gorrell: Senior Administrative Assistant	08/2022
MEC	Marian Gorrell: Senior Administrative Assistant	08/2022
Senior Leadership Team (SLT)	Marian Gorrell: Senior Administrative Assistant	08/2022
CPC	Marian Gorrell: Exec Secretary	06/2022
Resuscitative Services	Marian Gorrell: Exec Secretary	06/2022

Applicability

CA - Providence Cedars-Sinai Tarzana MC

Standards

No standards are associated with this document

COPY

Status Active PolicyStat ID 19021668

Origination	01/2022
Last Approved	01/2022
Effective	01/2022
Last Revised	01/2022
Next Review	01/2025

Owner	Saied Amirpoor: Executive Director Pharmacy
Policy Area	Medication Management
Applicability	CA - Divisional/ Regional
References	SoCal Region

To find another policy, use the browser BACK button to return to your Ministry.

Tenecteplase (TNKase) Intravenous Administration for Acute Ischemic Stroke (AIS) (2022)

COPY

POLICY:

In keeping with the mission and values of Providence St. Joseph Health and Services this policy was developed to guide the care for acute ischemic stroke patients considered for and treated with Tenecteplase. Refer to individual ministry specific guidelines for acute stroke management.

PURPOSE:

1. To promote reperfusion on the cerebral circulation via thrombolytic therapy.
2. To provide guidelines for management of adverse reactions to thrombolytic therapy.
3. This policy is to assist with guiding care; however, the responsibility for determining thrombolytic eligibility and recommendation for treatment remains with the provider.

DEFINITIONS/ACRONYMS:

1. tPA - Tissue Plasminogen Activator, a protein involved in the breakdown of blood clots. Agents in this class include Tenecteplase and alteplase.
2. DOACS - Direct Oral Anticoagulants
3. NIHSS - National Institute of Health Stroke Scale
4. CT – Computed Tomography

CLINICAL PHARMACOLOGY:

Tenecteplase (TNKase), a thrombolytic agent, is a recombinant tissue plasminogen activator (tPA) that binds to fibrin and converts plasminogen to plasmin. Plasmin is involved in the breakdown of blood clots.

IMPORTANT CONSIDERATIONS:

A. Tenecteplase is administered only by approved practitioners.

B. **Tenecteplase INCLUSION Criteria: patient is eligible for IV thrombolytics (Tenecteplase) if ALL of the following criteria are met.**

1. Disabling neurological deficits suggestive of an acute ischemic stroke
2. CT head scan negative for intracerebral or intracranial hemorrhage
3. Time of last known well established to be less than 4.5 hours before treatment begins
4. Age 18 years or older

C. **Tenecteplase EXCLUSION Criteria (CONTRAINDICATIONS)**
Presence of one or more of the following is a contraindication for use of IV thrombolytics (Tenecteplase)

1. CT brain scan (non-contrast): evidence of intracranial hemorrhage
2. CT brain scan demonstrating extensive regions of obvious hypodensity
3. Symptoms and signs most consistent with an SAH
4. Elevated blood pressure (SBP > 185 mmHg or DBP > 110 mmHg) - uncontrolled at time of treatment
5. Blood glucose concentration < 50 mg/dL or > 400 mg/dL, unless corrected prior to administration
6. Active internal bleeding in past 21 days
7. Coagulopathy (presence of any of the following)

platelet count < 100,000 mm3 (note: in patients without history of thrombocytopenia, do not delay thrombolytic therapy while waiting for result)
INR > 1.7, aPTT > 40 sec, or PT > 15 sec (note: in patients without recent use of oral anticoagulants or heparin, do not delay thrombolytic therapy while waiting for result)

8. Anticoagulant & Antiplatelet use (presence of any of the following)

Heparin received within 48 hours, resulting in abnormally elevated aPTT greater than the upper limit of normal (aPTT > 40 sec)
Low molecular weight heparin (LMWH) full treatment dose within 24 hours (excludes VTE prophylactic doses)
Current use of warfarin anticoagulant AND INR >1.7 or PT≥15 secs
Current use of direct thrombin inhibitors (e.g., Pradaxa (dabigatran)) or direct factor Xa inhibitors (e.g., Xarelto (rivaroxaban), Eliquis (apixiban)), with last dose ≤ 48 hours prior to treatment (unless drug specific sensitive laboratory tests such as aPTT, INR, platelet count, ecarin clotting time (ECT), thrombine time (TT), or direct factor Xa assays are normal).

COPY

9. Aortic arch dissection: known or suspected
10. Gastrointestinal malignancy or hemorrhage within 21 days
11. Presence of intra-axial intracranial neoplasm
12. Infective endocarditis: signs/symptoms or suspicion
13. Acute or severe head trauma within 3 months
14. Intracranial or intraspinal surgery within 3 months
15. History of intracranial hemorrhage
16. Hypersensitivity to Tenecteplase or any component of the formulation

D. **Tenecteplase PRECAUTIONS CRITERIA (RELATIVE CONTRAINDICATIONS): one or more of the following may increase the risk associated with IV thrombolytics administration; provider discretion is advised.**

1. Only minor or rapidly improving stroke symptoms (clearing spontaneously)
2. Non-disabling deficits
3. Stroke within 3 months
4. End-stage renal disease
5. Seizure at onset with postictal residual neurological impairments
6. Pregnancy
7. Recent acute myocardial infarction (within previous 3 months)
8. Major surgery within previous 14 days
9. Major trauma not involving the head within previous 14 days
10. Acute pericarditis
11. Diabetic hemorrhagic retinopathy or other hemorrhagic ophthalmic conditions
12. Known systemic malignancy with reasonable (> 6 months) life expectancy and no known coagulopathy
13. Lumbar or dural puncture in the previous 7 days
14. Arterial puncture at noncompressible site in the previous 7 days
15. Any other condition in which bleeding constitutes a significant hazard or would be particularly difficult to manage because of location

E. **ADDITIONAL CONSIDERATIONS**

1. For patients presenting with AIS who are known to harbor a small or moderate-sized (<10 mm) unruptured and unsecured intracranial aneurysm, administration of IV thrombolytic is reasonable and probably recommended
2. For patients > 80 yrs of age presenting in the 3 - 4.5 hour window, IV thrombolytic is safe and can be as effective as in younger patients.

