

Preventing Cardiac Arrest in the Intensive Care Unit

Clinical Trigger and Response System

*

Hypotension

- New hypotension
- Addition of a new vasopressor
- Significant increase in vasopressor dose

Respiratory insufficiency

- Increase in respiratory rate
- Change in mental status
- Escalating oxygen requirements

Agitation/Anxiety

- Patient combative
- Patient pulling at/off support therapies
- Antipsychotic/anxiolytic ineffective

Marked Clinical Concern

- Nursing/Physician concern
- New and unexpected clinical change
- Other provider concern

*Abnormal vital signs and changes in mental status are common in the ICU. The listed 'Trigger' criteria are prompts only. A 'Trigger' should be invoked if the clinical change is new, unexpected, and/or concerning.

HYPOTENSION

- new SBP <90
- addition of a new vasopressor
- significant increase in vasopressor dose



Rapid Deterioration or Cardiac Arrest imminent

YES

Activate UNIT RESPONSE or call CODE BLUE x21212

NO

Take care of the patient

Ensure or obtain adequate IV access

Start IVF/Vasopressors

Consider intubation

Communicate

Huddle with multidisciplinary team at bedside

Alert attending physician if not present

Alert any additional personnel needed

Review

Review Clinical Trigger and Response decision aid

Review 'Common Pitfalls' list

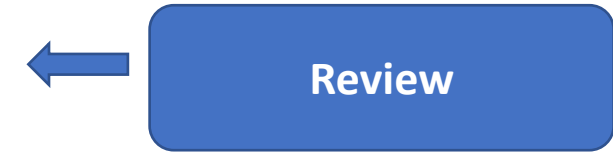
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HYPOTENSION

- new SBP <90
- addition of a new vasopressor
- significant increase in vasopressor dose

Clinical Trigger and Response Decision Aid



| Shock Type | Etiologies | Diagnostic and Management Considerations |
|--------------|---------------------------|--|
| Obstructive | Tension Pneumothorax | <ul style="list-style-type: none"> • Exam for cold, mottled extremities • Exam for decreased breath sounds or muffled heart sounds • Bedside ultrasound and chest Xray <ul style="list-style-type: none"> ○ Assess for pneumothorax ○ Assess for pericardial effusion • Assess for auto-peep • Measure lactate, cvO2 |
| | Cardiac Tamponade | |
| | Pulmonary Embolism | |
| | Impaired venous return | |
| Hypovolemic | Intravascular Volume Loss | <ul style="list-style-type: none"> • Exam for bleeding (e.g. flank bruising, inspect wounds, assess for GI bleeding) • Consider fluid resuscitation • Measure hemoglobin, lactate, and coagulation parameters • Consider massive transfusion protocol |
| | Hemorrhage | |
| Cardiogenic | Arrhythmia | <ul style="list-style-type: none"> • Exam for cold, mottled extremities • Cardiac exam with attention to new murmurs • Assess telemetry and consider 12-lead ECG • Send troponin, BNP, lactate, and measure cvO2 • Urgent cardiology consult and consider mechanical support |
| | Valve Failure | |
| | Cardiomyopathy | |
| | Myocardial infarction | |
| Distributive | Sepsis | <ul style="list-style-type: none"> • Examine for rash or other signs of allergy • Consider infectious source and obtain cultures, lactate • Low threshold for broad spectrum empiric antibiotics • Examine medications (esp. sedating medications) • Consider empiric steroid therapy |
| | Anaphylaxis | |
| | Drug/Toxin | |
| | Adrenal Insufficiency | |

Review

Common Pitfalls

Delayed intubation in the setting of clinical deterioration

Communication when patients are boarders or during off-hours

Patient code status discordant with perceived GOC

****Document hypotension event in the clinical chart****

Respiratory Insufficiency

- increase in respiratory rate
- change in mental status
- escalating oxygen requirements



Rapid Deterioration or Cardiac Arrest imminent

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NO

Take care of the patient

Communicate

Review

Patient NOT intubated

- Maximize respiratory support therapies already in place
- Consider and prepare for intubation

