

## BACKGROUND

Cardiac arrest prevention (CAP) bundles have been utilized in pediatric cardiac intensive care units (CICU) nationally with the goal of preventing in-hospital cardiac arrest and reducing mortality. The only mandatory element of the bundle includes twice daily bedside huddles to create a shared mental awareness of patient risk factors, warning signs, and prevention techniques. Given the success of CAP bundle application in the MUSC pediatric CICU, we sought to apply this intervention to the pediatric cardiac step-down (CSD) unit to improve a team-wide shared mental model of high-risk patients, reduce cardiac arrest, and prevent morbidity and mortality.

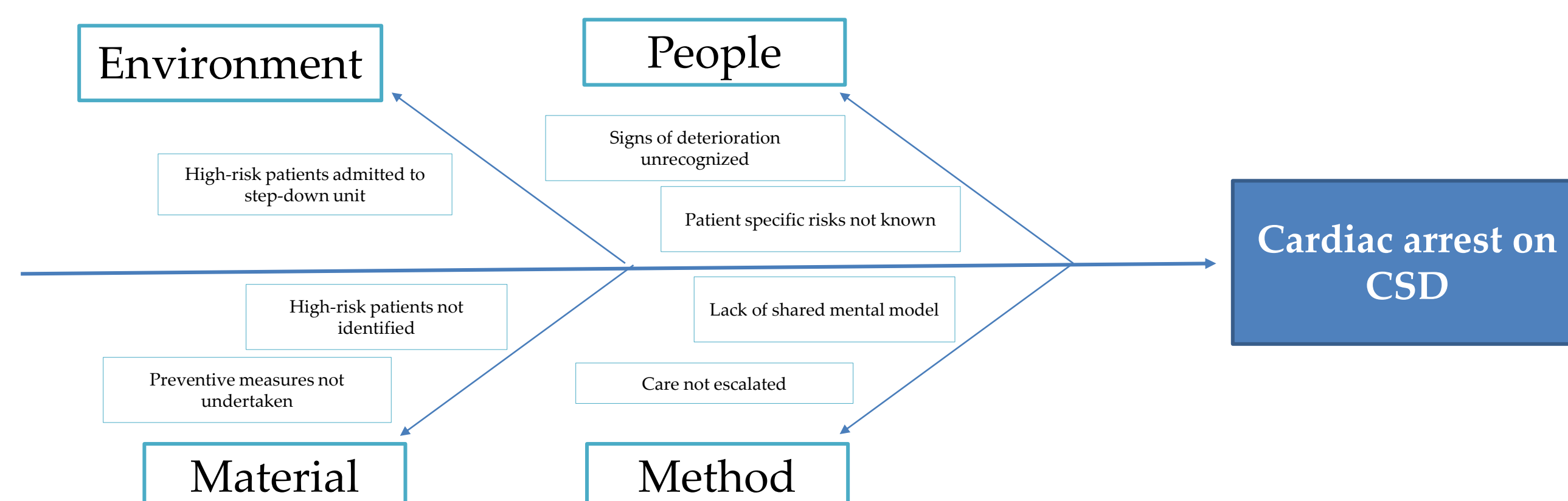
## CURRENT CONDITION

There are high acuity pediatric cardiac patients admitted to the MUSC cardiac step-down unit with an average of 1.9 cardiac arrests per year since 2015. No formal process exists for identifying high-risk patients admitted to CSD, and first-line providers on CSD frequently do not have cardiac-specific training. Providers involved in the care of these patients may not recognize signs of patient deterioration or tactics to mitigate patient morbidity and mortality.