PROCEDURE:

I. Assessment and Selection:

A. Assess patient for the following signs and symptoms (s/sx) of ischemic stroke within 4.5 hours of onset:

COPY

1. Impaired speech (*aphasia, dysarthria*)
2. Impaired swallowing (*dysphagia*)
3. Blurred or double vision
4. Paralysis (*face, arm, leg paraparesis*)
5. Sensory loss (*numbness, tingling*)
6. Impaired balance and coordination (*ataxia, loss of dexterity*)

Other symptoms (*less frequent*):

7. Headache
8. Impaired LOC
9. Seizure
10. Dizziness/Vertigo
11. Memory disturbance
12. Vomiting

B. Obtain Order for STAT Labs: CBC, BMP, PT/INR, PTT, T&S, Troponin are to be obtained per ministry procedures. Except for blood glucose or in patients on warfarin or heparin, lab draws and results should not delay Tenecteplase administration.

C. Obtain Order for STAT "CT brain without contrast" must be obtained; clinical indication: r/o hemorrhagic stroke.

D. Decision for administration of Tenecteplase is made after discussion with the Neurologist /Tele-neurologist and/or ED provider.

E. Obtain informed consent (note that a “signed consent” is not required).

COPY

II. Thrombolytic Therapy:

A. **Equipment**

1. Tenecteplase (TNKase) drug kit
2. Normal Saline (NS) 10 mL IV Flush
3. Syringe 5 mL (to pull the TNKase calculated dose)
4. Needles – Two: one to inject the sterile water into the TNKase vial; one to place on the 5 mL syringe to withdraw the TNKase calculated dose.

B. **AIS Dosing:** acute ischemic stroke dose is different from other indications (e.g., AMI)
Dosing weight = actual scale weight

1. **Tenecteplase 0.25 mg/Kg** (**maximum 25 mg**) IV bolus once over 5 seconds
    a. Reconstituted Tenecteplase vial is 50 mg/10 mL (5 mg/mL).
    b. Use 5 mL syringe to draw up dose
2. **Dosing chart:** round dose to nearest 0.2 mL. Calculate dosage, verifies dose calculation with prescriber order and mix the medication.

Tenecteplase Dosing Acute Ischemic Stroke
Concentration: 5 mg/mL

Dose: 0.25 mg/kg (rounded to nearest mg) MAX DOSE: 25 mg		
Patient Actual Scale Weight in KG	**Dose / mg**	**Dose / mL** (*round to nearest 0.2 mL)
26 – 29.9	7 mg	1.4 mL
30 – 33.9	8 mg	1.6 mL
34 – 37.9	9 mg	1.8 mL
38 – 41.9	10 mg	2 mL
42 – 45.9	11 mg	2.2 mL
46 – 49.9	12 mg	2.4 mL
50 – 53.9	13 mg	2.6 mL
54 – 57.9	14 mg	2.8 mL
58 – 61.9	15 mg	3 mL
62 – 65.9	16 mg	3.2 mL
66 – 69.9	17 mg	3.4 mL
70 – 73.9	18 mg	3.6 mL
74 – 77.9	19 mg	3.8 mL
78 – 81.9	20 mg	4 mL
82 – 85.9	21 mg	4.2 mL
86 – 89.9	22 mg	4.4 mL
90 – 93.9	23 mg	4.6 mL
94 – 97.9	24 mg	4.8 mL
98 kg or greater	25 mg	5 mL

COPY

Tenecteplase Reconstitution & Administration Acute Ischemic Stroke
Concentration: 5 mg/mL
Dose: 0.25 mg/kg (rounded to nearest mg) **MAX DOSE: 25 mg**
Tenecteplase Reconstitution:
1. Use 10 mL red hub cannula syringe filling device (supplied in kit) to withdraw 10 mL sterile water.
2. Inject 10 mL sterile water into the Tenecteplase vial.
3. Gently swirl the vial (DO NOT SHAKE).
4. Inspect vial for clarity and absence of particulate matter.
5. If available, refer to MAR patient–specific dose or use weight–based chart on front of card.
NOTE: Dose should be 0.25 mg/kg
6. **Use 5 mL syringe** (added to kit by pharmacy) **to withdraw dose from vial.**
7. **MAX dose is 25 mg (5 mL) – There should always be waste.**
8. Discard any unused solution

Tenecteplase Administration:
1. Flush dextrose containing line with normal saline before and after administration.
2. Administer IV bolus over 5 seconds.

C. **Preparation**

1. Tenecteplase (TNKase) is supplied as a ready-to-use kit with instructions for reconstitution and administration (refer to reconstituting instructions in kit). These instructions also contain dosing information for acute myocardial infarction. **Do not use manufacturer AMI dosing instructions provided in this kit when using for acute ischemic stroke.**

D. **Administration**

1. Tenecteplase is **INCOMPATIBLE with dextrose** solutions. Flush line with saline before and after administration.
2. Administer dose as a single bolus over 5 seconds. Max dose is 25 mg.
3. Flush IV line with 0.9% sodium chloride before and after bolus administration.
4. Tenecteplase is considered a high-risk medication. Dual signature is required on the MAR as per established procedures.

III. Patient Monitoring:

COPY

A. **NIHSS:** Must assess prior to AND immediately after Tenecteplase administration, and if there are any neuro changes.

B. **Vital Signs and Neuro Checks:** Q15 min x 2 hours, then Q 30 min x 6 hrs, then Q 1hr x 16 hrs for 24hrs after Tenecteplase administration, then per unit standard.

C. **Blood Pressure:** Prior to initiation of Tenecteplase assure Systolic BP < 185 Diastolic BP < 110 and maintain Systolic BP < 180 mmHg and Diastolic BP < 105 mmHg post dose administration x 24 hours. If BP outside these parameters, refer to Epic order set for BP management or contact LIP for further orders as needed.

D. **Cardiac Rhythm:** Monitor continuously and observe the patient for coronary artery reperfusion dysrhythmias.

E. **Bleeding:**
FIRST 24 HOURS AFTER TENECTEPLASE ADMINISTRATION:

1. Avoid anticoagulant and antiplatelet medications
2. Avoid any punctures to non-compressible sites. If venipuncture is necessary, a longer period of site compression may be necessary to ensure hemostasis. Observe all potential sites of bleeding.
3. Avoid arterial sticks until at least 1 hour after Tenecteplase administration.
4. Check all stools, emesis, NG aspirate for blood.
5. Delay placement of nasogastric tubes, indwelling bladder catheters, IV's or intra-arterial pressure catheters, or oral/nasal suctioning if patient can be safely managed without them or allow at least 30 minutes after Tenecteplase administration before inserting.

