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Michele Readman

University of San Diego, mreadman@sandiego.edu

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UNIVERSITY OF SAN DIEGO

Hahn School of Nursing and Health Science

DOCTOR OF NURSING PRACTICE

DEVELOPMENT OF A NURSE PRACTITIONER DRIVEN PROGRAM FOR
CARDIOLOGY PROVIDERS TO INCREASE KNOWLEDGE AND AWARENESS OF
NEURODEVELOPMENTAL ASSESSMENT NEEDS IN CHILDREN WITH CONGENITAL
HEART DEFECTS

by

Michele A. Readman, MSN Ed, RN, PHN, CPN, CDCES

A Doctor of Nursing Practice Portfolio presented to the
FACULTY OF THE HAHN SCHOOL OF NURSING AND HEALTH SCIENCE
UNIVERSITY OF SAN DIEGO

In partial fulfillment of the

requirements for the degree

DOCTOR OF NURSING PRACTICE

May 9, 2022

Martha Fuller, PhD, PPCNP-BC, Faculty Advisor

Elizabeth Valles, DNP, FNP-C, PNP-C, Clinical Mentor

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Documentation of Mastery of DNP Program Outcomes

Final Manuscript

Development of a Nurse Practitioner Driven Program for Cardiology Providers to Increase
Knowledge and Awareness of Neurodevelopmental Assessment Needs in Children with
Congenital Heart Defects

Michele A. Readman

University of San Diego
Hahn School of Nursing

Abstract

Children diagnosed with congenital heart defects are at increased risk for neurodevelopmental delays. Timely referral of patients to a neurodevelopmental clinic for initial evaluation and referrals to support services can improve learning outcomes, provide early intervention for neurodevelopmental disorders, and mediate factors affecting low quality of life. Nationally, a substantial proportion of pediatric cardiologists are not referring children for neurodevelopmental evaluation. A review of patient referrals to a Cardiac Neurodevelopmental Clinic within an urban children's hospital demonstrated an opportunity to improve provider awareness and knowledge of referral recommendations. Using the Iowa Model of Evidence-Based Practice to Promote Quality Care, an educational intervention was developed to improve cardiology provider's awareness of the Neurodevelopmental Clinics and knowledge of the need to refer children diagnosed with congenital heart defects for care. The education was emailed to pediatric cardiology providers including physicians, nurses, and management. A pre/post assessment of provider knowledge and awareness was performed to measure the impact of the intervention. Provider awareness of the Cardiac Neurodevelopmental Clinic increased by 42% and knowledge of the structure and function of the Clinic doubled following completion of the education. Most providers, 73%, agreed or strongly agreed that they were likely to refer patients to the Clinic in the future. Education is an effective way to improve provider knowledge, awareness, and increase the likelihood of futures referrals which will lead to early identification and early intervention, which will then contribute to improvements in the quality of life of patients with congenital heart defects.

Keywords: Heart Defects, Congenital; Evidence-Based Practice; Referral and Consultation;
Quality of Life, Neurodevelopmental Evaluation

Development of a Nurse Practitioner Driven Program for Cardiology Providers to Increase
Knowledge and Awareness of Neurodevelopmental Assessment Needs in Children with
Congenital Heart Defects

Congenital heart defects are a common birth defect globally. Approximately 40,000 children born in the United States each year will be affected by a congenital heart defect (CDC, 2022). Approximately one in four of these children will have a critical congenital heart defect, such as hypoplastic left heart syndrome, single ventricle, tetralogy of Fallot, total anomalous pulmonary venous return, or transposition of the great vessels, which will require significant procedural or surgical intervention within the first year of life (Bakker et al., 2019). These types of structural heart defects disturb the blood flow through the heart and lungs which decreases the oxygen uptake and or delivery to other organs during systemic circulation causing organ damage and potentially deadly complications. Survival rates for children with congenital heart disease are improving with advancements in prenatal diagnosis and advancing treatment technology (Oster et al., 2013 & Best & Rankin, 2016). A collaborative global statistical analysis published in 2020 estimates individuals under 20 years of age represent 279,320 of the 466,566 cases of congenital heart disease in the United States (GBD 2017 Congenital Heart Disease Collaborators, 2020).

