

# **PC4 Cardiac Arrest Prevention Quality Improvement Project**

## **Toolkit**

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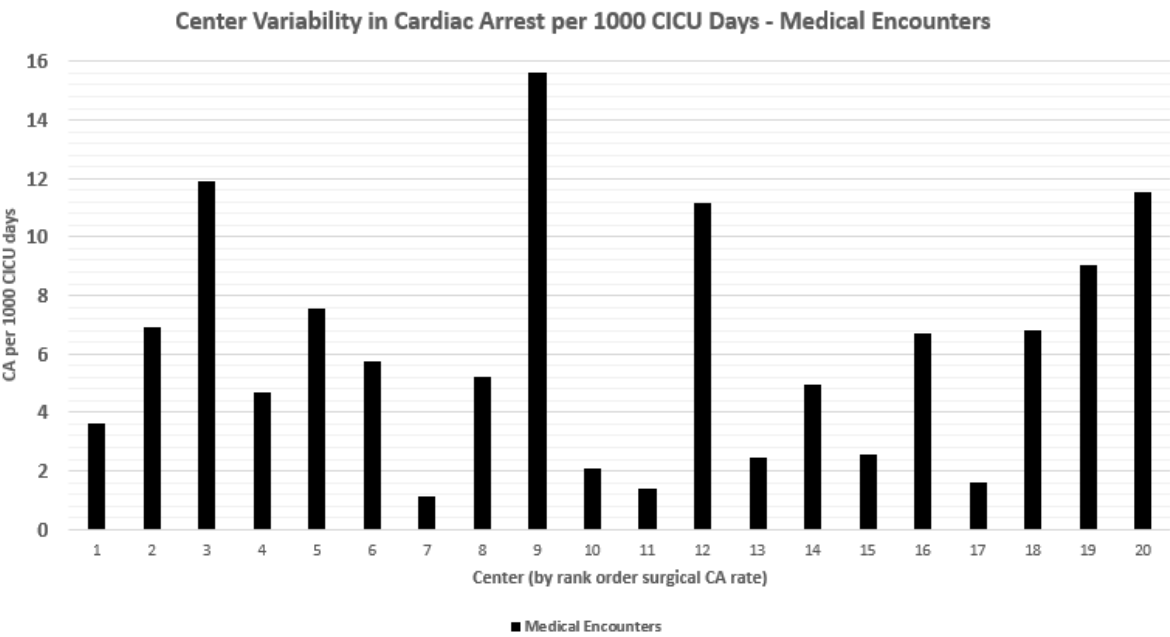
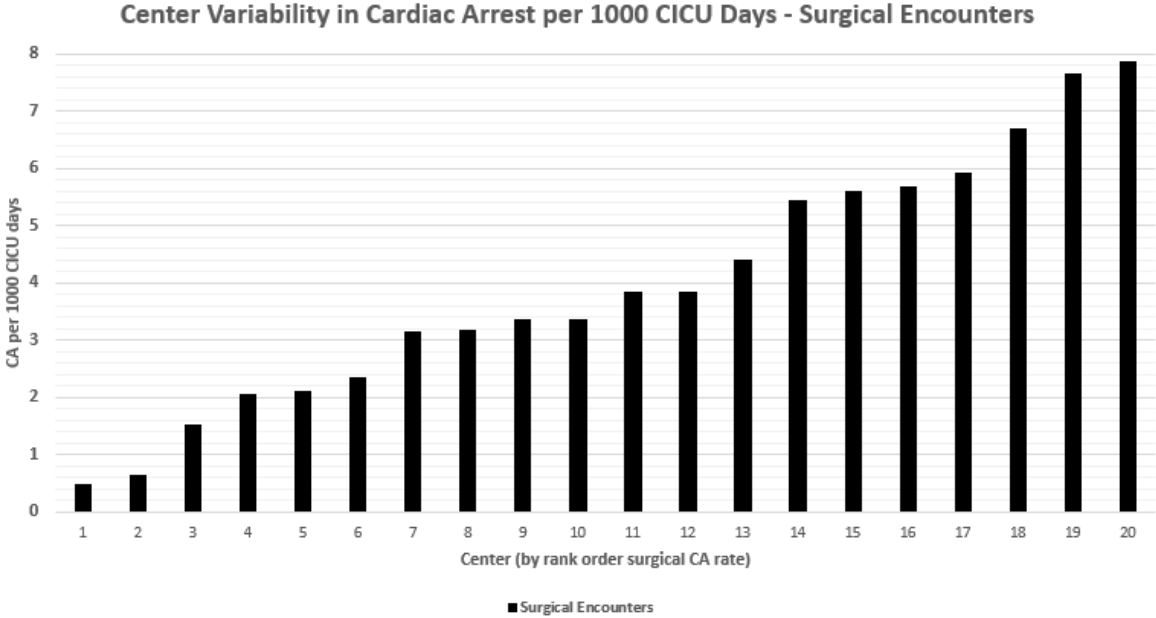
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# PC4 Cardiac Arrest Prevention (CAP) Initiative

# Preventing cardiac arrest symbolizes purpose of our CICUs and PC4

- This project is important – preventing CA will decrease mortality
- This project will require much collaboration – largest multicenter pediatric CICU quality improvement initiative
  - Between centers, networks, and within your own center
- This project will take a lot of work
  - Passionate site physician and nurse CAP champions with ability to positively influence and impact change within their local CICU care team
- This project will require the support of administration and senior clinical leadership – including a commitment to the time and human resources necessary for success
- This iteration of this project is a starting point
  - And it is time to get started

# Center Variation in CA





# CAP QI Leadership Team

- **Executive sponsors:** Cardiac Networks United: Michael Gaies (PC4), Jeff Anderson (NPCQIC)
- **Co-Leads:** Jeffrey Alten, David Cooper, Darren Klugman, (*Tia Raymond*)
- **QI coaches:** Shari Wooton and Evan Hochberg
- **Project management, Data analysis, Dashboard, monthly control charts:** in collaboration with Cardiac Networks United and CCHMC HIRC

# Participating Sites

- **29 PC4 Centers**
  - 16 have committed to implement all 5 bundle elements
  - 8 will implement zero to two of the optional elements  
*(Vital sign communication, pre-sedation discussion, bedside epinephrine)*
  - 5 will serve as “active control” – data collection without any CAP implementation

# Principles of CA prevention QI project

- Data driven –
  - Evidence-based patient selection
  - inclusion of highest risk cohorts & time periods
- Collaborative learning
  - expert consensus from high performing centers
  - Single center CA reduction QI projects
- Respect local resource/time/personnel limitations
  - Simple and straight forward bundle/protocol
  - Not dependent on new technology or capital investments
  - Bundle will allows flexibility and modifications to fit local practice
  - Minimal additional data collection

# Patient inclusion criteria for CA bundle

## Postoperative Surgical Patients

- All neonates after cardiac surgery requiring CPB
- Any neonate/infant receiving pulmonary artery banding or a systemic to pulmonary artery shunt
- ***Duration of bundle activation:*** from postoperative admission until 24 hours after extubation to maximum of 7 days postoperative

## Medical Patients

- Any medical patient with a medical condition on admission that requires mechanical ventilation within first 4 hours
- ***Duration of bundle activation:*** from intubation until 24 hours after extubation to maximum of 72 hours from intubation

*Note: Any other patients may have the bundle implemented at discretion of treating team (deemed as at risk for CA based on local data or empirically). Additionally, can extend duration of bundle on mandatory patients.*

# Identification of patients

- Establish a system that efficiently identifies all patients that meet inclusion
  - Fits within normal work flow
- Visual identifier on the patient room