F. **Notify LIP if any of the following condition occurs:**

1. Acute neurological deterioration, new headache, nausea, emesis, and/or new atrial fibrillation

2. Evidence of hypersensitivity reaction including orolingual angioedema, shortness of breath, skin rash etc.
3. Any bleeding
4. If blood pressure goal is not obtained after two doses of IV antihypertensive medication
5. For all parameters listed below unless otherwise indicated:
    a. HR greater than 120 or less than 50
    b. Respiratory rate greater than 24 or less than 10
    c. Temperature greater than 38 Celsius
    d. SpO2 less than 94 despite 4L O2 (unless otherwise indicated in oxygen order)
    e. Blood glucose greater than 180 mg/dL (unless otherwise indicated in insulin order)
    f. Blood glucose less than 60mg/dL
    g. Urine output greater than 600 mL per hour for 2 consecutive hours
    h. Urine output less than 30 mL per hour for 4 consecutive hours

G. **Tissue Damage:** Protect the patient from falls and injuries. Move and turn patient gently.

H. **Support:** Provide simple explanations to the patient/family/caregiver. This alleviates anxiety and encourages participation in the plan of care.

IV. Emergency Management

COPY

Monitor and report the following complications immediately to the LIPs, including neurologist/ Teleneurologist/ED provider:

A. **Bleeding:** overt bleeding (GI bleeding, blood in urine, uncontrolled bleeding, etc.). Apply direct pressure to all compressible sites of bleeding. Refer to Emergent Antithrombotic Therapy Reversal, including Life-Threatening Bleeding.

B. **Oral Angioedema:** signs and symptoms of angioedema (swelling of lips, tongue, difficulty breathing). Medication history of ACE inhibitors increases risk. For management of angioedema, refer to the Epic order set.

C. **Hemorrhagic Stroke:** changes in NIH > 3 points. Prepare patient for a STAT CT scan. Follow Tenecteplase Epic order sets and additional orders as per LIPs.

D. **Allergic Response:** transient hypotension, rash, urticaria, fever, or joint pain. If mild reactions occur, monitor closely for more serious symptoms of anaphylaxis (severe hypotension or bronchoconstriction).

E. **Other Potential Complications:** Further neurologic insult, including seizures, respiratory/cardiac arrest, can occur.

REFERENCE(S)/RELATED POLICIES

1. Powers WJ et al. Guidelines for the early management of patients with acute ischemic stroke: 2019 update to the 2018 guidelines for the early management of acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. Stroke. 2019 Dec;50(12):e344-e418. Doi: 10.1161/STR.0000000000000211.
2. Tenecteplase. Lexi-Drugs [database on the Internet]. Hudson, Ohio: Lexicomp, Inc.;2021 [updated 27 January 2021; cited 13 April 2021].

3. TNKase (Tenecteplase) [package insert]. South San Francisco, CA: Genentech, Inc.; 2018.
4. Van De Werf F et al. Assessment of the Safety and Efficacy of a New Thrombolytic (ASSENT-2) Investigators,. Single-bolus Tenecteplase compared with front-loaded Tenecteplase in acute myocardial infarction: the ASSENT-2 double-blind randomised trial. Lancet. 1999;354(9180):716-722. doi:10.1016/s0140-6736(99)07403-6
5. Providence System Pharmacy & Therapeutics Committee (2020, November) *Emergent Antithrombotic Therapy Reversal, including Life-Threatening Bleeding*.

Approval Signatures

Approver	Date
Wen Yun Chang: NI Program Analyst	01/2022
Julie Hilsenbeck: Reg Chief Nursing Ofcr So CA	01/2022
Kevin Streeter: Exec Dir Clin Ops Socal Reg	12/2021
Wen Yun Chang: NI Program Analyst	12/2021
Saied Amirpoor: Exec Dir Pharmacy Wd	12/2021

COPY

Approval Signatures

Step Description	Approver	Date
Regional Site Administrator	Wen Yun Chang: Senior Business Analyst	10/2025

Applicability

CA - Regional/Divisional

Standards

No standards are associated with this document

Status **Active** PolicyStat ID **9532155**

Origination	04/2006
Last Approved	11/2021
Effective	11/2021
Last Revised	11/2021
Next Review	11/2024
Owner	Shalina Steccato: Director Nursing
Policy Area	Patient Care Services
Applicability	CA - Providence Cedars-Sinai Tarzana MC

Rapid Response Team - Nursing

Number: PTMC-PCP-R120

COPY

POLICY

In keeping with the mission and values of Providence Health & Services, Providence Cedars-Sinai Tarzana Medical Center has selected Rapid Response Team (RRT) as a method that enables health care staff members to directly request additional assistance from specially trained individuals when the patient's condition appears to be worsening.

A multidisciplinary medical team (Critical Care Nurse, Respiratory Therapist) are to provide early intervention and stabilization to patients that are outside of the critical care environment whose condition may be deteriorating in order to promote better outcomes and:

1. Reduce the number of hospital unexpected deaths outside intensive care unit (ICU)
2. Reduce cardiac and/or respiratory arrests in the hospital;
3. To minimize unnecessary transfers to a higher level of care;
4. Provide a more timely transfer of appropriate patients to a higher level of care.
5. Reduce the need for intubations.
6. Provide initial and ongoing education for people who may request assistance and the staff who may respond to those requests.

PROCEDURE/GENERAL INSTRUCTIONS

1. Staff member concerned/worried about the patient will notify the primary registered nurse (and/or Charge Nurse) and the Rapid Response Team (RRT) will be called.
2. Call the operator @ 333 and ask for the "Rapid Response Team" to room (say room number)

3. Once the page is received, the Rapid Response Team members simultaneously respond to the room/location within minutes.
4. The Rapid Response Team members speak directly with the patient's primary nurse and the nurse in charge of that unit in the patent's room, collaborating to get background information/ history.
5. Assessment and appropriate interventions will be performed by the Rapid Response Team in collaboration with the primary care nurse.
6. STAT call to the attending doctor will be made from the involved nursing unit/clinical areas identifying that the call is from the Rapid Response Team.
7. Further interventions will be based on the doctor's orders/telephone orders received.
8. Documentation in the electronic record by the Rapid Response Team
    a. The RRT called
    b. Arrival time
    c. Attending physician notified.
    d. If the family was notified
    e. Code Status Prior to RRT call
    f. Code Status Post RRT call
    g. Reason for call
    h. Outcome
    i. Whether or not the patient was transferred to another unit.
    j. STAT consults
    k. Interventions
    l. Vital Sings and modified early warning score (MEWS) score
    m. National Institutes of Health Stroke Scale (NIHSS) if applicable
9. The Rapid Response Team will assist/facilitate the transfer to a higher level of care if indicated and/or appropriate follow through based on the treatment plan as ordered by the provider.
10. If, at any time, the patient meets Code Blue criteria, the appropriate code will be called.
11. As appropriate and/or indicated, mentoring/education will be provided to the person requesting assistance.
12. The Rapid Response RN will also respond to MEWS scores that are 4 or greater and complete Sepsis Screens when there are no Rapid Response Team calls in progress.