As survival rates increase, studies have revealed many complications that may manifest in the children who are living with corrected critical congenital heart defects. The potential long-term effects for a child with critical congenital heart disease were formally recognized in 2012 when the American Heart Association (AHA), with the support of the American Academy of Pediatrics (AAP), issued their scientific statement concluding that “children with congenital

heart defects are at increased risk of developmental disorder or disabilities or developmental delay.” (Marino et al., 2012, p. 1143). The statement provided recommendations for management to include “periodic developmental surveillance, screening, evaluation and reevaluation throughout childhood” (Marino et al., 2012, p. 1143) to improve the children’s outcomes in academic, cognitive, psychosocial, adaptive, and executive functioning.

Downing et al. (2021) found that disabilities including hearing or vision, cognitive, mobility, self-care, and factors affecting independent living, are five to eight times more common in individuals with congenital heart defects, as compared to the general population, and 40% of young adults with congenital heart defects will have some type of disability. These disabilities include neurodevelopmental changes such as decreases in cognitive, adaptive, and executive function, decreased mean Intelligence Quotient (IQ), and difficulties with working memory, impulse control, and mental flexibility. These may adversely impact independence in activities of daily living and cause mild to severe academic impairments (Calderon & Bellinger, 2015, Liamlahi & Latal, 2019 Nattel et al., 2017, Wernovsky et al., 2018). Decreased expressive language ability and poor fine or gross motor skills can cause communication breakdown leading to difficulties in interpersonal relationships. Increased risk of neuropsychiatric disorders such as autism spectrum disorder, attention deficit hyperactivity disorder, anxiety, depression, or oppositional defiant disorder are also commonly seen among children with congenital heart defects. (Nattel et al., 2017, Wernovsky et al., 2018)). In addition to disability, there are notable decreases in the self and parent reported quality of life scores for children with congenital heart defects (Derridj et al., 2022, Kaugars et al., 2017). Early developmental follow-up, including assessment of neurological, motor, cognitive, language development and behavioral outcomes with referrals to specialized support services and intervention therapies is crucial to minimizing

the risks associated with neurodevelopmental delay due to congenital heart defects (Spittle et al., 2021).

There is substantial evidence to support the need to refer children affected by congenital heart disease for specialized multidisciplinary surveillance due to the potential systemic effects of their condition (Billotte et al., 2021, Naef et al., 2017). Despite this, a study conducted in 2019 suggested that there may be a deficit in provider knowledge regarding the AHA recommendations for neurodevelopmental assessment and follow up, reporting that only 54% of pediatric cardiologists are only “somewhat familiar” and 18% are “not familiar” with the statement (Milanaik et al., 2019). In addition, this study showed that 25% of pediatric cardiologist do not refer for neurodevelopmental follow-up and 31% do not have a neurodevelopmental program (Milanaik et al., 2019). Other studies to evaluate use of neurodevelopmental resources have also demonstrated poor utilization of services, which may have been related to lack of referral (Mussatto et al., 2018 & West, et al., 2021).

A retrospective review of utilization rates of a cardiac neurodevelopmental clinic within the heart institute at an urban, well recognized children’s hospital, revealed lower than expected utilization rates, resembling the findings of other studies. The heart institute participates in multiple national research collaboratives committing themselves to contribute to the collection and analysis of patient data to create and improve best practices for children with congenital heart defects. This dedication to development of, and adherence to, best practices supported the cardiac neurodevelopmental clinic’s membership in the national Cardiac Neurodevelopmental Outcomes Collaborative, an organization dedicated to the research and development to support the neurodevelopmental aspects of congenital heart defects. When reviewing utilization rates of the clinic, which had been established for two years, it was determined that approximately 15%

of the providers were referring to the clinic. Of the patients seen in the cardiac neurodevelopmental clinic for assessment and evaluation, 90% needed resources to support their development and/or quality of life.