## GOALS

- Conduct CAP bundles upon admission and during morning and evening rounds (for a total of 4 encounters) on high-risk patients admitted to CSD including patients meeting the following criteria:
  - Cardiac Children's Hospital Early Warning Score (C-CHEWS) that places them in the "red" category
  - Admission from the Pediatric ED or transferred from an outside facility in the preceding 24 hours
  - Triggered the cardiac rapid response team in the preceding 24 hours
  - Other
- Adherence rate of 90% to the CAP bundle on the pediatric CSD unit. Adherence rate will be calculated as (# CAP bundles completed)/(# CAP eligible encounters).
- Reduction of cardiac arrest on CSD

## PROBLEM ANALYSIS



## TARGET CONDITION

Countermeasure	Who
Identify patients qualifying for CAP huddles at time of admission, completion of bundle	Cardiology fellows, advanced providers, and attendings
Completion of CAP huddles at morning and evening rounds for a total of 4 occurrences	Rounding team + bedside nurse

## EVALUATION

- Quarter 1: 1/1/2023 – 3/31/2023**
  - In process...
  - Problems identified with CAP compliance including inconsistent identification of eligible patients
  - Discussed in fellows meeting, obstacles discussed and plans to improve consistency/compliance established (see "Follow up")
  - Adherence to date: 11 CAP huddles completed of 105 eligible encounters = 10% compliance**

## ANALYSIS OF WHY BELOW BENCHMARK

- Lack of education to nursing staff who are the most consistent CSD providers
- Bundles not integrated into daily flow
- Late education to CSD attending providers and fellows

## FOLLOW UP

- What went well:** High-risk patients recognized, communication improved
- What could be improved:** Better dispersal of education regarding this new process during test period leading up to study period, better integration of CAP bundles into daily workflow, identification of consistent team members to take responsibility for identification and completion of CAP huddles
- What are we working on now:**
  - Engagement of charge nurses and bedside nurses with the goal that they will promote consistent adherence to CAP bundles during morning/evening rounds
  - In-person education for nurses at upcoming staff meeting
  - Education to fellows/advanced providers to identify qualifying patients and make note of those patients in daily sign-out email (such that nighttime providers can be aware of qualifying patients and complete CAP bundles)
  - Team-wide, transparent sharing of CAP bundle adherence quarterly
  - Integration of feedback

### CAP Safety Huddle Form – Cardiac Step Down

Instructions: Complete team CAP huddles 2 times daily for 2 days

- Day rounds with rounding team, CSD charge nurse, and bedside nurse
- Night rounds with overnight on-call team including pediatric resident and pediatric cardiology fellow, charge nurses for the step-down unit and CICU, bedside nurse, and telemetry tech
- Goal: To improve a team-wide shared mental model of high-risk patients, reduce cardiac arrest, and prevent morbidity and mortality

#### 1. High Risk due to:

- Cardiac Children's Hospital Early Warning Score (C-CHEWS) in "red" category
- Admission from Peds ED or transferred from outside facility in the preceding 24 hours
- Triggered the cardiac rapid response team in the preceding 24 hours
- Other: \_\_\_\_\_

#### 2. Etiology of clinical decompensation/cardiac arrest:

#### 3. Patient specific notification parameters/warning signs:

#### 4. Preventative measures:

- Maintain vascular access
- Keep specified medications at bedside: ( \_\_\_\_\_ , \_\_\_\_\_ )
- Keep external pacer at bedside
- Confirm updated Type & Screen
- Other: \_\_\_\_\_

#### Crucial first steps: If acute episode occurs, immediately:

Bedside RN:	Charge RN:	Resident:	RT:
<ul style="list-style-type: none"> <li>Call for help</li> <li>Push code button or staff assist</li> <li>Start CPR, place Zoll pads (Defibrillate at _____)</li> </ul>	<ul style="list-style-type: none"> <li>Call cardiac RRT or code</li> <li>Obtain tacklebox</li> <li>Get airway bag</li> <li>Get code cart</li> <li>Identify roles</li> </ul>	<ul style="list-style-type: none"> <li>Assume the role as team leader until fellow arrives</li> </ul>	<ul style="list-style-type: none"> <li>Manage airway</li> <li>Bag mask ventilate</li> </ul>

#### Code Med Access:

1. \_\_\_\_\_ 2. \_\_\_\_\_  Yes, activate ECMO,  No, not an ECMO candidate

#### Vital Sign Parameters:

Vital Sign	Day 1: / / am/pm	Day 1: / / am/pm	Day 2: / / am/pm	Day 2: / / am/pm
BP				
HR				
SpO2				
RR				
Trajectory:				