COPY

ASSESSMENT AND PERFORMANCE IMPROVEMENT:

1. Data abstracted from the Rapid Response Team Records will be aggregated and assessed at Resuscitative Service Committee to identify trends and opportunities for improvement. Reported data will be presented to the appropriate Medical Staff and Performance Improvement Committees.

Also see **Rapid Response Standard Procedures for Nurse Initiated Orders - POST EPIC**

REFERENCE(S)/RELATED POLICIES

1. www.ihi.org.
2. 5 Millions Lives Campaign: How-to Guide: Rapid Response Teams.
3. M. A. Peberdy et al. (2003) Cardiopulmonary Resuscitation of Adults in the Hospital: A Report of 14720 Cardiac Arrests from the National Registry of Cardiopulmonary Resuscitation. *Resuscitation* 58, 297–308.
4. M. D. Buist et al. (1999) Recognizing Clinical Instability in Hospital Patients Before Cardiac Arrest or Unplanned Admission to Intensive Care. *Med. J. Aust.* 171, 22–25.
5. R. Bellomo et al. (2003) A Prospective Before-and-After Trial of a Medical Emergency Team. *Med. J. Aust.* 179, 283–287; R. Bellomo et al. (2004) Prospective Controlled Trial of Effect of Medical Emergency Team on Postoperative Morbidity and Mortality Rates. *Crit. Care Med.* 32, 916–921.
6. M. A. DeVita et al. (2004) Use of Medical Emergency Team Responses to Reduce Hospital Cardiopulmonary Arrests. *Qual. Saf. Health Care* 13, 251–254. Rapid Response Teams: Heading Off Medical Crises at Baptist Memorial Hospital-Memphis. Boston: Institute for Healthcare Improvement.

COPY

Approval Signatures

Step Description	Approver	Date
CNO - Final Review	Deborah Carver: Chief Nursing Officer [MG]	11/2021
Board	Adrieanne Guerrero: Coord Stroke Center RN [MG]	11/2021
Medical Executive Committee (MEC)	Adrieanne Guerrero: Coord Stroke Center RN [MG]	11/2021
Medicine Committee	Adrieanne Guerrero: Coord Stroke Center RN [MG]	11/2021
Cardiology Committee (Via Critical Care)	Adrieanne Guerrero: Coord Stroke Center RN [MG]	11/2021
Clinical Practice Council (CPC)	Adrieanne Guerrero: RN Stroke/Policy Prg Coord	06/2021

Applicability

CA - Providence Cedars-Sinai Tarzana MC

Standards

No standards are associated with this document

COPY

Status **Active** PolicyStat ID **10689107**

Origination	05/2016
Last Approved	04/2022
Effective	04/2022
Last Revised	04/2022
Next Review	04/2023

Owner	Cari Shaver: Director Clinical Education RN
Policy Area	Standardized Procedures
Applicability	CA - Providence Cedars-Sinai Tarzana MC

Standardized Procedures: Rapid Response For Nurse Initiated Orders

COPY

PTMC-NSG-SPGS 210

POLICY

In keeping with the mission and values of Providence Health and Services, it is the policy of Providence Cedars-Sinai Tarzana Medical Center that a Rapid Response may be initiated by any member of the healthcare team when a patient has a deterioration in their condition, evidenced by either clinical triggers and or a modified early warning system (MEWS).

SUBJECT

The Rapid Response RN utilizes a Standardized Procedure and nurse initiated orders to perform rapid assessment and provide interventions during periods of clinical deterioration when cardiac arrest is not the emergency and a physician is not immediately available.

PURPOSE

The purpose of this standardized procedure and nurse initiated orders for the Rapid Response RN is to enable prompt initiation of diagnostic tests and implementation of interventions intended to treat specific clinical conditions when cardiac arrest is not the identified emergency and a physician is not present or immediately available to intervene and failing to treat and/or delay could lead to further deterioration in patients condition to cardiac arrest. The physician is notified at the earliest opportunity regarding the change of status, provided an update which includes current assessment of the patient, interventions already provided, responses to interventions as well as the results of any laboratory testing done.

DEFINITIONS

- **MEWS** – Modified Early Warning System – is a simple, validated physiological scoring system that identifies high risk patients. (Refer to LA Regional policy: CA-Clin-20003 MEWS - Automated Early Warning System)
- **MEWT** - Maternal Early Warning Trigger - **Tool** to identify patients *at risk* for clinical deterioration & severe morbidity associated with the perinatal population (Refer to the 4 MEWT pathways)
- **Adult** – Any patient age 14 or older
- **RRT** - Rapid Response Team – is comprised of a Critical Care Trained Nurse and a respiratory therapist who are available 24/7 to evaluate and intervene for hospitalized in-patients demonstrating clinical deterioration.
- **SIRS** – Systemic Inflammatory Response Syndrome is the physiologic effects upon the body by any non specific insult of various origins that may include ischemia, trauma or infection.
- **SIRS Criteria:**
    - Temperature >38.2 C (100.9F) or < 36C (96.8F)
    - Heart rate >90
    - Respiratory rate >20
    - WBC >12,000 or < 4,000 or bands >10%
- **Sepsis** – The systemic response to infection defined by the presence of 2 or more SIRS criteria in addition to a documented or presumed infection.
- **Severe Sepsis** – Any patient meeting the criteria for Sepsis with associated organ dysfunction
    - Renal failure-Creatinine >2.0 or UOP < 0.5mL/kg/hr
    - Requiring oxygen
    - Transient hypotension-SBP< 90 or MAP < 65
    - Lactate >2.0
    - Hepatic dysfunction-Bilirubin >2
    - DIC-Platelet <100K or INR >1.5
- **Septic Shock** – Severe sepsis with hypotension unresponsive to 30mL/kg IVF bolus (SBP <90, MAP<65 or reduction from baseline systolic pressure of >40mm Hg) or a serum lactate greater than 4mg/dL.
- **STEMI** - ST-elevation myocardial infarction

COPY

By Whom

This Standardized Procedure is performed by a Critical Care RN who has a valid CA RN license and has completed probationary orientation with documented competencies for Critical Care. Initial competency to perform this procedure is attained through the completion of learning modules specific to this protocol and completion of a validation exam with a score of 100%, this will be repeated bi-annually. A list of current competent RNs is kept in the nursing office. This protocol will be reviewed bi-annually by

the Medical Director for the ICU, the manager of Critical Care as well as the ministry specific Interdisciplinary Practice Committee.

Scope of Supervision

Procedure may be performed when physician is not immediately available in person to intervene.