A nurse practitioner driven program was developed to increase pediatric cardiology provider awareness of the need to refer qualifying patients to the cardiac neurodevelopmental clinic based on the recommendations of the AHA and the AAP. A second goal of the program was to improve provider knowledge of the structure and function of the cardiac neurodevelopmental clinic. The long-range goal of the program is to increase the referrals to the cardiac neurodevelopmental clinic which will improve the outcomes and support for children with congenital heart defects treated within the heart institute.

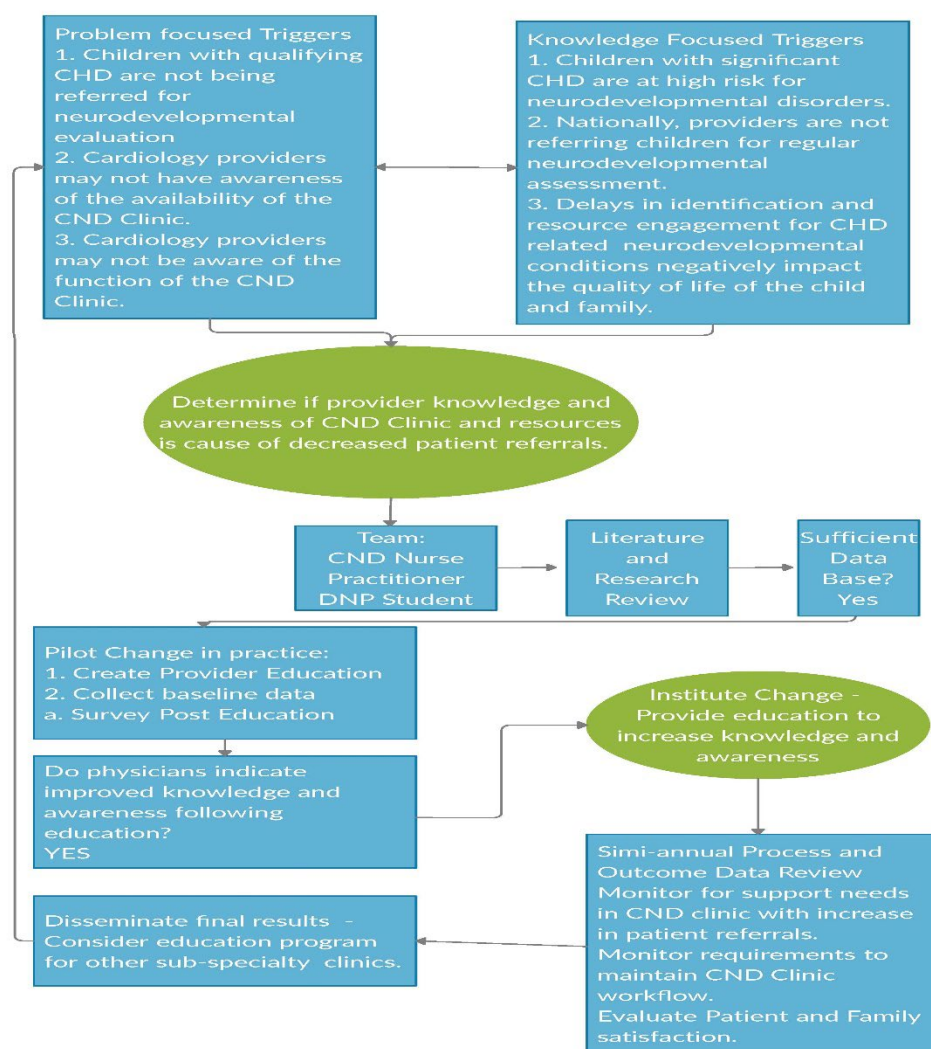
Materials and Methods

Using the Iowa Model (Buckwalter et al., 2017), a systematic approach was constructed to identify the key triggers, pilot change, evaluate outcomes, and identify processes to improve institutional practices, see Figure 1. Identification of the key triggers, both problem focused and knowledge focused, acted to identify the potential stimuli for the small number of provider referrals and as rationale to validate the investigation. An initial literature review demonstrated that lack of provider knowledge and awareness of guidelines and resources as a substantiated rationale for poor referrals (Milanaik et al., 2019, Mussatto et al., 2018 & West, et al., 2021). A second literature review supported provider education to improve appropriate ordering of referrals (Busch et al., 2018, Fields, 2018). This information was the basis for the nurse practitioner driven team to create a brief educational program for the heart institute providers and staff. Hospital Institutional Review Board and University Institutional Review Board evaluation was completed with both entities concluding the proposed evidence-based practice project would