**Resuscitation Action Plan**

Reasons Patient is High Risk: open chest / low cardiac output syndrome

Patient Specific Notification Parameters / Warning Signs: ↓ HR by 20  
↓ SBP by 10, ↓ Sats by 10, ↓ NIRS by 10

**Preventative Measures:**

- ☐ Prostaglandin checks q2 hours
- ☒ Goal temperature: 36.5-37.5
- ☒ PRE-SEDATE with all noxious stimuli
- ☒ No Bath
- ☒ No Weighing
- ☒ PRE-SEDATE with all suctioning
- ☒ 3 person suctioning protocol
- ☒ Bag and suction q 4 hrs
- ☐ DO NOT break circuit - (In-line suction only)

**3.2kg Medications:**

\*Located in RAP kit in top drawer of bedside supply cart labeled with RAP magnet

- ☒ Diluted Epinephrine (10:1 in NS)
- ☒ Calcium Chloride (20 mg/kg)
- ☒ Sodium Bicarbonate (2 meq/kg)
- ☒ Vasopressin (0.1 unit/ml)
- ☒ Rocuronium (1 mg/kg)
- ☒ Other albumin 30cc (5%)
- ☐ Other

**Equipment:**

- ☐ Code cart to bedside
- ☐ External Pacemaker
- ☐ Pads Placed ☐ Defibrillator set to joules
- ☐

**Access:**

Arterial: Per Per Per Per

Venous: Per Per Per Per

**Crucial First Steps:**

If HR < 80, SBP < 45, Sat < 70, happens, immediately do the following:

- 1) Push RED Emergency button
- 2) Notify NP/ Attending MD
- 3) TURN LIGHTS ON / Cycle BP cuff
- 4) Bedside nurse → chest compressions
- 5) RT → turn Fio2 to 100%, Bag pt
- 6) 2° nurse → pull up albumin bolus & code drugs
- 7) bolus & code drugs

**Code Roles:**

Code Director: On call MD  
Hand Bag Ventilation: 1° RRT  
Chest Compressions: Helping Nurse/ 2° RRT  
Medication Prep: Charge Nurse / Pharmacist  
Medication Administration: Bedside Nurse  
Charting: Helping Nurse  
ECMO primer/ Surgery team activation: Unit Clerk

**ECMO Plan:**

☒ NOT an ECMO candidate

Cannulation plan: (Location / Cannula size)

Arterial: Central 8 Fr cannula

Venous: Central 16 Fr cannula

# Cardiac Arrest Prevention Bundle

1. **“CAP Safety Huddle”** multidisciplinary discussion of CA prevention 2 times/day, (AM shift, call hand-off or PM)
  - goals and plans posted at bedside
2. **Patient-specific vital sign goals** alarm parameters adjusted
  - communicated/posted at bedside
3. **Pre-sedation *discussion*** for noxious stimuli
4. **Emergency medications** (epinephrine) available at bedside
5. **Formal review** of all cardiac arrest events

# 1. CAP Safety Huddle

- Formal bedside discussion with clinical team [bedside RN, attending (or senior clinician), “nurse leader”, respiratory therapist]. Just in time education, shared mental model, mini simulation, etc.

## Three essential components:

- Why patient meets criteria
- Most likely etiology of arrest or clinical decompensation
- Action plan for prevention (vital sign notification, pacemaker management, sedation)
- Huddle must occur at admission, time of intubation for medical patients (< 1hour)
- Clear verbal (or time) transition must occur between patient rounds and CAP Safety Huddle
- Plan should be re-discussed on each shift twice a day
- Plan must be documented & posted at bedside

## 2. Vital sign adjustment & communication

- Clear adjustment & communication of patient-specific vital sign parameters with clear values for notification
  - [HR, RR, SBP/DBP/MBP, O2 sat, temp, ETCO2 (if applicable) and NIRS (if applicable)]
- Parameters defined/confirmed/updated upon meeting criteria for CA bundle and then every nursing shift
  - Programmed into monitor
- Parameter changes require provider evaluation at bedside; changes must be communicated to attending physician (or senior clinician)
  - Any change must be followed up w/ reassessment @ designated frequency
- Parameters must be documented and posted at bedside



# CAP Communication sheet

- Posted at bedside
  - Plastic sleeve; white board, etc.
- Filled out during CAP safety huddle and/or vital sign discussion
- Plans/vital sign parameters adjudicated each shift

Cardiac Arrest Prevention Communication Sheet

Date/Time: \_\_\_\_\_

**High Risk due to:**

A. Postop admission from neonatal CPB surgery (duration: 24 hrs after extubation; max 7days)  
B. Premature neonate postop cardiac surgery (duration: 24 hrs after extubation; max 7days)  
C. Postoperative BT shunt, PA band (duration: 24 hrs after extubation; max 7days)  
D. Admitted for active medical problem and intubated w/in first 24 hrs (max 72 hrs)  
E. OTHER \_\_\_\_\_

**Etiology of clinical decompensation/cardiac arrest:**

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

**Action plan for mitigation:**

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_

**Vital sign parameters:**

Parameter	AM Goals	Alarm Limits	PM Goals	Alarm Limits
HR				
SBP ART/NBP				
MAP				
O2 Sat				
CVP/LAP				
NIRS (C/R)				
ETCO2				
Temp				
Other				

**Additional care requirements:**

Pre-medicate with suctioning and/or stimulation: ☐ Yes ☐ No  
3<sup>rd</sup> Person Suctioning: ☐ Yes ☐ No  
High Risk Drip Change: ☐ Yes ☐ No  
PICC or IV placement: ☐ Yes ☐ No

**Emergency medications at Bedside:**

☐ 1:100,000 Epinephrine  
☐ Calcium chloride  
☐ Narcotic/Neuromuscular blockade  
☐ Other \_\_\_\_\_

**Overall Trajectory:**

Improving	Same	Worse

AM MD Signature: \_\_\_\_\_ PM MD Signature: \_\_\_\_\_  
AM RN Signature: \_\_\_\_\_ PM RN Signature: \_\_\_\_\_

### 3. Pre-sedation for noxious stimuli

- **Discussion** of need for pre-sedation for all intubated patients during each nursing shift (required)
  - Pre-sedation is always at discretion of treating team – *only mandate is that the discussion occurs (similar to necessity of invasive device discussions)*
- May occur on regular rounds or during safety huddle
- Consider 3<sup>rd</sup> person at bedside during endotracheal suctioning to watch monitor

## 4. Epinephrine at bedside

- In the event of clinical deterioration, rescue medications should be available for immediate administration
- The following medications should be drawn up and available at bedside:
  - patient specific dose of epinephrine
    - Exact dosing and concentration of epinephrine utilized per local CICU standards/protocols
- Indication for administration clearly delineated in mitigation plan

## 5. Formal Code Review

- Format to be determined by center
- All codes should be reviewed within 2 weeks
- Learning points should be disseminated back to team
- Recommend Elements for Formal Code Review:
  - Occurs within 48 hours of the event
  - Vital sign, telemetry, and physiologic monitoring review
  - Medical record review
  - Clinical staff involved should be present during the code review

# Data Collection

- 3 data collection forms
  - CA event DCF
  - Monthly Data Form
  - Bundle Audit Form
- Paper Forms for now (available at [PC4quality.org](https://PC4quality.org))
- RedCap entry once local IRB exemption and DUA (if necessary) completed
  - There will be no PHI on DCFs
  - We will provide template of these soon

# CAP CARDIAC ARREST EVENT DCF



PRE-CODE STATUS	
<b>Patient</b>	
REDCAP ID: _____	
<b>Event Background</b>	
Hemodynamic Support (include dose): <input type="checkbox"/> None <input type="checkbox"/> Dopa_____ <input type="checkbox"/> Mil_____ <input type="checkbox"/> Epi_____ <input type="checkbox"/> NE_____ <input type="checkbox"/> Vaso_____ <input type="checkbox"/> Other_____	
Did this patient have a previous arrest during this CICU encounter? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Did this patient have a previous arrest during this Hospitalization? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Did Patient Meet CAP Inclusion Criteria at time of arrest? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Were all bundle elements completed at time of the arrest? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Was this patient a previous bundle patient? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<b>Staff Background</b>	
Attending years of experience: _____ years	RN years of experience: _____ years
Attending in house : <input type="checkbox"/> Yes <input type="checkbox"/> No	RN Source: <input type="checkbox"/> unit-based <input type="checkbox"/> internal float <input type="checkbox"/> Travel RN
Attending training background: <input type="checkbox"/> Critical Care <input type="checkbox"/> Cardiology <input type="checkbox"/> Critical Care AND Cardiology <input type="checkbox"/> Anesthesia <input type="checkbox"/> Other	RN/Pt ratio (circle): 1:1 1:2
	<u>Orientee</u> assigned? <input type="checkbox"/> Yes <input type="checkbox"/> No

PRIMARY CAUSE OF ARREST		
<input type="checkbox"/> Arrhythmia	<input type="checkbox"/> Pulmonary Hypertensive Crisis	<input type="checkbox"/> Electrolyte disturbance
<input type="checkbox"/> LCOS – hypotension or lactic acidosis	<input type="checkbox"/> Tension pneumothorax	<input type="checkbox"/> Procedural complication
<input type="checkbox"/> Tamponade	<input type="checkbox"/> Airway loss/obstruction	<input type="checkbox"/> Anesthesia induction
<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Respiratory Arrest - Hypoxemia/Hypercarbia	<input type="checkbox"/> AP Shunt Occlusion
		<input type="checkbox"/> Undetermined
ARREST REVIEW		
Date of formal arrest review: ____ / ____ / ____		
Was Education specific to this code disseminated back to the clinical staff? <input type="checkbox"/> Yes <input type="checkbox"/> No		



**Monthly CICU patient days:** this data is tracked by your hospital or heart center – will have to identify the person and request monthly report

Recommend log in Excel or similar to keep track of bundle patients each month – we will have example available in CAP folder

**CAP Monthly Data Collection**

Month \_\_\_\_\_

Institution \_\_\_\_\_

Total number of CA episodes \_\_\_\_\_

Total number of patients that had CA \_\_\_\_\_

Dates of All CA this month  
\_\_\_\_\_  
\_\_\_\_\_

Total Patient Days for your CICU during this calendar month (all CICU encounters) \_\_\_\_\_

Total number of Bundle patients this calendar month \_\_\_\_\_

## CARDIAC ARREST PREVENTION AUDIT TOOL



PATIENT	
Institution: _____	Has this patient been audited before? <input type="checkbox"/> YES <input type="checkbox"/> NO
Date: _____	
CAP IDENTIFICATION	
Is a visual cue currently in place which easily identifies this patient as a CAP eligible patient?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO <input type="checkbox"/> Have not implemented
Were all CAP eligible patients receiving the CAP bundle?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO
SAFETY HUDDLE	
Did a timely safety huddle occur during the most recent required timeframe? – (occur twice in last 24 hours AND/OR within one hour of meeting criteria).	
<input type="checkbox"/> YES	<input type="checkbox"/> NO
Were all required team members present during the safety huddle? (Select "No" if no huddle occurred)	
<input type="checkbox"/> YES	<input type="checkbox"/> NO
Is an up-to-date plan for cardiac arrest prevention posted at the bedside?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO
VITAL SIGN ADJUSTMENT	
Are patient specific vital signs parameters posted at the bedside AND programmed into the monitor?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO <input type="checkbox"/> Have not implemented
Did readjustment of vital sign parameters occur only with clinician bedside assessment?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO <input type="checkbox"/> Have not implemented
DISCUSSION OF PRE-SEDATION	
During the most recent safety huddle OR rounds, was pre-sedation prior to noxious stimuli discussed?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO <input type="checkbox"/> Have not implemented
EMERGENCY MEDICATION	
Is a patient-specific dose of epinephrine available at the bedside?	
<input type="checkbox"/> YES	<input type="checkbox"/> NO <input type="checkbox"/> Have not implemented



# All CAP Forms available in CAP Folder at [PC4quality.org](http://PC4quality.org)

- All data collection forms and logs
- Example Safety Huddle sheets
- Operational definitions
- Example Charter
- Regulatory Documents
- All presentations including Webinars
- Video of Example safety Huddle
- Code Review examples
- Contacts of all participants
- Will be updated with resources from participating centers in spirit of collaboration and shared learning

# Monthly Dashboard

- LifeQI – program
- Each site will be able to view their own run and control chart data and compare to other centers
- Will be able to view your run charts and Compare to aggregate and other sites – CA rate per 1000 CICU days
  - All CICU patients
  - High risk cohorts
  - **Up to one year of baseline data will be presented for each site – available by May 1 (March, April data to be supplied by us)**
- CA /bundle eligible patient – CA %
- CA/non-bundle eligible patients – CA %
- Days between CA
- Risk adjusted CA incidence available [PC4quality.org](http://PC4quality.org)

# Time Line

- **March/April – Key Next Steps**
  - ☐ Assemble teams including charter signed by leaders - **Draft Charter will be provided for you to edit**
  - ☐ Establish reliable processes to identify patients and visual cue for the identification
  - ☐ Data collection
    - ☐ Bundle Audit– audit data at least a couple safety huddles and any other bundle elements initiated to test the forms.
    - ☐ Identify process to obtain patient CICU days
  - ☐ Begin to work on DUA/IRB exemption – once we provide drafts
    - ☐ Redcap entry/training will begin once DUA/IRB executed (if applicable)
  - ☐ Begin to phase in safety huddle (PDSA cycles)
  - ☐ Attend educational Webinars – schedule forthcoming
- **May 1** – all sites should effectively identify all eligible patients and be actively trying/testing safety huddle (at minimum)
- **May 1** – compliance/audit data begins – 10 per month
- **July 1** – goal to be testing all bundle elements
- MOC credit type 4 has been approved

# CAP Support Roles

## QI Coaches



- ☐ Work with leads to follow QI model
- ☐ Facilitate webinars
- ☐ Teach QI Skills
- ☐ QI Coach for Local Teams

## PM Lead



- ☐ Develop timelines
- ☐ Track deliverables
- ☐ Builds collaboration space

## Data Analyst



- ☐ Data collection design
- ☐ Produce charts
- ☐ SPC Analysis
- ☐ Develop performance dashboard

Interested in a coaching session. Contact

- Evan Hochberg [EHochber@childrensnational.org](mailto:EHochber@childrensnational.org) and
- Sharyl Wooton [Sharyl.Wooton@cchmc.org](mailto:Sharyl.Wooton@cchmc.org)

# Getting Started



# Project Charter: Getting everyone involved on the same page

- Defines the project scope
- Clarifies objectives of project
- Identifies Teams & Roles
- Identifies high level timeline & risks

Your LOGO

## QI Project Charter

A. General Information	
<b>Project Title:</b>	Cardiac Arrest Prevention (CAP)
<b>Department/ Division/Unit/</b>	<Unit (s) TBD - by hospital>
<b>Population:</b>	All at Risk Patients (All postoperative surgical neonates (term), Surgical preterm neonate and SV without aortic arch repair (exclude HFP and Fontan)
<b>Brief Project Description (AIM):</b>	Outcome: 25% reduction in overall CA rate in our UNIT from <X> to <Y >/1000 CICU patient days by April 2019 (X is your baseline, and Y is the 25% goal)  Process: Increase the monthly reliability of the CAP Bundle Reliability from <X > to 80% or greater by September 1st 2018
<b>Measures:</b>	Reliability = Number of audits fully compliant with all CAP Prevention Bundle Elements/ Number of audits completed* x 100 *Recommend a minimum of 10 patient audit observations a month.
<b>Prepared By:</b>	<Enter Team Name>
<b>Date:</b>	<Enter Date>

- Review with leadership along with any institutional Quality Improvement policies.

Tip: Create ceremony/formality by having your leaders “sign off” either in email or on a printed charter. Creates a clear signal of leadership support for the team & work

# Suggested Team Structure

- Primary Leader
  - Operational control over ICU (Medical Director/Nursing Director)
- Direct-care nursing
  - QI experience or interest
- Medical representative
  - Change agent
- Quality/Safety Consultant
  - Experience with QI collaborative, iterative change (Model for Improvement/PDSA/Lean)
- Additional Voices
  - RT, ancillary staff, interns, social work, Patient and Family rep

# Data Collection

## Weekly



☐ Minimum 10 bundle audits

## Monthly



☐ Unit summary data sheet

## Ad hoc



☐ Event Form

☐ Arrest log



# QI Best Practices

- “Perfection is the enemy of pretty darn good!”
- Iterative change vs. implementation
- Create project roles
- Build data collection into standard duties
- Ask for help!

# What's next?

- Monthly webinars will be scheduled with two purposes:
  - “All Teach / All Learn” about your progress through CAP. 1-2 centers to share on each webinar.
    - First Volunteers? Reach out to [Sharyl.Wooton@cchmc.org](mailto:Sharyl.Wooton@cchmc.org)
  - Teaching quality improvement skills & tools
- Begin working on your deliverables (from slide 22)
- Reach out for coaching / help as needed
  - Quality Improvement
    - Evan Hochberg [EHochber@childrensnational.org](mailto:EHochber@childrensnational.org) and
    - Sharyl Wooton [Sharyl.Wooton@cchmc.org](mailto:Sharyl.Wooton@cchmc.org)
  - Project Management
    - Katie Clarke-Meyers [Katie.Clarke\\_Myers@cchmc.org](mailto:Katie.Clarke_Myers@cchmc.org)
  - Data
    - Jeffrey Alten [Jeffrey.Altен@cchmc.org](mailto:Jeffrey.Altен@cchmc.org)

## Cardiac Arrest Prevention

Date/Time: \_\_\_\_\_

### High Risk due to:

- A. Postop admission from neonatal CPB surgery (duration: 24 hrs after extubation; max 7days)
- B. Postoperative BT shunt, PA band (duration: 24 hrs after extubation; max 7days)
- C. Admitted for active medical problem and intubated w/in first 4 hrs (max 72 hrs)
- D. OTHER \_\_\_\_\_

### Etiology of clinical decompensation/cardiac arrest:

1. \_\_\_\_\_
2. \_\_\_\_\_

### Action plan for mitigation:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

### Vital sign parameters:

Parameter	AM Goals	Alarm Limits	PM Goals	Alarm Limits
HR				
SBP ART/NBP				
MAP				
O2 Sat				
CVP/LAP				
NIRS (C/R)				
ETCO2				
Temp				
Other _____				

### Additional care requirements:

Pre-medicate with suctioning and/or stimulation: ☐ Yes ☐ No

3<sup>rd</sup> Person Suctioning: ☐ Yes ☐ No

High Risk Drip Change: ☐ Yes ☐ No

PICC or IV placement: ☐ Yes ☐ No

### Emergency medications at Bedside:

- ☐ 1:100,000 Epinephrine
- ☐ Calcium chloride
- ☐ Narcotic/Neuromuscular blockade
- ☐ Other \_\_\_\_\_

Overall Trajectory:		
Improving	Same	Worse

AM MD Signature: _____
AM RN Signature: _____

PM MD Signature: _____
PM RN Signature: _____

# CICU Cardiac Arrest Prevention Communication Sheet



## PATIENT STICKER

TODAY'S DATE \_\_\_\_\_

Overall Trajectory		COMMENTS
Improving		
Same		
Worse		

High Risk due to: (Please Circle)

- A. Postop admission from neonatal CPB surgery (duration: 24 hrs after extubation; max 7days)  
 A. Postoperative BT shunt, PA band (duration: 24 hrs after extubation; max 7 days)  
 B. Admitted for active medical problem and intubated w/in first 4 hrs (max 72 hrs)  
 C. Other \_\_\_\_\_

Start Date: \_\_\_\_\_

End Date: \_\_\_\_\_

### DECOMPENSATION ETIOLOGY(S)

### WARNING SIGNS/SYMPTOMS

1. \_\_\_\_\_ 1. \_\_\_\_\_  
 2. \_\_\_\_\_ 2. \_\_\_\_\_

### MITIGATION PLANS

1. IF \_\_\_\_\_ THEN \_\_\_\_\_  
 2. IF \_\_\_\_\_ THEN \_\_\_\_\_  
 3. IF \_\_\_\_\_ THEN \_\_\_\_\_

Preventative Measures	Medications drawn up at Bedside	Equipment
<input type="checkbox"/> PRE-SEDATE with all noxious stimuli <input type="checkbox"/> only suction <input type="checkbox"/> only PICC or PIV <input type="checkbox"/> No Bath <input type="checkbox"/> No Weighing <input type="checkbox"/> Keep Warmer on <input type="checkbox"/> 3 person suctioning protocol <input type="checkbox"/> DO NOT break circuit - Inline suction only <input type="checkbox"/> High risk drip change <input type="checkbox"/> Other _____	<input type="checkbox"/> Epi Spritzer <input type="checkbox"/> Code dose Epi <input type="checkbox"/> Calcium Chloride (20 mg/kg) <input type="checkbox"/> Sodium Bicarbonate (2 meq/kg) <input type="checkbox"/> Lactated Ringers (10 cc/kg) <input type="checkbox"/> Neuromuscular blockade <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____	<input type="checkbox"/> Wires plugged into Pacemaker <input type="checkbox"/> Pacemaker with emerg. settings <input type="checkbox"/> Zoll pads at BS <input type="checkbox"/> On patient <input type="checkbox"/> Defibrillator ____ joules <input type="checkbox"/> NIRS: set baseline/ audio alarm <input type="checkbox"/> ST monitoring /Alarms <input type="checkbox"/> Other _____

**Vital Sign Parameters:** Program alarm limits into monitor; Any change in limits requires bedside clinician eval. and re-assessment

Parameter	AM Goals	Alarm Limits	□ NO Δs Except:	PM Goals	Alarm Limits
HR					
SBP					
DBP					
MAP					
O2 Sat					
CVP/RA					
NIRS (C/R)					
ETCO2					
Temp					

AM MD Signature: _____	PM MD Signature: _____
AM RN Signature: _____	PM RN Signature: _____



# Cardiac Arrest Prevention Communication Sheet



NAME: \_\_\_\_\_

TODAY'S DATE: \_\_\_\_\_

Overall Trajectory		COMMENTS
Improving		
Same		
Worse		

High Risk due to: (Please Circle)

1. Postop admission from neonatal CPB surgery (duration: 24 hrs after extubation; max 7 days)
2. Postoperative BT shunt, PA band (duration: 24 hrs after extubation; max 7 days)
3. Admitted for active medical problem and intubated w/in first 4 hrs (max 72 hrs)
4. Other \_\_\_\_\_