Communication

RRT RN performing the Standardized Procedure notifies the Licensed Independent Practitioner (LIP) by phone promptly when safe to do so after the initial immediate assessment is performed. The RRT RN may in the event of an emergency, delegate this notification to a peer RN who will inform the LIP that a Rapid Response activation is occurring and assist with communication pertinent updated information. RRT RN will notify LIP immediately for the following conditions:

- Cardiac Arrest – call Code Blue per ministry alert process
- Respiratory Arrest – call code blue per ministry alert process
- Profound visible hemorrhage – call code blue per ministry alert process

PROCEDURE/GENERAL INSTRUCTIONS

COPY

Nurses caring for adult in-patients may initiate a call to the RRT when a patient condition changes and/or sepsis is suspected. The RRT RN will perform and document a head-to-toe general physical assessment and complete set of vital signs to include temperature, pulse rate, respiratory rate, blood pressure and pulse oximetry.

1. When not responding to patient emergencies, MEWS, PEWS, MEWT, or other alerts, the RRT RN will review adult in-patient records to assess for early signs of sepsis. This includes but is not limited to, those patients transferred from Critical Care within the past 24 hours, had a surgical procedure within the past 24 hours or a hospital LOS longer than 3 days without clinical improvement. The RN will utilize SIRS criteria as defined above to screen patients for possible sepsis.
2. RRT responds to the following areas:
    a. all in-patient units;
    b. emergency department;
    c. labor and delivery/mother baby
    d. acute rehab and short stay surgery.
3. The RN(or other caregiver) on the floor initiates the RRT call.
4. The RRT RN will respond to the patient care area and gather information from the primary nurse regarding the reason for the call and obtain an SBAR (situation, background, assessment, recommendation) report.
5. The RRT RN will screen all rapid response calls for sepsis using the above defined criteria.

6. The RRT RN will perform a head to toe assessment and implement the attached procedures based on the assessment findings.
7. The RRT RN will contact the primary care physician (PCP) with patient update including any interventions undertaken per this protocol, the response as well as follow up needed.
8. The RRT RN will accompany the patient to the Critical Care area if needed.
9. If no transfer to critical care is needed, the RRT RN will reassess the patient within 12 hours.
10. The RRT RN will document all information in the electronic medical record.
11. Increased frequency of vital signs may be ordered if patient does not transfer to a higher level of care.

RN with validated competency may initiate the following orders and interventions when severe sepsis or septic shock are indicated or under the circumstances as described below:

Administration of Oxygen – apply via nasal canula or mask and titrate to achieve an oxygen saturation equal to or greater than 92% for the patient with one or more of the following:

1. Chest pain or pressure
2. Oxygen saturation less than 90%
3. New onset cardiac arrhythmias or ST segment changes in ECG bedside monitoring
4. Respiratory rate less than 10 or greater than 30
5. Evidence of obstructed airway, noisy respirations
6. Decreased level of consciousness
7. Use of accessory muscles to assist spontaneous respirations
8. Acute seizure
9. Dizziness
10. New onset confusion with shortness of breath
11. Shortness of Breath (SOB)
12. Evidence of acute bleeding including but not limited to bright red blood, significant increase in serosanguinous or sanguinous drainage from surgical drains or tubes, tachycardia and swelling at invasive procedure site or hematoma.
13. Cool, mottled skin or capillary refill greater than 2 seconds

Perform 12 lead Electrocardiogram (ECG):

1. Chest pain or pressure
2. Unexplained pain in the left arm, neck or jaw
3. Acute onset of arrhythmia, bradycardia or suspected heart block
4. Skin changes including coolness, clammy or decreased pallor
5. Diaphoresis
6. Bedside ECG monitoring with wide QRS rhythm or peaked T waves

COPY

7. Acute onset new nausea or vomiting
8. Complain of (C/O) palpitations in the non cardiac monitored patient
9. Dizziness
10. Hypotension with slow pulse in non cardiac monitored patient
11. Palpable pulse greater than 100 or less than 60 in the non cardiac monitored patient

Obtain Arterial Blood Gas:

1. Oxygen saturation less than 90%
2. Bright red skin tone to face or suspicious for elevated carbon dioxide level
3. RR greater than 30 or less than 10
4. Patient with suspicion of severe sepsis (2 or more SIRS criteria and suspect or active infection)
5. Patient receiving 100% oxygen via non re-breather mask with associated shortness of breath with or without oxygen saturation less than 90%
6. New evidence of pulmonary congestion including but not limited to rales, frothy sputum, wheezing associated with shortness of breath
7. Acute onset cardiac arrhythmias with hypotension
8. Acute non capture of permanent pacemaker with hypotension
9. Altered level of consciousness with supplemental oxygen or history of chronic obstructive airway disease or restrictive lung disease

COPY

Insertion of Intravenous (IV) Saline Lock in the patient without IV access:

1. Chest pain or pressure
2. Respiratory distress or shortness of breath
3. Oxygen saturation less than 92% without oxygen
4. Acute onset of arrhythmias or bradycardia
5. Patient with hypotension – systolic blood pressure (SBP) below 90 mm HG
6. Patient with hypertension SBP greater than 190
7. Patient with respiratory suppression RR less than 10
8. Patient with acute change in mental status with GCS less than 14
9. Patient with signs or symptoms of acute stroke
10. Patient with blood glucose via point of care less than 70 unable to safely ingest PO
11. Acute onset bleeding or hemorrhage, including burgundy stools, NGT drainage or emesis
12. Evidence of severe sepsis or septic shock

Bedside cardiac monitoring may be initiated for any patient on an unmonitored floor for purposes of assessment during a Rapid Response Team assessment period.

Administration of Naloxone (Narcan) 0.2mg IVP slowly, may repeat times 1 slowly – if ineffective call Code Blue:

1. Respiratory suppression after administration of opioid narcotic.

Administration of Normal Saline 250 mL IV bolus x 1:

1. New onset hypotension – SBP less than 90 mm Hg with clear breath sounds (in the absence of suspected sepsis)
2. Evidence of acute bleeding including burgundy emesis or stools

Administration of Normal Saline 30mL/kg IV bolus for 1 hour x1:

1. Evidence of Sepsis
   NOTE - Refer to IV bolus dose in physician Sepsis order set

Perform Nasotracheal suctioning:

1. Patient without artificial airway and evidence of pulmonary congestion including thick sputum production by history during admission with c/o SOB or O2 saturation by pulse oxymetry less than 90%
2. Evidence of acute aspiration including emesis, tube feeding or other food or fluids with O2 saturation less than 90%
3. Evidence of airway obstruction from foreign object aspiration (large food particle etc)

COPY

Order Portable Chest X-ray – indicate reason in order:

1. Respiratory distress
2. Absence of breath sounds in one or more lung fields
3. Respiratory distress in the presence of tracheostomy and suspicious for dislodgement of trach tube as evidenced by inability to easily pass a bronchial aspirating suction catheter
4. Acute onset pulmonary congestion as evidenced by rales, wheezes or frothy sputum production
5. Evidence of acute aspiration including adventitious lung sounds, stridor, noisy respirations
6. Signs of acute tracheal deviation
7. New onset subcutaneous emphysema to trunk, shoulders, neck or face
8. Muffled heart tones, hypotension, narrowing pulse pressures within 48 hours post cardiovascular surgery
9. Chest pain

Discontinuation of potassium from IV fluids:

1. Evidence ECG or cardiac monitor changes suggestive of hyperkalemia.
2. New serum potassium level greater than 5.1mEq and physician not yet available

For Hyperkalemia only: Wide QRS bradycardia with documented potassium level of greater than 6.0 mEq/l and associated hypotension, chest discomfort, diaphoresis or decreased level of consciousness

1. **Administration of 50% Dextrose**, 50 GM (100 mL) IVP slowly over 6 - 10 min. Hold if blood glucose is already greater than 250mg/dL.
2. **Regular insulin** 10 units IVP times one, wait five minutes following administration of D50, perform point of care blood sugar monitoring Q 30 min times 2.

For hypoglycemia only: Refer to LA Regional policy: Hypoglycemia Management of Non-Pregnant Adult, Pregnant, and Pediatric

Perform Point of care blood glucose fingerstick:

1. Acute change or decrease in mental status
2. Cardiac arrhythmias
3. Dizziness, light headedness
4. Nausea, vomiting
5. Diaphoresis
6. Suspicion of stroke
7. Syncope
8. Acute onset seizure
9. Wide QRS rhythm on cardiac monitor with heart rate less than 65

COPY

Stat Serum Lactic acid level and order repeat in 2 hours if initial result is >2.0:

1. Evidence of sepsis
2. New onset hypotension with elevated WBC in past 24 hours

Blood Cultures times 2

1. Evidence of sepsis (as per definitions above)

Protime INR

1. Evidence of stroke
2. Initiation of Code Stroke

PTT/Factor Xa

1. Evidence of stroke
2. Initiation of Code Stroke

Stat CBC

1. New acute evidence of bleeding
2. Hypotension with evidence of infection if not done in past 24 hours
3. First 12 hours post invasive procedure when hypotension, HR greater than 120 with pain score less than 5, tense abdomen or invasive site hematoma or hardness / swelling to area occur
4. Initiation of Code Stroke

Stat Serum potassium level

1. Evidence ECG or cardiac monitor changes suggestive of hyperkalemia.
2. New onset PVC's with hypotension
3. New onset Vtach greater than 8 beats with no loss of pulse
4. New onset bradycardia with hypotension
5. Non capture of permanent pacemaker beats with hypotension
6. Initiation of Code Stroke (include Stat BMP)

Administration of Atropine 1 mg IVP may repeat one time (call code blue if ineffective after first dose of 0.5mg):

1. Bradycardia (HR less than 50) with hypotension, dizziness or loss of consciousness or acute change in mental status

Administration of Epinephrine

1. 10mL of 1:10000 (0.1mg/mL) solution per current ACLS guidelines
2. 0.3-0.5mL of 1:1000 (1mg/mL) solution IM for acute anaphylaxis

Immediate Defibrillation of patient with 120 joules biphasic energy (call Code Blue even if immediately effective):

1. Pulseless ventricular tachycardia by bedside cardiac monitor
2. Ventricular fibrillation by bedside cardiac monitor
3. Pulseless Torsades De Pointes rhythm by bedside cardiac monitor
4. Automated External Defibrillator (AED) interpretation indicating "shock advised" during analyze period when in AED mode
5. Pulseless Wide QRS rhythm with heart rate greater than 150

Initiate Code Stroke and obtain STAT non contrast CT (computed tomography) of the brain for signs and symptoms of stroke including but not limited to:

1. Sudden loss of balance or coordination
2. Sudden blurred, double vision or persistent vision trouble
3. Facial drooping
4. Slurred speak
5. Acute onset weakness to extremities especially if on only one side
6. C/O numbness or heaviness to an extremity
7. Acute decreased sensation in one extremity
8. Loss of consciousness
9. Acute altered mental status, acute confusion
10. Acute change in Glasgow Coma scale score of more than 1 point

COPY

In-Patient Code STEMI

A. Suspicion or evidence of ST segment elevation by cardiac or telemetry monitoring:
    1. 12 lead EKG shows STEMI
    2. Inpatient Stemi to Room #XXX (Refer to PTMC policy: Code STEMI)
    3. Hospitalist on duty as well as the ED physician will respond to the patient's bedside
    4. EKG transmitted to on-call interventionalist and/or to patient's known cardiologist
    5. Call PCP/hospitalist

B. No STEMI
    1. PCP/hospitalist may consider higher level of care.

Seizure Management

A. Seizure Adult
    1. Ativan 2 mg IV push

B. Seizure Adult Pregnant
    1. Magnesium Sulfate 6 gm IVPB x 1 over 20 minutes (1st choice IF Pregnant or postpartum) Refer to **Maternal Hypertension Regional Policy**- PolicyStat ID: *10033096*
        a. If no IV access or IV access delayed, 5 grams magnesium may be administered per deep IM injection to each buttock (10 g total).
        b. Seizure while on magnesium sulfate:
        Additional 2 grams IV bolus over 5 to 10 minutes may be administered.
        Serum magnesium level to evaluate for sub therapeutic level
        c. Ativan 2 mg IV push

COPY

Acute Hemorrhage- Activate Massive Transfusion Protocol (MTP) on patients with any stage of acute hemorrhagic shock who may benefit from large volume replacement of blood products.

A. Acute Hemorrhagic Shock
    1. Notify Hospitalist on duty as well as the ED physician who will respond to the patient's bedside
    2. Notify Blood Bank (Refer to PCSTMC PolicyStat ID #7126061)
    3. Start 2 Large Bore peripheral lines

B. Acute Obstetric Hemorrhage
    1. Notify OB Hospitalist on duty as well as the ED Physician who will respond to the patient's bedside
    2. Start 2 Large Bore peripheral lines
    3. Refer to **Regional Obsteric Hemorrhage Policy PolicyStat ID # 9996887**

REFERENCE(S)/ RELATED POLICIES

American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency 2020

California BRN Title 16, California Code of Regulations (CCR) section 1474; Medical Board of California, Title 16, CCR Section 1379Subsection (b)(4) of Section 2725 of California Nurse Practice Act

Cardiovascular Care. Circulation, 122(18) supplement. Standardized Procedures PHC-PCP-S03

CMQCC Toolkits. (n.d.). Retrieved from https://www.cmqcc.org/resources-tool-kits/toolkits

Guirgis, F. W., Jones, L., Esma, R., Weiss, A., McCurdy, K., Ferreira, J., ... & Gray-Eurom, K. (2017). Managing sepsis: electronic recognition, rapid response teams, and standardized care save lives. *Journal of critical care*, *40*, 296-302.