be an exempt study due to no human research. Upon receipt of these approvals, a recorded presentation was developed to provide information regarding availability and the goals of the cardiac neurodevelopmental clinic, the institution's affiliation with the Cardiac Neurodevelopmental Outcome Collaborative, the developmental risks associated with congenital heart defects, the American Heart Association and American Academy of Pediatrics recommendations, the need for early patient intervention to improve patient outcomes, the patient experience when referred to the cardiac neurodevelopmental clinic, recommended times for referrals, an algorithm to identify qualifying patients to refer, and directions on how to place a referral in the electronic medical record system.

Figure 1

Iowa Model of Evidence-Based Practice - Improving Cardiology Provider Awareness of the Cardiac Neurodevelopmental Clinic



Note. Adapted from White, S.R., & Spruce, L. (2015). Perioperative Nursing Leaders Implement Clinical Practice Guidelines Using the Iowa Model of Evidence-Based Practice. AORN journal, 102 1, 51-56.

To measure knowledge increase, pre- and post-education surveys were constructed. The Likert-based surveys were designed to assess changes in knowledge and awareness of clinic function and availability and likelihood of future referrals. The surveys were designed to protect participant identification asking only if the participant was an inpatient or outpatient provider and the provider's level of care (physician, nurse practitioner, registered nurse [lead nurse or case manager], or leadership). The two surveys were styled in this fashion to increase the likelihood of completion and encourage participant transparency regarding knowledge and awareness of practices and resources (Sammur, 2021). A web based anonymous survey collection company was utilized to collect and manage survey data. A unique password was used to protect all survey data.

The educational presentation and survey information was distributed by email to the department email list serve so that all survey and educational participants received the information in a uniform and timely manner. This method of education distribution also allowed the participants to complete the education at their convenience and as their schedule permitted. The email list serves included inpatient and outpatient cardiology physicians, cardiology nurse practitioners, cardiology physician assistants, members of the leadership team within the cardiology department, and registered nurses working in the role of case management, cardiothoracic intensive care unit lead or neonatal intensive care unit lead. Leadership team members and registered nurses were included in this education as a support to our provider partners with the understanding that these multidisciplinary team members support discharge planning and assist in the referral coordination of patients seen in the inpatient and outpatient setting.

A simplified email format was utilized. The body of the email contained a concise introduction and three bullet points to instruct the participant to complete the pre-education survey, review the education, then complete the post education survey. The pre-education survey link was posted in the email, the post-education survey link was embedded in on the final slide of the recorded education presentation, which was attached to the email. The email requested that the surveys and education be completed within seven days. A reminder email was sent on day six, extending the deadline three days, providing a total survey availability of ten days. The reminder email contained the same information and instructions as the first email as well as information regarding the extension of the survey availability.

Results

Participation in the survey peaked day two following the initial email and then again on day six when the reminder email was sent. A total of twenty-four (N=24) members of the pediatric cardiology department completed the pre-education survey, as represented in Table 1. The number of inpatient and outpatient provider responses were almost equal. Most respondents were physicians followed by case managers or intensive care unit lead nurses.

Eleven nurses and/or physicians completed the post-education survey, as reported in Table 2. The number of inpatient and outpatient provider responses were almost equal. There were no responses from leadership or nurse practitioner/physician assistant providers, although four had completed the pre-education survey. Approximately 50% of the physicians and registered nurses who completed the pre-education survey also completed the post education survey.