Start Date: \_\_\_\_\_

End Date: \_\_\_\_\_


## DECOMPENSATION ETIOLOGY(S)

## WARNING SIGNS/SYMPTOMS

1. Low Cardiac Output
2. \_\_\_\_\_
1. ↓ NIRS, ↑ HR, ↓ BP, ↓ perfusion, ↓ EtCO<sub>2</sub>, ↑ lactate, ↓ SvO<sub>2</sub>
2. \_\_\_\_\_

## MITIGATION PLANS

1. IF \_\_\_\_\_ THEN \_\_\_\_\_
2. IF HR < 100 and/or SBP < \_\_\_\_ THEN Epi Spritzer, Staff Assist, Start CC @ 100 bpm for goal SBP > 60 on a-line
3. IF SBP < \_\_ & CVP < \_\_ THEN Give 5 ml/kg LR. IF SBP < \_\_ & CVP > \_\_ THEN ↑ \_\_\_\_\_ gtt and call provider

Preventative Measures	Meds drawn up at Bedside	Significant PM Shift Changes								
<input type="checkbox"/> PRE-SEDATE with all noxious stimuli <input type="checkbox"/> only suction <input type="checkbox"/> only PIV or PIV <input type="checkbox"/> No Bath <input type="checkbox"/> No Weighing <input checked="" type="checkbox"/> NIRS: set baseline/ audio alarm <input type="checkbox"/> ST monitoring /Alarms <input type="checkbox"/> 3 person suctioning protocol <input type="checkbox"/> DONT break circuit - Inline suction only <input checked="" type="checkbox"/> High risk drip change <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Epi Spritzer <input checked="" type="checkbox"/> Code dose Epi <input checked="" type="checkbox"/> Calcium Chloride (20 mg/kg) <input type="checkbox"/> Sodium Bicarb (2 meq/kg) <input checked="" type="checkbox"/> Lactated Ringers (3 cc/kg) <input type="checkbox"/> Neuromuscular blockade <input type="checkbox"/> Other	<table><tr><th colspan="2">PM Shift</th></tr><tr><td>Improving</td><td></td></tr><tr><td>Same</td><td></td></tr><tr><td>Worse</td><td></td></tr></table>	PM Shift		Improving		Same		Worse	
PM Shift										
Improving										
Same										
Worse										

**Vital Sign Parameters:** Program alarm limits into monitor; Any change in limits requires bedside clinician eval. and re-assessment

Parameter	AM Goals	Alarm Limits	NO Δs Except:	PM Goals	Alarm Limits
HR		120-180			
SBP		55-90			
DBP		>30			
MAP		>40			
O <sub>2</sub> Sat					
CVP/RA		6-12			
NIRS (C/R)					
ETCO <sub>2</sub>		35-45			
Temp		36.0-38.0			

AM MD Signature: _____	PM MD Signature: _____
AM RN Signature: _____	PM RN Signature: _____

# Resuscitation Action Plan

Reasons Patient is High Risk: \_\_\_\_\_

Patient Specific Notification **Parameters / Warning Signs:** \_\_\_\_\_

## Preventative Measures

- ☐ Prostaglandin checks q2 hours
- ☐ Goal temperature \_\_\_\_\_
- ☐ PRE-SEDATE with all noxious stimuli
  - ☐ No Bath
  - ☐ No Weighing
- ☐ PRE-SEDATE with all suctioning
- ☐ 3 person suctioning protocol
- ☐ Bag and suction q \_\_\_\_ hrs
- ☐ **DO NOT** break circuit - Inline suction only

Example:  
Dressing Δ s  
Bath  
Weighing  
IV sticks

## Medications

*\*Located in RAP kit in top drawer of bedside supply cart labeled with RAP magnet*

- ☐ RAP kit      Diluted Epinephrine (10:1 in NS)  
Calcium Chloride (20 mg/kg)  
Sodium Bicarbonate (2 meq/kg)  
Vasopressin (0.1 unit/ml)  
Rocuronium (1 mg/kg)
- ☐ Albumin (10 cc/kg)
- ☐ Other \_\_\_\_\_
- ☐ Other \_\_\_\_\_

## Equipment

- ☐ External Pacemaker  
Settings: \_\_\_\_\_
- ☐ Pads on pt      ☐ Defibrillator to \_\_\_\_ joules
- ☐ \_\_\_\_\_

## Access

Arterial: \_\_\_\_\_ draws    flushes  
Venous: \_\_\_\_\_ draws    flushes

## ECMO Plan

- ☐ **NOT** ECMO candidate
- ☐ Cannulation plan: (Location / Cannula)  
Arterial: \_\_\_\_\_ F cannula  
Venous: \_\_\_\_\_ F cannula

## Crucial First Steps

If \_\_\_\_\_  
happens, immediately do the following:  
**Bedside RN:**

- 1) Push RED Emergency button
- 2) Turn lights on / Cycle BP cuff

3) \_\_\_\_\_

4) \_\_\_\_\_

5) \_\_\_\_\_

6) \_\_\_\_\_

7) \_\_\_\_\_

**Respiratory Therapist:**

1) \_\_\_\_\_

2) \_\_\_\_\_

**Float / Charge RN:**

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

**Other:**

1) \_\_\_\_\_

## Chest Compressions

If HR < \_\_\_\_\_ If SBP < \_\_\_\_\_ If MAP < \_\_\_\_\_

Target Rate: \_\_\_\_\_ Pulse ox \_\_\_\_\_ Target SBP: \_\_\_\_\_  
Art line



# Resuscitation Action Plan



Bundle Pt #:  Start Date:  Date Last Updated:   
End Date:  24 hrs post extubation date:

Overall Trajectory	
Improving	
Same	
Worse	

## High Risk due to:

- Postop admission from neonatal CPB surgery (duration: 24 hrs after extubation; max 7days)
- Postoperative BT shunt, PA band (duration: 24 hrs after extubation; max 7 days)
- Admitted for active medical problem and intubated w/in first 4 hrs (max 72 hrs)
- Other \_\_\_\_\_

Etiology of clinical decompensation/cardiac arrest: \_\_\_\_\_

Patient Specific Notification Parameters / Warning Signs: \_\_\_\_\_

Preventative Measures	Medications	Equipment
<input type="checkbox"/> Prostaglandin checks q2 hours <input type="checkbox"/> PRE-SEDATE with all noxious stimuli <input type="checkbox"/> No Bath <input type="checkbox"/> CHG bath only <input type="checkbox"/> No Weighing <input type="checkbox"/> Bed scale only <input type="checkbox"/> PRE-SEDATE with all suctioning <input type="checkbox"/> 3 person suctioning protocol <input type="checkbox"/> DO NOT break circuit - Inline suction only <input type="checkbox"/> High risk drip change <input type="checkbox"/> Other _____	<input type="checkbox"/> Epi Spritzer (10:1 in NS)/Code dose Epi <input type="checkbox"/> Calcium Chloride (20 mg/kg) <input type="checkbox"/> Sodium Bicarbonate (2 meq/kg) <input type="checkbox"/> Albumin (10 cc/kg) <input type="checkbox"/> Narcotic/Neuromuscular blockade <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____	<input type="checkbox"/> External Pacemaker at BS <input type="checkbox"/> Zoll pads at BS <input type="checkbox"/> Defibrillator ____ joules (2/kg) <input type="checkbox"/> NIRS: set to baseline and lower limits w alarm <input type="checkbox"/> Other _____

Code Med Access	ECMO Plan
Venous: _____ <input type="checkbox"/> Draws <input type="checkbox"/> Flushes	<input type="checkbox"/> <b>NOT</b> ECMO candidate <input type="checkbox"/> <b>YES</b> activate ECMO

## Crucial First Steps: If acute episode occurs, immediately:

Bedside RN	Respiratory Therapist:	Charge RN:	Other:
1) Call for help/Crash Cart	1) Bag-mask Ventilation	1) Identify roles (med RN, etc.)	1) _____
2) Turn on lights/NIBP cuff	2) Manage airway	2) Activate ECMO	2) _____
3) Start CPR	3) _____	3) _____	3) _____
4) Place Zoll Pads	4) _____	4) _____	4) _____

## Vital Sign Parameters:

Parameter	AM Goals	Alarm Limits	PM Goals	Alarm Limits
HR				
SBP ART/NBP				
MAP				
O2 Sat				
CVP/RA				
NIRS (C/R)				
ETCO2				
Temp				
Other _____				

AM MD Signature: _____	PM MD Signature: _____
AM RN Signature: _____	PM RN Signature: _____

# PCH Cardiac Arrest Prevention Plan

## Inclusion Criteria:

- ☐ Term neonate following bypass surgery
  - *Duration 24 hours after extubation, max 7 days*
- ☐ Single ventricle infant pre-stage I palliation, post interventional catheterization or non-bypass surgery (PA band, BT shunt, PDA stent)
  - *Duration 24 hours after extubation, max 7 days*
- ☐ Medical patient requiring intubation in first 4 hours following CICU admission (duration 72 hours)
- ☐ Other \_\_\_\_\_ (duration 72 hours)

Patient Name: \_\_\_\_\_ Patient Weight: \_\_\_\_\_ kg Bundle Start Date: \_\_\_\_\_

Bundle	Date & Time	Date & Time	Date & Time	Date & Time	Date & Time	Date & Time	Date & Time
<b>Expected Reason(s) for Decompensation</b>							
	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
	<input type="checkbox"/> Low cardiac output syndrome	<input type="checkbox"/> Low cardiac output syndrome	<input type="checkbox"/> Low cardiac output syndrome	<input type="checkbox"/> Low cardiac output syndrome	<input type="checkbox"/> Low cardiac output syndrome	<input type="checkbox"/> Low cardiac output syndrome	<input type="checkbox"/> Low cardiac output syndrome
	<input type="checkbox"/> Qp:Qs Imbalance	<input type="checkbox"/> Qp:Qs Imbalance	<input type="checkbox"/> Qp:Qs Imbalance	<input type="checkbox"/> Qp:Qs Imbalance	<input type="checkbox"/> Qp:Qs Imbalance	<input type="checkbox"/> Qp:Qs Imbalance	<input type="checkbox"/> Qp:Qs Imbalance
	<input type="checkbox"/> Arrhythmia	<input type="checkbox"/> Arrhythmia	<input type="checkbox"/> Arrhythmia	<input type="checkbox"/> Arrhythmia	<input type="checkbox"/> Arrhythmia	<input type="checkbox"/> Arrhythmia	<input type="checkbox"/> Arrhythmia
	<input type="checkbox"/> Pulmonary Hypertension Crisis	<input type="checkbox"/> Pulmonary Hypertension Crisis	<input type="checkbox"/> Pulmonary Hypertension Crisis	<input type="checkbox"/> Pulmonary Hypertension Crisis	<input type="checkbox"/> Pulmonary Hypertension Crisis	<input type="checkbox"/> Pulmonary Hypertension Crisis	<input type="checkbox"/> Pulmonary Hypertension Crisis
	<input type="checkbox"/> Hypotension	<input type="checkbox"/> Hypotension	<input type="checkbox"/> Hypotension	<input type="checkbox"/> Hypotension	<input type="checkbox"/> Hypotension	<input type="checkbox"/> Hypotension	<input type="checkbox"/> Hypotension
	<input type="checkbox"/> Preload dependency	<input type="checkbox"/> Preload dependency	<input type="checkbox"/> Preload dependency	<input type="checkbox"/> Preload dependency	<input type="checkbox"/> Preload dependency	<input type="checkbox"/> Preload dependency	<input type="checkbox"/> Preload dependency
	<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Hemorrhage
	<input type="checkbox"/> Airway loss/obstruction	<input type="checkbox"/> Airway loss/obstruction	<input type="checkbox"/> Airway loss/obstruction	<input type="checkbox"/> Airway loss/obstruction	<input type="checkbox"/> Airway loss/obstruction	<input type="checkbox"/> Airway loss/obstruction	<input type="checkbox"/> Airway loss/obstruction
	<input type="checkbox"/> Respiratory arrest	<input type="checkbox"/> Respiratory arrest	<input type="checkbox"/> Respiratory arrest	<input type="checkbox"/> Respiratory arrest	<input type="checkbox"/> Respiratory arrest	<input type="checkbox"/> Respiratory arrest	<input type="checkbox"/> Respiratory arrest
	<input type="checkbox"/> Tamponade physiology	<input type="checkbox"/> Tamponade physiology	<input type="checkbox"/> Tamponade physiology	<input type="checkbox"/> Tamponade physiology	<input type="checkbox"/> Tamponade physiology	<input type="checkbox"/> Tamponade physiology	<input type="checkbox"/> Tamponade physiology
	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other
<b>Other red flags for decompensation</b>							



## PCH Cardiac Arrest Prevention Plan

[illegible]

## PCH Cardiac Arrest Prevention Plan

[illegible]

<b>Other possible inclusion criteria:</b>
<input type="checkbox"/> Patients with Open chest
<input type="checkbox"/> High inotropic / vasopressor support:  $\geq 3$ infusions, including milrinone only if $\geq 1$ mcg/kg/min)  Epinephrine $> 0.05$ mcg/kg/min  Vasopressin $> 0.04$ units/kg/hr
<input type="checkbox"/> History of prior arrest during current hospitalization
<input type="checkbox"/> New onset cardiomyopathy / myocarditis on epinephrine and/or dopamine infusion
<input type="checkbox"/> Arrhythmia requiring anti-arrhythmic infusion and/or $\geq 2$ anti-arrhythmic medications
<input type="checkbox"/> Known difficult airway and/or upper airway obstruction
<input type="checkbox"/> ECMO patients and up to 48 hours post-decannulation
<input type="checkbox"/> Pulmonary hypertension
<input type="checkbox"/> Severe lung disease:  PEEP $\geq 10$ and/or  100% FiO2 and iNO

# Resuscitation Action Plan

Bundle Patient # 

Start Date:   
End Date: 

Total CAP Days: 


## High Risk due to:

- Postop admission from neonatal CPB surgery (duration: 24 hrs after extubation; max 7 days)
- Postoperative BT shunt, PA band (duration: 24 hrs after extubation; max 7 days)
- Admitted for active medical problem and intubated w/in first 4 hrs (max 72 hrs)
- Other \_\_\_\_\_

Etiology of clinical decompensation/cardiac arrest: \_\_\_\_\_

## Patient Specific Notification Parameters / Warning Signs:

CAP day	Date	AM/PM
1		AM/PM
2		AM/PM
3		AM/PM
4		AM/PM
5		AM/PM
6		AM/PM
7		AM/PM
8		AM/PM
9		AM/PM
10		AM/PM

Preventative Measures	Medications	Equipment
<input type="checkbox"/> Prostaglandin checks q2 hours <input type="checkbox"/> PRE-SEDATE with all noxious stimuli <input type="checkbox"/> No Bath <input type="checkbox"/> CHG wipes only <input type="checkbox"/> No Weighing <input type="checkbox"/> Bed scale only <input type="checkbox"/> PRE-SEDATE with all suctioning <input type="checkbox"/> 3 person suctioning protocol <input type="checkbox"/> DO NOT break circuit - Inline suction only <input type="checkbox"/> High risk drip change <input type="checkbox"/> Other _____	<input type="checkbox"/> Epi Spritzer (10:1 in NS)/Code dose Epi <input type="checkbox"/> Calcium Chloride (20 mg/kg) <input type="checkbox"/> Sodium Bicarbonate (2 meq/kg) <input type="checkbox"/> Albumin (10 cc/kg) <input type="checkbox"/> Narcotic/Neuromuscular blockade <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____	<input type="checkbox"/> External Pacemaker at BS <input type="checkbox"/> Zoll pads at BS <input type="checkbox"/> Defibrillator _____ joules (2/kg) <input type="checkbox"/> NIRS: set to baseline and lower limits w alarm <input type="checkbox"/> Other _____

Code Med Access	ECMO Plan
Venous: _____ <input type="checkbox"/> Draws <input type="checkbox"/> Flushes	<input type="checkbox"/> <b>NOT ECMO candidate</b> <input type="checkbox"/> <b>YES activate ECMO</b>

Crucial First Steps: If acute episode occurs, immediately:			
<b>Bedside RN</b> 1) Call for help/Crash Cart 2) Turn on lights/NIBP cuff 3) Start CPR 4) Place Zoll Pads	<b>Respiratory Therapist:</b> 1) Bag-mask Ventilation 2) Manage airway 3) _____ 4) _____	<b>Charge RN:</b> 1) Identify roles (med RN, etc.) 2) Activate ECMO 3) _____ 4) _____	<b>Other:</b> 1) _____ 2) _____ 3) _____ 4) _____

## Vital Sign Parameters:

Parameter	AM Goals	Alarm Limits	PM Goals	Alarm Limits
HR				
SBP ART/NBP				
MAP				
O2 Sat				
CVP/RA				
NIRS (C/R)				
ETCO2				
Temp				
Other _____				

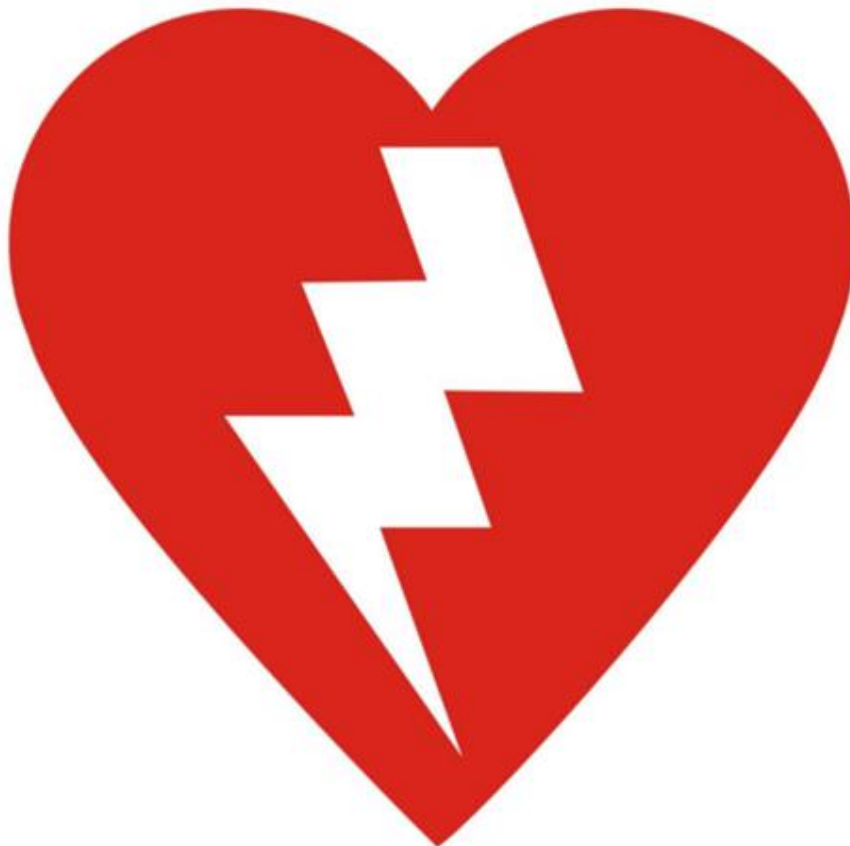
During your shift were any adjustments to v/s parameters (outside the safety huddles) discussed w provider? ☐ Yes ☐ No ☐ N/A

AM MD Signature: \_\_\_\_\_


PM MD Signature: \_\_\_\_\_

AM RN Signature: \_\_\_\_\_

PM RN Signature: \_\_\_\_\_



## CAP Plan Badge Buddy/Sticker

<p style="text-align: center;"><b><u>CAP Plan Checklist</u></b></p> <p><b><i>Safety Huddle discussion should include:</i></b></p> <ul style="list-style-type: none"><li><input type="checkbox"/> Etiology of decompensation/Reason for CAP</li><li><input type="checkbox"/> Clinical Red Flags</li><li><input type="checkbox"/> Mitigation plan(s) for decompensation discussed</li><li><input type="checkbox"/> Mitigation and rescue medications at bedside</li><li><input type="checkbox"/> Vital sign parameters (goals and limits)</li><li><input type="checkbox"/> Measures for minimizing risk (i.e. pre-sedation)</li></ul>	 <p>PEDIATRIC CARDIAC CRITICAL CARE CONSORTIUM</p> <p><small>PC<sup>4</sup> improving outcomes and quality through collaboration</small></p>
---	---

## CAP Plan Checklist

### *Safety Huddle discussion*

#### *should include:*

- ☐ Reason patient is at high risk for arrest
- ☐ Etiology of decompensation
- ☐ Warning signs/symptoms of decompensation
- ☐ Mitigation plan(s) for decompensation discussed
- ☐ Mitigation and rescue medications at bedside
- ☐ Vital sign parameters (goals and limits)
- ☐ Prevention measures for minimizing risk (i.e. pre-sedation)
- ☐ Pt. condition agreement (worse, stable, improving)

**P**EDIATRIC  
**C**ARDIAC  
**C**RITICAL  
**C**ARE  
**C**ONSORTIUM  
PC<sup>+</sup> Improving outcomes and quality through collaboration

## Rounding CAP Plan Checklist



*Safety Huddle discussion should include:*

- ☐ Etiology of decompensation/Reason for CAP
- ☐ Clinical Red Flags
- ☐ Mitigation plan(s) for decompensation discussed
- ☐ Mitigation and rescue medications at bedside
- ☐ Vital sign parameters (goals and limits)
- ☐ Measures for minimizing risk (i.e. pre-sedation)

## Bedside Staff CAP Checklist

*Ensure that you can complete this checklist at the end of the safety huddle. If not, request further information or discussion from the medical team.*

- ☐ I know what is wrong (Diagnosis)
  - ☐ I know what to do (Plan)
  - ☐ I know what to worry about (Assessment)
  - ☐ I know when to escalate (Anticipatory Guidance)
  - ☐ I see what you see (Shared Mental Model)
- (Berger, J.T., 2014)





# CARDIAC ARREST PREVENTION

AS A Team, We are Saving Lives: CA Events Oct to Feb 2018  
vs Oct to Feb 2019



## In January 2019

CICU Nurses were **Empowered to utilize CAP Mitigation Plans** developed Together as a Team in a CAP Safety Huddle on **37 Different Shifts!** Thank you for acting early to keep our patients Safe AND helping to prevent deterioration to Cardiac Arrest.

**Together We Save Lives**

(Since November 2018)



## Purpose

To reduce overall CA by 30% and the number of days between CA after 1 year of implementation

## What are we doing to achieve this?

Implementing the CAP bundle of select high-risk patients during the time of highest risk

# 28

## Tip of the Week

These badges will appear in your mailbox in the coming days with spares in the CAP binder in the 100 pod.

Use this checklist as a visual aid and verbal checklist to ensure that all tenants of your CAP huddle are being discussed during each safety huddle.



## CAP Star of the Week



Abbey advocated for keeping her patient on a CAP plan and coincidentally utilized that CAP plan 5 minutes later.

CAP

# Sharing Information with All Staff

- CAP Bulletin Board
  - CAP Star of the Week
  - Tip of the Week
  - Lives Saved
  - CAP Patient Tracker
  - Days without Cardiac Arrest





# CAP CARDIAC ARREST EVENT DCF



## PRE-CODE STATUS

### Patient

ID: \_\_\_\_\_  
 Site Month Year

CA Event ID: \_\_\_\_\_

## Event Background

Hemodynamic Support (include dose): ☐ None

☐ Dopa\_\_\_\_\_ (mcg/kg/min) ☐ Mil\_\_\_\_\_ (mcg/kg/min) ☐ Epi\_\_\_\_\_ (mcg/kg/min)

☐ NE\_\_\_\_\_ (mcg/kg/min) ☐ Vaso\_\_\_\_\_ (units/kg/min) ☐ Other: \_\_\_\_\_

Did cardiac arrest occur < 1 hour after admission? ☐ Yes ☐ No

Did this patient have a previous arrest during this CICU encounter? ☐ Yes ☐ No

Did Patient Meet CAP Inclusion Criteria at time of arrest? ☐ Yes ☐ No

*If Yes, Indication:* ☐ Neo CPB ☐ Shunt/PAB ☐ Intubated Medical ☐ Other

Were all bundle elements completed at time of the arrest? ☐ Yes ☐ No ☐ N/A

Was this patient a previous bundle patient? ☐ Yes ☐ No ☐ N/A

## Staff Background

Attending years of experience: \_\_\_\_\_ years

RN years of experience: \_\_\_\_\_ years

Attending in house : ☐ Yes ☐ No

Attending training background:

- ☐ Critical Care
- ☐ Cardiology
- ☐ Critical Care AND Cardiology
- ☐ Anesthesia
- ☐ Other

RN Source:

- ☐ Unit-based
- ☐ Internal float
- ☐ Travel RN

RN/Pt ratio (circle): 1:1 1:2

1 year CICU fellowship: ☐ Yes ☐ No

Orientee assigned? ☐ Yes ☐ No

## PRIMARY CAUSE OF ARREST

☐ Arrhythmia

☐ LCOS – hypotension or lactic acidosis

☐ Tamponade

☐ Hemorrhage

☐ Pulmonary HTN Crisis

☐ ECLS malfunction

☐ Airway Loss / obstruction / manipulation

☐ Respiratory Arrest – Hypoxemia/Hypercarbia

☐ Electrolyte disturbance

☐ Procedural complication

☐ Anesthesia induction

☐ AP Shunt Occlusion

☐ Other \_\_\_\_\_

## ARREST REVIEW

Date of formal arrest review: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Was Education specific to this code disseminated back to the clinical staff? ☐ Yes ☐ No

## CAP Monthly Data Collection



ID: | | | - | | | - | | | |  
Site Month Year

Total number of CA episodes \_\_\_\_\_

Total number of patients that had CA \_\_\_\_\_

Dates of All CA this month

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Total CICU Patient Days during this calendar month (all CICU encounters) \_\_\_\_\_

Total CAP bundle days this calendar month \_\_\_\_\_

Total number of Bundle patients this calendar month \_\_\_\_\_

Neo CPB CAP patients: Total number \_\_\_\_\_ Total Days \_\_\_\_\_

Shunt/PAB CAP patients: Total number \_\_\_\_\_ Total Days \_\_\_\_\_

Medical Intubated CAP patients: Total number \_\_\_\_\_ Total Days \_\_\_\_\_

CAP Bundle patients for local indication, "other": Total number \_\_\_\_\_

Total Days \_\_\_\_\_

## CARDIAC ARREST PREVENTION AUDIT TOOL

PATIENT		
Institution: _____	Has this patient been audited before? <input type="checkbox"/> YES <input type="checkbox"/> NO	
Date: _____		
CAP IDENTIFICATION		
Is a visual cue currently in place which easily identifies this patient as a CAP eligible patient?		
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Have not started this element
Were all CAP eligible patients receiving the CAP bundle?		
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> previously answered for this date
SAFETY HUDDLE		
Did a timely safety huddle occur during the most recent required timeframe? – ( <i>occur twice in last 24 hours AND/OR within one hour of meeting criteria</i> ).		
<input type="checkbox"/> YES	<input type="checkbox"/> NO	
Were all required team members present during the safety huddle? (Select "No" if no huddle occurred)		
<input type="checkbox"/> YES	<input type="checkbox"/> NO	
Is an up-to-date plan for cardiac arrest prevention posted at the bedside?		
<input type="checkbox"/> YES	<input type="checkbox"/> NO	
VITAL SIGN ADJUSTMENT		
Are patient specific vital signs parameters posted at the bedside AND programmed into the monitor?		
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Have not started this element
Did readjustment of vital sign parameters occur only with clinician bedside assessment?		
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Have not started this element
Were vital signs parameters discussed/adjudicated twice daily?		
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Have not started this element
DISCUSSION OF PRE-SEDATION		
During the most recent safety huddle OR rounds, was pre-sedation prior to noxious stimuli discussed?		
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Have not started this element
EMERGENCY MEDICATION		
Is a patient-specific dose of epinephrine available at the bedside?		
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> Have not started this element



## OPERATIONAL DEFINITIONS

ELEMENT	DEFINITION
<u>Missed Identifications</u>	Number of patients eligible for CAP (per inclusion) and are NOT enrolled in the CAP bundle as evidenced by a visual identifier (Magnet, sign, or plan)
<u>Safety Huddle</u>	<p>A formal structured discussion on the plan of care to prevent cardiac arrests in a patient. Discussion should include most likely etiology(s) of arrest and mitigation plan. The safety huddle occurs separately from patient rounds. A complete safety huddle must include:</p> <ul style="list-style-type: none"> <li>• Direct-care nurse</li> <li>• Nurse Leader (charge/unit manager)</li> <li>• Attending Physician</li> <li>• First-responding provider (Resident/Fellow/Nurse Practitioner)</li> <li>• Respiratory Therapy</li> </ul> <p>Mitigation plan should be posted in patient's room. Must occur twice a day; first huddle must occur within 1 hour of meeting criteria.</p>
<u>Vital Sign Adjustment</u>	<p>Patient-specific vital sign parameters which are posted in the patient's room AND programmed into the monitor.</p> <p>Changes to parameters require clinician evaluation and reassessment.</p>
<u>Discussion of Pre-sedation</u>	A discussion of the use of pre-sedation for noxious stimuli (e.g. suctioning/bathing) occurred during the most recent safety huddle OR rounds. Compliance is based on the discussion, not ordering or administration of an agent.
<u>Emergency Medication</u>	A patient-specific dose of epinephrine (concentration and dose to be determined by individual centers) is available at the bedside for rapid administration.
<u>Formal Code Review</u>	<p>A cardiac arrest reviewed within two weeks of the event and the learnings have been disseminated to medical and nursing staff including key code-prevention elements.</p> <p><u>Recommend Elements for Formal Code Review:</u></p> <ul style="list-style-type: none"> <li>- Occurs within 48 hours of the event</li> <li>- Vital sign, telemetry, and physiologic monitoring review within 48 hours.</li> <li>- Medical record review</li> <li>- Clinical staff involved should be present during the code review.</li> </ul>

# MONTHLY CARDIAC ARREST LOG

[illegible]