Hijazi, M. (2012). The Rapid Response Team Reduces the Number of Cardiopulmonary Arrests and Hospital Mortality. *Emergency Medicine: Open Access, 02*(08). doi:10.4172/2165-7548.1000128

Ju, T., Al-Mashat, M., Rivas, L., & Sarani, B. (2018). Sepsis Rapid Response Teams. *Critical care clinics*, *34*(2), 253-258.

Kato, R. (2018). Faculty of 1000 evaluation for Use of Maternal Early Warning Trigger tool reduces maternal morbidity. *F1000 - Post-publication Peer Review of the Biomedical Literature*. doi:10.3410/f.726180565.793541914

Medical Emergency Teams/Rapid Response Teams. (n.d.). Retrieved from https://acls.com/free-resources/knowledge-base/bls-acls-surveys/medical-emergency-teams-rapid-response-teams-purpose-and-benefits

Rhodes, A., Evans, L. E., Alhazzani, W., Levy, M. M., Antonelli, M., Ferrer, R., ... & Dellinger, R. P. (2017). Surviving sepsis campaign: international guidelines for management of sepsis and septic shock: 2016. *Intensive care medicine*, *43*(3), 304-377.

Scott, A., & Cervantes, R. (2018). Implementation of a Maternal Early Warning Trigger (MEWT) System. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *47*(3), S27-S28.

Smith, L. W., & Giuliano, K. K. (2010). Rapid response teams: improve patient safety and patient outcomes. *AACN advanced critical care*, *21*(2), 126-129.

LA Regional policy: CA-Clin-20003 MEWS - Automated Early Warning System

LA Regional policy: Hypoglycemia Management of Non-Pregnant Adult, Pregnant, and Pediatric

PTMC policy: Code STEMI

Regional Obstetric Hemorrhage Policy

Regional Maternal Hypertension Policy

COPY

Attachments

4 MEWT Pathways.pptx

BF_Maternal Sepsis Process Map VERSION 8 (1).docx

Approval Signatures

Step Description	Approver	Date
CNO (Chief Nursing Officer) Final Review	Deborah Carver: Chief Nursing Officer	04/2022
Board	Adrieanne Guerrero: Coord Stroke Center RN [MG]	04/2022
MEC (Medical Executive Committee)	Adrieanne Guerrero: Coord Stroke Center RN [MG]	04/2022
Interdisciplinary Practice Committee	Adrieanne Guerrero: Coord Stroke Center RN [MG]	04/2022
Medicine Committee	Adrieanne Guerrero: Coord Stroke Center RN [MG]	04/2022
Cardiology Committee	Adrieanne Guerrero: Coord Stroke Center RN [MG]	04/2022
ED Committee	Adrieanne Guerrero: Coord Stroke Center RN [MG]	04/2022
P&T Committee	Adrieanne Guerrero: Coord Stroke Center RN [MG]	04/2022
CPC (Clinical Practice Council)	Adrieanne Guerrero: Coord Stroke Center RN [MG]	12/2021
Nurse Educator-Education	Lydia Wong: Dir Clncl Education/Prof Prac	11/2021

Applicability

CA - Providence Cedars-Sinai Tarzana MC

Standards

No standards are associated with this document

Status **Active** PolicyStat ID **18463351**

Providence
Santa Rosa
Memorial Hospital

Origination	06/1977
Last Approved	07/2025
Effective	07/2025
Last Revised	07/2025
Next Review	07/2027
Owner	Hiranya Abeysekara: Supervisor Clinical Laboratory
Area	Lab Services - Microbiology
Applicability	CA - Santa Rosa Memorial Hospital

Collection and Care of Urine Specimens

COPY

PURPOSE/DEFINITION:

Collection of urine for laboratory examination is done to determine specific bacterial, cellular, or chemical properties to assist in diagnosis of disease entities. The amount of urine required and the time it is collected will vary according to the test to be performed.

POLICIES/GENERAL INSTRUCTIONS:

1. Urine supports rapid bacterial growth if left at room temperature; therefore, specimens should be taken to the laboratory within 15 minutes of collection for processing or refrigeration. If transport to the lab for is delayed, it can be refrigerated for up to two hours after which a new specimen must be obtained. If the specimen has been transferred into a grey top boric acid tube.
2. Urine tests that are sent to reference laboratory may require special handling and/or preservatives. Refer to the Reference Laboratory's collection information.
3. If patient is menstruating, the perineal area should be cleansed and a fresh vaginal tampon inserted before specimen is collected. The presence of RBC's will be detected on microscopic examination.
4. Label generated from the Laboratory Information System (LIS) must be affixed to each specimen container. During downtime, alternate labeling is acceptable.
5. Specimen must be placed in a biohazard bag, sealed, and transported to the lab.

6. Hazardous specimen should be clearly marked; ie red bagged or labeled with special sticker. If possible there should be three-day delay before collection of urine from Radiation Therapy.
7. For Urine Culture, clean-catch specimen, catheter aspiration, and pedi-bagged specimens are acceptable. Quantitative studies of organisms are done to determine the presence, type, and degree of pathogens in the urine . One (1) to five (5) milliliters of urine is required.
8. Routine Macroscopic Urinalysis includes a study of general appearance, pH, specific gravity, protein, glucose, ketones, occult blood, bilirubin. Routine Microscopic Urinalysis includes sediment analysis. Twelve (12) milliliters of urine is optimal.
9. Twelve or 24 hour Creatinine and Urea Clearance require urine and blood specimen. The blood is drawn during the collection period. It is part of the tests to determine the excretion rate.

