Using a Situation Awareness Bundle to Reduce Cardiac Arrests in the Pediatric ICU

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Thank you!

- Stephanie R. Durbin, MSN, RN, CPN (co-leader)
- Maya Dewan, MD, MPH (mentor)

- Emily Turner, APRN
- Hope VanCleve, DO
- James M. Anderson Center for Health System Excellence
• Failure to recognize and treat clinical deterioration remains a source of serious preventable harm for hospitalized pediatric patients
• Patients who experience cardiac arrest are at increased risk for mortality
• Prior research has demonstrated that improved situation awareness in the PICU may reduce CPR events.
Objectives & Metrics

• To increase days between CPR events in the PICU by 25% from one event every 40 days to one event every 50 days by October 2023

• The primary process metric was to increase compliance with the situation awareness bundle to identify high-risk patients and create an actionable mitigation plan by 25% from 54% to 70% by June 2022.
SA Huddles to Reduce IHCA Key Driver Diagram (KDD)

Project Leader(s): Rhea Vidrine, MD

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Global Aim

To decreased cardiac arrest events in the PICU/PCICU

SMART Aim

To increase compliance with the Watcher/CAP bundles* in the PICU/PCICU by 25% from 54% to 70% by October 2022

*bundle is completion of huddle to identify patients and completion of mitigation form

Population

All patients admitted to the KCH PICU/PCICU

Key Drivers

- Identification of high risk patients
- Actionable mitigation plan in place to prevent decompensation
- Faculty and staff buy in
- Accurate tracking of cardiac arrests events in PICU/PCICU
- Timely review of cardiac arrests events in PICU/PCICU

Interventions (LOR #)

- Creation and implementation of manual screening tool to ID high risk PICU and PCICU patients (LOR 1)
- Utilization of BID safety huddles to share high risk pts with care team (LOR 1)
- Using EMR to automate screening tool (LOR 3)
- Creation of worksheet to create and display mitigation plan on pt door (LOR 1)
- Audits and review of plans to ensure high quality (LOR 1)
- Staff education on cardiac arrest rates, areas for improvement (LOR 1)
- Creating reliable activation of code system to ensure accurate capture (LOR 3)
- Standing weekly code debriefs with discussion of watchercap status and plan (LOR 2)

Legend

- Potential intervention
- Active intervention
- Adopted intervention
- Abandoned intervention

Note: LOR # = Level of Reliability Number, e.g., LOR 1

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Methods

A situation awareness bundle to guide the recognition of patients at high-risk for decompensation

- Checklist with the at-risk criteria
- Worksheets to share etiologies of decompensation and descriptive, actionable mitigation plans
Methods

• A baseline survey was conducted to evaluate the current perceived level of situation awareness, identification of high-risk patients, and the sharing of desired mitigation plans.

• The unit implemented **twice a day huddles** to assign code team roles, review these identified patients

• Mitigation plans are reviewed on rounds

• Code events were defined as occurring in the PICU/PCICU and the patient received >2 min CPR
<table>
<thead>
<tr>
<th>Patient</th>
<th>Admission Info</th>
<th>Code Status</th>
<th>Notifications</th>
<th>Attending</th>
<th>First Call Provider</th>
<th>Nurses</th>
<th>PICU Watchers</th>
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Integration into EPIC
**PICU Watcher Worksheet**

**Date:**
Watcher criteria met: TBI with increased ICP

Is this patient an ECMO candidate? Yes/No

<table>
<thead>
<tr>
<th>DECOMPENSATION ETIOLOGY(S)</th>
<th>WARNING SIGNS/SYMPTOMS</th>
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</thead>
<tbody>
<tr>
<td>1. increased ICP</td>
<td>1. ICP &gt;20, CPP goal, bradycardia</td>
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</tbody>
</table>

**MITIGATION PLANS**

1. IF ICP >20 x 15 min THEN sedate with morphine prn, paralyze with 1mg/kg of rocuronium, give 5mg/kg of 3%

2. IF sustained after above THEN call NSGY

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**Preventative Measures**

- **PRE-SEDATE with all noxious stimuli**
  - No bath
  - No weighing
  - Weigh only with attending present
  - High risk drip change
  - Other ______

**Meds @ Bedside**

- Epi Spritzer
- Code Dose Epi
- Cacil bolus
- Sodium bicarb (1-1.25mg/kg)
- Lactated rings bolus
- Neuromuscular blockade
- 3% NaCl bolus (5ml/kg)
- Angiotensin
- Vasopressive drip in line
- Other ______

**Vital Sign Parameters:** Any change to limits requires bedside evaluation and re-assessment.

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<tr>
<th>Parameter</th>
<th>AM Goals</th>
<th>PM Goals</th>
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**Preparation Equipment**

- Pads on chest
- Code cart outside of room
- Airway plan reviewed
  - Medication:
    - Equipment:
      - Anesthesia or ENT needed at bedside Y/N

AM MD:          PM MD:          
AM RN:          PM RN:          

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Code event = occurring in the PICU/PCICU & >2 min CPR
Code Events per 1000 PICU Patient Days

SA Huddles started 10/11/21

- Monthly Defect Rate
- Average Rate of Defects
- Control Limits
Implementation of a previously described situation awareness bundle including a standardized risk assessment tool, huddles and mitigation plans may lead to decreased cardiac arrest events in the PICU.
For more information on this subject, see the following publications:


