Boston Children's Hospital
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Dear Colleagues,

We are pleased to inform you that we have completed the analysis of surveys for the Consortium for Congenital Cardiac Care - Measurement of Nursing Practice (C4-MNP) state of practice assessment regarding pediatric critical care cardiac nursing education.

The purpose of the C4-MNP state of practice assessment regarding pediatric critical care cardiac nursing education was to define the current state of practice around pediatric cardiac critical care nursing education in dedicated pediatric cardiac ICUs (CICUs) and mixed pediatric ICUs (PICUs) that care for cardiac patients.

The survey questions were developed by Angela Jarden, MSN, RN, CCRN of Cleveland Clinic Children's.

The invitation to participate was sent to 37 C4-MNP centers and 26 completed the survey for a response rate of 70 percent. Below, please find the aggregate result report.

We would like to extend our heartfelt appreciation for your continued commitment to this collaborative as we work to improve outcomes for pediatric cardiovascular patients and their families.

Sincerely,

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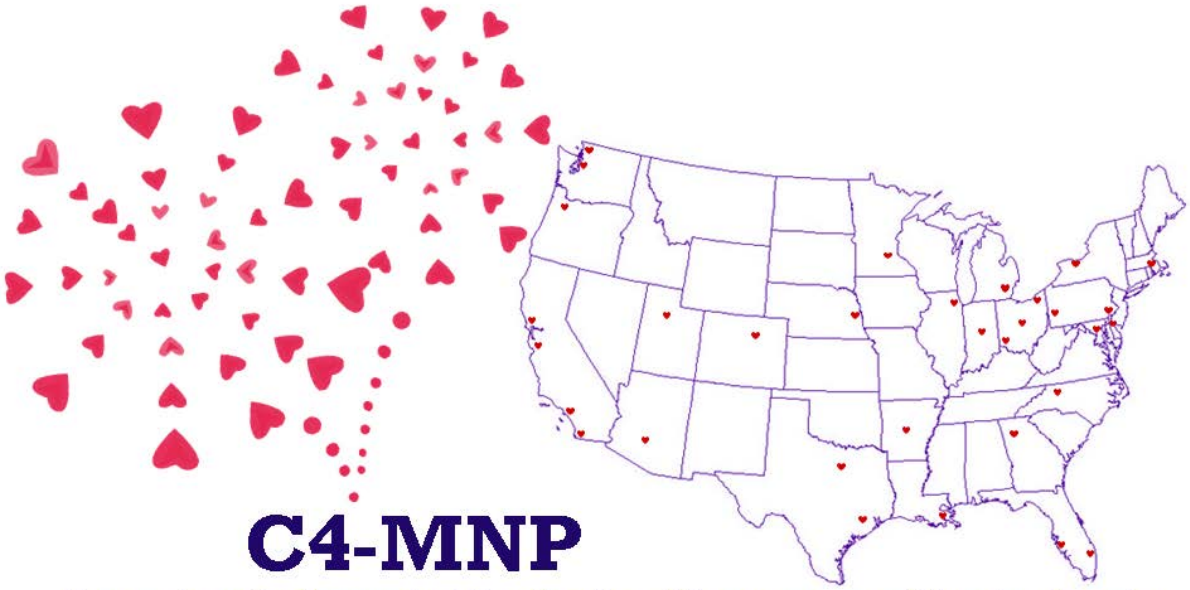
Consortium for Congenital Cardiac Care – Measurement of Nursing Practice

State of Practice Assessment Result Report

Pediatric Cardiac Critical Care Nursing Education

November 26, 2018 – December 24, 2018



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Executive Summary

Survey Overview

Increases in the number of pediatric cardiac surgical procedures and development of dedicated Cardiac Intensive Care Units (CICUs) has created the need for nurses with specialized knowledge and training. The literature, however, lacks evidence of the best practices for educating clinical nurses in this setting or mixed Pediatric Intensive Care Units (PICUs) that care for cardiac patients. In an effort to define the current state of practice for pediatric cardiac critical care education, an electronic survey was developed and sent to 37 cardiac centers in free-standing children's hospitals with 26 responses resulting in a 70 percent response rate.

Key Findings

A majority of the respondents (88.5%) represented dedicated CICUs. For all respondents, including mixed PICUs and dedicated CICUs:

- Most units have a dedicated nurse educator (88.5%) and clinical nurse specialist (73.1%)
- The majority of units (92.3%) hire new graduate nurses
- Preceptors for new hires are predominately selected by management/educator/CNS (63.9%)
- There was variation in the curriculum for both initial and continuing cardiac education:
    - Only 1 of 12 topics were covered by all respondents during initial education
    - None of the 12 topics were covered by all respondents during continuing education
- The primary method utilized for initial post-hire cardiac education (46.3%) and continuing cardiac education (50.0%) is traditional classroom lecture
- Most respondents (76.9%) reported that knowledge acquisition is evaluated via observation by the bedside preceptor

Conclusions

These findings indicate that most intensive care units that care for cardiac patients are utilizing dedicated nurse educators and clinical nurse specialists to support clinical nurses. In addition, although other methods of education, including simulation and online modules, are being utilized occasionally, traditional classroom lecture remains the primary method for education.

Next Steps

The results of this state of practice assessment regarding pediatric cardiac critical care nursing education have generated additional opportunities for advancing practice. Variation in practice identified in the curriculum, for both initial and continuing education topics, demonstrates the need for a standardized curriculum. Additionally, an objective tool to assess cardiac competency can be developed instead of relying on the observation of the bedside preceptor.

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CICU and PICU

Unit-Specific

Topic One: Demographics

Unit Category:

Respondents (N=26)	
	Frequency (%)
CICU	23 (88.5)
PICU	3 (11.5)

Number of Beds:

Respondents (N=26)	
	Mean (Range)
CICU	23 (9-48)
PICU	24 (18-28)

Topic Two: Staff

1. Does your unit have a dedicated nurse educator?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Yes	21 (91.3)	2 (66.7)
No	2 (8.7)	1 (33.3)

2. Does your unit have a dedicated clinical nurse specialist or similar role that involves a graduate-prepared nurse expert?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Yes	18 (78.3)	1 (33.3)
No	5 (21.7)	2 (66.7)

3. Does your unit hire new graduate nurses?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Yes	21 (91.3)	3 (100.0)
No	2 (8.7)	0 (0.0)

4. For all new hires (new graduates & non-new graduates), do you utilize a core group of dedicated preceptors for orientation?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Yes	17 (73.9)	2 (66.7)
No	1 (4.4)	0 (0.0)
Not consistently yes or no	5 (21.7)	1 (33.3)

5. How are preceptors selected?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Following a set amount of time on the unit	0 (0.0)	0 (0.0)
Management/educator/clinical nurse specialist discretion	21 (91.3)	3 (100.0)
Other	2 (8.7)	0 (0.0)

Of the 3 respondents reporting 'Other' method of selecting preceptors:

Response	Unit Type
Both time and discretion	CICU
Usually nurses are here at least two years before being considered to precept. New grad would be longer. In most cases it is our more experienced nurses who precept. We have hired large numbers the past few years and we are dealing with some preceptor burnout. Those who we prefer to precept are also those that are in charge, take the higher acuity patients, and are active in unit projects. We also have experienced nurses who we prefer not to precept due to communication or attitude issues. We discuss at leadership and try to match preceptors to new hires. ENCs are not part of the interview process so we need supervisor input.	CICU

6. Do you require that preceptors have a minimum number of years of experience?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Yes	12 (52.2)	0 (0.0)
No	5 (21.7)	1 (33.3)
Not consistently yes or no	6 (26.1)	2 (66.7)

Of the 12 respondents reporting "yes," how many years of experience are required for preceptors?

Respondents (N=12)	
	Mean (Range)
CICU	2.25 years (2-5)

7. Do preceptors attend a preceptor training course?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Yes	17 (73.9)	1 (33.3)
No	0 (0.0)	1 (33.3)
Sometimes	6 (26.1)	1 (33.3)

8. Are regularly scheduled meetings held with new hires and preceptors to assess progress?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Yes	20 (87.0)	2 (66.7)
No	0 (0.0)	0 (0.0)
Not consistently yes or no	3 (13.0)	1 (33.3)

Topic Three: Initial Post-Hire Unit Education

1. For INITIAL post-hire unit education, what is the primary method utilized to provide cardiac education?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Traditional classroom lectures	11 (47.9)	1 (33.3)
Online or web-based self-learning modules	2 (8.7)	0 (0.0)
Simulation scenarios	1 (4.3)	0 (0.0)
Preceptor-led education	6 (26.2)	2 (66.7)
Skill laboratories	1 (4.3)	0 (0.0)
Bedside/Just In-Time education	1 (4.3)	0 (0.0)
Other	1 (4.3)	0 (0.0)

Of the 1 respondent reporting 'Other' primary method of providing initial cardiac education:

Response	Unit Type
Equal combination of online, lecture, and simulation	CICU

2. For INITIAL post-hire unit cardiac education, how much time (in hours) is dedicated to the following?

	Mean (Range)	
	CICU (N=22)	**PICU (N=3)**
Traditional classroom lectures	38.8 (7-240)	8.7 (0-22)
Online/web-based self-learning modules	17.5 (0-80)	11.3 (0-20)
Simulation scenarios	9.1 (0-40)	1.7 (0-3)
Preceptor-led education	201.7 (0-690)	168 (48-288)
Skill laboratories	8.3 (0-32)	1.7 (0-3)
Bedside/Just In-Time education	29.8 (0-144)	3.3 (0-6)

3. For INITIAL post-hire unit cardiac education, which topics are covered?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Care of Preterm Newborns	9 (39.1)	2 (66.7)
Fetal Circulation	18 (78.3)	3 (100.0)
Cardiac Assessment	20 (87.0)	2 (66.7)
Congenital Heart Defects	22 (95.7)	2 (66.7)
Hemodynamics	23 (100.0)	3 (100.0)
Pulmonary Hypertension	19 (82.6)	3 (100.0)
Arrhythmias	21 (91.3)	2 (66.7)
Pharmacology	20 (87.0)	3 (100.0)
Low Cardiac Output Syndrome	17 (73.9)	3 (100.0)
Pacemakers	18 (78.3)	3 (100.0)
Emergency Situations	21 (91.3)	3 (100.0)
Care of Adults	11 (47.8)	1 (33.3)
Other	6 (26.1)	0 (0.0)

Note: Column totals exceed 100% due to option of selecting multiple responses.

Of the 6 respondents reporting 'Other' topic covered in initial cardiac education:

Response	Unit Type
ABG analysis, mechanical ventilation, airway management, anti-coagulation, nutrition management, cardio-pulmonary bypass, post-op management, CHD neurodevelopment, acquired heart disease, heart transplantation, lung transplantation, advanced ventilation strategies, inhaled nitric oxide, dealing with stressed families, pain management, care of the neuro patient, care of the surgical patient	CICU
Care of newborn, transplant, normal heart, single ventricles	CICU
Cardiac Output, Chest Tubes, Bypass, arterial line transducer setup	CICU
Serious harm , renal modalities, respiratory mgmt., pt./family experience, end of life, self-care, introduction to ECMO/VADs	CICU
Newborn care, initial stabilization, post-op care	CICU
Term newborn assessments, immediate post-op care, transplant, mechanical assist devices	CICU

4. What is the primary method used to evaluate knowledge acquisition for initial post-hire cardiac education?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Multiple-choice examination	2 (8.7)	0 (0.0)
Observation at bedside by preceptor	17 (73.9)	3 (100.0)
Observation during simulation	0 (0.0)	0 (0.0)
Education is not evaluated	3 (13.0)	0 (0.0)
Other	1 (4.3)	0 (0.0)

Of the 1 respondent reporting 'Other' primary method of evaluating knowledge acquisition:

Response	Unit Type
We use case studies and group discussion	CICU

5. How do you evaluate the quality of initial post-hire cardiac education?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Student satisfaction survey	8 (34.8)	0 (0.0)
Stakeholder (i.e. MDs, NPs) satisfaction survey	1 (4.3)	0 (0.0)
Standard hospital-developed education form, completed immediately after receiving education	9 (39.1)	1 (33.3)
Not formally assessed	5 (21.7)	2 (66.7)

6. How does your unit determine when individuals attend education for advanced treatment modalities?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Following a set amount of time on unit	7 (30.4)	0 (0.0)
Management/educator/clinical nurse specialist discretion	11 (47.9)	3 (100.0)
Other	5 (21.7)	0 (0.0)

Of the 5 respondents reporting 'Other' primary method of determining when individuals attend education for advanced treatment modalities:

Response	Unit Type
Introduce during orientation then mgmt./educator/CNS determine as the employee develops out of orientation	CICU
Covered during cardiac education	CICU
Availability of classes	CICU
We have an acuity system for our staff that helps them navigate their progression	CICU
Self-paced and experience clinical ladder	CICU

If education for advanced treatment modalities follows a set amount of time on the unit, how much time?

	Mean (Range)	
	CICU (N=23)	**PICU (N=3)**
Time in months	11.7 (20)	0 (0.0)

7. After a new hire completes orientation, how frequently do you assess cardiac competency, defined as nurse's knowledge in caring for pediatric cardiac patients?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Once a year/annually	8 (34.8)	1 (33.3)
Twice a year/biannually	3 (13.0)	1 (33.3)
Competency is not assessed	3 (13.0)	0 (0.0)
No consistent time frame	6 (26.1)	1 (33.3)
One time	1 (4.3)	0 (0.0)
Two times	0 (0.0)	0 (0.0)
Other	2 (8.7)	0 (0.0)

Of the 2 respondents reporting 'Other' frequency of assessing cardiac competency after a new hire completes orientation:

Response	Unit Type
Ongoing all the time	CICU
Based on the acuity system, we assess at a minimum of every 3 months	CICU

8. How do you assess cardiac competency (defined as nurse's knowledge in caring for pediatric cardiac patients)?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Multiple-choice examination	4 (17.4)	1 (33.3)
Observation at bedside by educator/clinical nurse specialist	15 (65.2)	2 (66.7)
Observation during simulation by educator/clinical nurse specialist	13 (56.5)	1 (33.3)
Competency is not assessed	4 (17.4)	0 (0.0)
Other	2 (8.7)	1 (33.3)

Note: Column totals exceed 100% due to option of selecting multiple responses.

Of the 3 respondents reporting 'Other' means of assessing cardiac competency:

Response	Unit Type
Feedback of charge and peer nurses	CICU
Peer reviews are sent to evaluating staff	CICU
Preceptor evaluation/provider feedback	PICU

Topic Four: Continuing Cardiac Education

1. If continuing education is offered by your institution, how much time (in hours) per year is cardiac education provided?

	Mean (Range)	
	CICU (N=19)	**PICU (N=3)**
Time (in hours) per year	59.4 (300)	27.7 (36)

2. For continuing education, what is the primary method utilized to provide cardiac education?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Traditional classroom lectures	11 (47.9)	2 (66.7)
Online or web-based self-learning modules	3 (13.0)	0 (0.0)
Simulation scenarios	3 (13.0)	0 (0.0)
Preceptor-led education	0 (0.0)	0 (0.0)
Skill laboratories	1 (4.3)	0 (0.0)
Bedside/Just In-time education	2 (8.7)	1 (33.3)
Other	3 (13.0)	0 (0.0)

Of the 3 respondents reporting 'Other' primary method of continuing cardiac education:

Response	**Unit Type**
Conference	CICU
Daily small group education sessions utilizing handouts, lectures, and hands on application	CICU
Simulation or Huddles	CICU

3. For continuing cardiac education, how much time (in hours) is dedicated to the following?

	Mean (Range)	
	CICU (N=23)	**PICU (N=3)**
Traditional classroom lectures	24.6 (0-96)	12.7 (0-26)
Online or web-based self-learning modules	9.7 (0-40)	0.7 (0-2)
Simulation scenarios	12.2 (1-95)	7.3 (0-18)
Preceptor-led education	3.7 (0-48)	0.0 (0)
Skill laboratories	3.6 (0-18)	0.3 (0-1)
Bedside/Just In-time education	46.7 (0-384)	6.7 (2-12)
Other	3.0 (0-8)	0.0 (0)

4. For continuing cardiac education, which topics are covered?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Care of Preterm Newborns	6 (26.1)	0 (0.0)
Fetal Circulation	6 (26.1)	0 (0.0)
Cardiac Assessment	16 (69.6)	2 (66.7)
Congenital Heart Defects	17 (73.9)	3 (100.0)
Hemodynamics	17 (73.9)	3 (100.0)
Pulmonary Hypertension	17 (73.9)	1 (33.3)
Arrhythmias	19 (82.6)	2 (66.7)
Pharmacology	14 (60.9)	2 (66.7)
Low Cardiac Output Syndrome	15 (65.2)	2 (66.7)
Pacemakers	17 (73.9)	2 (66.7)
Emergency Situations	20 (87.0)	1 (33.3)
Care of Adults	8 (34.8)	0 (0.0)
Other	8 (34.8)	0 (0.0)

Note: Column totals exceed 100% due to option of selecting multiple responses.

Of the 8 respondents reporting 'Other' topics covered for continuing cardiac education:

Response	Unit Type
Coags, psychosocial, crucial conversations, sepsis	CICU
ECMO, VAD, PALS, TRANSPLANT	CICU
Cath procedures/pressures, ECHO reports	CICU
A survey is distributed to staff yearly and feedback determines the focus areas of education	CICU
New equipment or procedures	CICU
Infection control practices; Hospital Acquired Infections; phototherapy; documentation	CICU
Care of infant	CICU
Equipment, standards of care, specific nursing procedures	CICU

5. What is the primary method used to evaluate knowledge acquisition for continuing cardiac education?

	Frequency (%)	
	CICU (N=22)	**PICU (N=3)**
Multiple-choice examination	4 (18.2)	0 (0.0)
Observation at bedside by preceptor	5 (22.7)	0 (0.0)
Observation during simulation	4 (18.2)	1 (33.3)
Education is not evaluated	7 (31.8)	2 (66.7)
Other	2 (9.1)	0 (0.0)

Note: One CICU unit did not respond.

Of the 2 respondents reporting 'Other' primary method used to evaluate knowledge acquisition for continuing cardiac education:

Response	Unit Type
Needs assessment	CICU
Hands on demonstration	CICU

6. How do you evaluate the quality of continuing cardiac education?

	Frequency (%)	
	CICU (N=23)	**PICU (N=3)**
Student satisfaction survey	10 (43.5)	1 (33.3)
Stakeholder (i.e. MDs, NPs) satisfaction survey	2 (8.7)	0 (0.0)
Standard hospital-developed education form, completed immediately after receiving education	9 (39.1)	1 (33.3)
Other	2 (8.7)	0 (0.0)

Of the 2 respondents reporting 'Other' method of evaluating the quality of continuing cardiac education:

Response	Unit Type	Count
Not evaluated	CICU	2

Additional comments about cardiac nursing education:

Response	Unit Type
We are transiting to a dedicated cardiac unit which will allow more weeks of orientation for new and experienced nurses.	PICU
New nurses are sent to a "cardiac class" after about a year of being off orientation, which consists of 4 eight hour days in a classroom.	CICU
Initial education is customized for nurses with experience, ongoing education is determined by needs assessment and expressed interest	CICU
Our program is 2 years old and we are in the process of developing a nursing curriculum as our patient volume grows.	CICU
We have a dedicated CNS and clinical coach. They provide one on one bedside education for approximately 12 - 16 hours per week for staff.	CICU
We utilize a format where once a month an attending speaks on a certain topic of interest. We call it "Coffee with Cardiology." This is done in a relaxed format that allows for questions. We record it and put it on our website for staff. Attendance is 6-8 nurses plus RTs and techs depending on acuity of unit. It is done on night shift in our bay area where nurses can attend but still be close by their patients. Currently nurses can only view videos when they are on site - we are working on a process for them to view at home but it has been a challenge. We are hoping for our advanced provider group to begin monthly or bi monthly presentations on cardiac defects (pre and post op) in 2019.	CICU
Survey evaluation of the education day, audits at bedside	CICU
We defined "initial post-hire unit education" as post-orientation advancement of knowledge required for all RNs, within 3 years of hire.	CICU

Topic 5: CICU-Specific General Education

New Graduate Nurse Education

Respondents (N=21)	
Length of time NEW graduate nurses spend:	**Mean (Range)**
In orientation (weeks)	18.7 (10-25)
In non-patient care cardiac education (i.e. classroom, simulation) (hours)	74.1 (8-180)
In preceptor-supported cardiac patient care assignments (hours)	558.5 (300-764)

Non-New Graduate Nurse Education

Respondents (N=23)	
Length of time NON-new graduate nurses spend:	**Mean (Range)**
In orientation (weeks)	11.3 (4-18)
In non-patient care cardiac education (i.e. classroom, simulation) (hours)	55.3 (8-308)
In preceptor-supported cardiac patient care assignments (hours)	358.5 (108-568)

Continuing Cardiac Education

Is continuing cardiac education offered consistently by your institution?

Respondents (N=23)	
	Frequency (%)
Yes	19 (82.6)
No	4 (17.4)

Topic 6: PICU-Specific General Education

New Graduate Care/Education

Do new graduates care for cardiac patients?

Respondents (N=3)	
	Frequency (%)
Yes	1 (33.3)
No	2 (66.7)

If Yes:

Respondents (N=1)	
Length of time NEW graduate nurses spend:	**Response**
In orientation (weeks)	14
In non-patient care cardiac education (i.e. classroom, simulation) (hours)	22
In preceptor-supported cardiac patient care assignments (hours)	288

Non-New Graduate Education

Respondents (N=3)	
Length of time NON-new graduate nurses spend:	**Mean (Range)**
In orientation (weeks)	6.3 (2-9)
In non-patient care cardiac education (i.e. classroom, simulation) (hours)	14 (4-22)
In preceptor-supported cardiac patient care assignments (hours)	96 (24-216)