Huddle with multidisciplinary team at bedside

Alert attending physician if not present

Alert any additional personnel needed

Review Clinical Trigger and Response decision aid

Review 'Common Pitfalls' list

See REVERSE side of card

Patient intubated

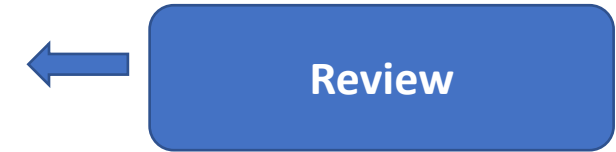
- Check all ventilator connections
- Increase FiO2 to 100%
- Listen for cuff-leak as sign of ET tube above the vocal cords



Respiratory Insufficiency

- increase in respiratory rate
- change in mental status
- escalating oxygen requirements

Clinical Trigger and Response Decision Aid



| Area of Defect | Etiologies | Diagnostic and Management Considerations |
|----------------|--|--|
| Controller | Hypercapnia | <ul style="list-style-type: none"> Assess ability to protect airway Assess pCO₂ |
| | Stroke/CVA | |
| | Encephalopathy | |
| Gas exchanger | Interstitial edema/ARDS | <ul style="list-style-type: none"> Exam for new crackles, rhonchi, wheezing or absent breath sounds Obtain bedside US and CXR to assess for PTx and other pathologies Consider CT-angiogram to assess for PE Assess for auto-peeep and ventilator dyssynchrony |
| | Pneumonia | |
| | Pulmonary embolism | |
| | Non-infectious interstitial lung disease | |
| Pump | Mucous plug | <ul style="list-style-type: none"> Exam for decreased breath sounds Exam for signs of cuff leak Deep suction through ETT Assess all connections and equipment Consider diaphragm evaluation |
| | Equipment failure | |
| | Diaphragm dysfunction | |

Peri-Intubation

- Review **PRE-EMPT** checklist
- Obtain CXR to assess ETT placement
- Ensure set minute volume matches or exceeds pre-intubation minute volume
- Re-assess blood gas within 1 hour of intubation

Post Intubation

Common Pitfalls

- Delayed intubation in the setting of increasing high-flow nasal cannula requirements
- Communication when patients are boarders or during off-hours
- Patient code status discordant with perceived GOC

****Document respiratory event in the clinical chart****

Agitation/Anxiety

- patient combative
- patient pulling at/off support therapies
- family concern regarding mental status



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Cardiac Arrest imminent

YES

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CODE BLUE x21212

NO

Take care of the patient

Assess for and correct
hypoxemia

Ensure staff and patient
safety

Provide patient
reassurance

Communicate

Huddle with
multidisciplinary team
at bedside

Alert attending
physician if not present

Obtain additional
information from
family if present

Review

Review Clinical Trigger
and Response decision
aid

Review 'Common
Pitfalls' list

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Agitation/Anxiety

- patient combative
- patient pulling at/off support therapies
- family concern regarding mental status

Clinical Trigger and Response Decision Aid

Review

Assess patient at bedside with multidisciplinary team

Common Pitfalls

Unrecognized shock

- Assess for occult hypoperfusion and organ dysfunction
 - Exam for cool extremities or mottling
 - Laboratory testing for lactate, hemoglobin, and markers of organ function

Anxiolytics/antipsychotics given despite impending clinical deterioration

Impending respiratory failure

- Assess for hypoxemia, hypercarbia, or airway obstruction
 - Exam for stridor, accessory muscle use
 - Determine If any change in respiratory support or supplemental O2 delivery

Communication when patients are boarders or during off-hours

Pain

- Assess for any new pain
 - Exam for tenderness (esp abdominal tenderness)
 - Evaluate pain with imaging modalities as needed
 - Treat pain

Patient code status discordant with perceived GOC

Could this be?

No

Consider treatment for agitation with antipsychotic or anxiolytic

****Document anxiety/agitation event in the clinical chart****

Marked Clinical Concern

- Nursing concern
- MD/NP/PA concern
- Family concern



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NO

- Assess for hypoxemia, hypotension, and agitation
- Huddle with multidisciplinary team at bedside
- Alert attending physician if not present
- Obtain additional information from family if present