EQUIPMENT FROM FLOOR SUPPLY:

1. A sterile urine container collection kit for Routine Urinalysis, Urine Culture, or Random chemistry test
2. Grey top BD Boric Acid tube for Culture and Sensitivity testing.
3. 24-hour urine collection bottle for timed urine tests
4. For Catheters, syringe with small gauge needle and prep pads
5. For babies or young children, plastic pedi-bag
6. Computer generated specimen identification label.
7. Clean urinal, appropriate container and graduated pitcher.
8. Electronic health record barcoded specimen label

COPY

PROCEDURE:

1. Explain midstream clean catch procedure to patient.
2. Have patient wash hands!
3. Wash and glove your hands.
4. Midstream Collection:
    a. MALE: cleanse urethral meatus with three changes of castile soap towelettes, starting at the urethral orifice and cleansing away from the orifice (if foreskin is present, it must e retracted throughout the entire procedure). Initiate the stream of urine. Wait a few seconds, then collect the midstream specimen by passing the sterile collection cup into the stream of urine without stopping the flow. Optimal volume to collect 12 milliliters and no more than half full. Remove and close container securely. Wipe dry any excess urine on outside of container. Label properly.
    b. FEMALE: Retract labia minora with non-dominant hand. Cleanse vulvar area with three changes of castile soap towelettes beginning above the urethral orifice and moving downward posteriorly; ie front to back. Maintain hold on labia and initiate stream of urine. Wait for a single stream to be achieved. Collect the midstream specimen by passing the sterile collection cup into the stream of urine without

stopping the flow. Obtain at least 12 milliliters and no more than half full. Remove and close container securely. Wipe dry any excess urine on outside of container. Label properly.

5. Pedi-Bag collection: Before attaching bag, perform careful perineal prep and cleansing as noted above or as preferred by pediatrician. The bag containing the specimen is not to be sent to the laboratory, but rather use a 12 milliliter syringe to transfer this to a sterile specimen container. Indicate on the container that this is a "bagged" urine specimen. This assists the physician and Clinical Laboratory Scientist (CLS) to interpret any mixed growth with occurs with this type of collection when Urine Culture is performed.
6. Catheter Aspiration: Only to be done by RNs. Cleanse the surface of the collection port (just below the "Y" connection) with alcohol prep pad. Allow to air-dry thoroughly. Puncture the port with a small gauge needle and syringe and withdraw specimen. Aspiration of the catheter line tubing is contraindicated when a collection port is available. NEVER take urine from the collecting bag or lower portion of the collection tubing. NEVER disconnect catheter tubing for the purpose of obtaining a specimen . After obtaining the specimen, cap the syringe securely and label properly. Please note this was a "CATHETER" aspiration collection. The laboratory must know this so that the correct quantitative studies are done for Urine Culture. If desired, the urine specimen may be aseptically transferred to a sterile specimen container by removing the needle from the syringe and carefully expelling the urine into the sterile container.
7. Timed Urine Specimens: 12 hour, 24 hour collections (Creatinine, Urea Clearance, other timed Urine tests)
    a. Timed urine specimens are done to determine a specific function of the kidneys during a designated period of time. The length of study and type of collection bottle will vary according to the test ordered. Some will required preservatives.
    b. All timed urine specimens are started with an empty bladder and ended when the bladder is emptied for the final specimen. The exact time of starting and ending specimens should be indicated on label. If possible timed specimens should be scheduled to end at 0700.
    c. Explain the test and its duration to the patient to insure his/her cooperation in obtaining an accurate collection. Instruct the patient that he/she is to void into a suitable container or bedpan for the duration of the test procedure and to notify a nurse of each voiding so that it can be added to the specimen container. It is important that the patient be instructed to void in a separate container and to avoid any contamination of the urine with stool.
    d. Keep the urine specimen refrigerated during the collection period.
    e. At the end of the test period, have the patient empty his bladder again, add that specimen to the collection. Note the time of the last voiding on the specimen label. This ends the timed urine collection.
    f. For Creatinine and Urea Clearance, it is required to obtain blood Creatinine or Urea specimen during the urine collection time to determine excretion rate.
    g. Order the test in LIS and respond to the prompts if appropriate. On the LIS label, write the collection time/period and sign.
    h. Submit the specimen to the laboratory immediately.

COPY

Approval Signatures

Step Description	Approver	Date
Laboratory Services Medical Director	Wanhua Yang: MD	07/2025
	Hiranya Abeysekara: Supervisor Clinical Laboratory	07/2025

Applicability

CA - Providence Santa Rosa Memorial Hospital

COPY

Standards

No standards are associated with this document

Status **Active** PolicyStat ID **19033234**

Providence
Santa Rosa
Memorial Hospital

Origination	07/2025
Last Approved	09/2025
Effective	10/2025
Last Revised	09/2025
Next Review	09/2028
Owner	Dalila Formato: Project Coordinator
Area	Infection Prevention Services
Applicability	CA - Santa Rosa Memorial Hospital

Prevention of Catheter Associated Urinary Tract Infection (CAUTI)

COPY

Purpose

In keeping with the mission and values of Providence, Providence Santa Rosa Memorial Hospital (PSRMH) adopts the system policy titled " Catheter Associated Urinary Tract Infection (CAUTI) Prevention Viewing PSJH-CLIN-1210 Catheter Associated Urinary Tract Infection (CAUTI) Prevention **with the exception of the information below:**

Urine Culture Collection

Replacing the Foley catheter before collecting a urine sample for culture is essential to reduce the risk of contamination, which can lead to false positives indicating a urinary tract infection (UTI). False positives may result in misdiagnosis and inappropriate treatment. Therefore, it is crucial to follow proper procedures to ensure accurate diagnostic results.

For patients with a Foley catheter in place for **24 hours or more**, consult the attending healthcare provider before collecting a urine sample for microscopy or culture. Obtain an order to remove the existing catheter, and request an order for straight catheterization if obtaining a midstream specimen is challenging.

If the healthcare provider decides to continue using the urinary catheter, request an order to replace the catheter before collecting the urine sample to minimize contamination risks. Ensure the specimen is

promptly transferred to the laboratory, ideally within 15 minutes, to maintain its integrity for accurate testing and analysis.

Daily CHG Treatment

Daily CHG treatment will be performed on patients having a indwelling urinary catheter of any type, including those patients with catheters present on admit.

PSRMH Adult Acute Urinary Retention Pathway

Adhere to the attached **Santa Rosa Memorial Hospital Acute Urinary Retention Protocol (PSRMH Nursing Pathway for Adult Acute Urinary Retention)** when ordered.

Reference

PSJH-CLIN-1210 Catheter Associated Urinary Tract Infection (CAUTI) Prevention

Carlee Hoxworth MPH, CIC , Addressing [Urinary Tract Infection]. In: Dean R, Popescu S, eds. APIC Text. [Revised January 26, 2024]. Available at 34. Urinary Tract Infection | Prevention Measures for Healthcare-Associated Infections | Table of Contents | APIC. Accessed July 30, 2024.

Approvals

Infection Prevention Committee 09/2025
Medical Executive Committee 09/2025
Community Board 09/2025

COPY

Attachments

PSRMH Nursing Pathway for Adult Acute Urinary Retention

Approval Signatures

Step Description	Approver	Date
	Dalila Formato: Project Coordinator	10/2025

Applicability

CA - Providence Santa Rosa Memorial Hospital

Standards

No standards are associated with this document

COPY