Table 1*Survey Participants Pre-Education*

<i>Provider Role</i>	Pre-Education Survey Results		
	<i>Inpatient Provider</i>	<i>Outpatient Provider</i>	<i>Not Answered</i>
Leadership	0	1	1
Nurse Practitioner or Physician Assistant	1	1	0
Registered Nurse (Case Manager or NICU/CTICU Lead)	7	1	0
Physician	4	8	0
Total	12	11	1

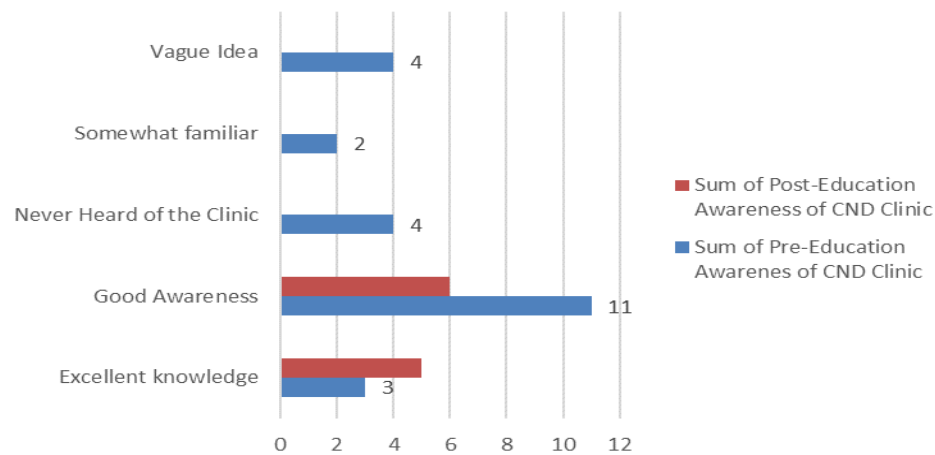
Table 2*Survey Participants Post-Education*

<i>Provider Role</i>	Post-Education Survey Results		
	<i>Inpatient Provider</i>	<i>Outpatient Provider</i>	<i>Not Answered</i>
Leadership	0	0	0
Nurse Practitioner or Physician Assistant	0	0	0
Registered Nurse (Case Manager or NICU/CTICU Lead)	4	1	0
Physician	1	5	0
Total	5	6	0

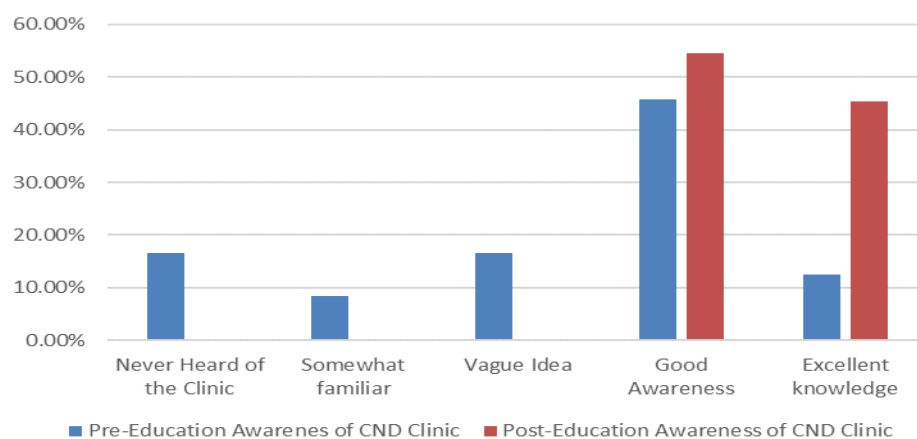
Provider awareness of the Cardiac Neurodevelopmental Clinic is displayed in Figure 2. Ten of the twenty-four participants (41.67%) indicated minimal awareness of the Cardiac Neurodevelopmental Clinic prior to receiving education. Fourteen of the twenty-four participants (58.33%) of the participants indicated good/excellent awareness of the Cardiac Neurodevelopmental Clinic prior to receiving education. Figure 3 reveals an increase of 42% in the awareness of the Cardiac Neurodevelopmental from minimal to good/excellent provider awareness following education.

Figure 2

Cumulative calculation of provider awareness of Cardiac Neurodevelopmental Clinic.

**Figure 3**

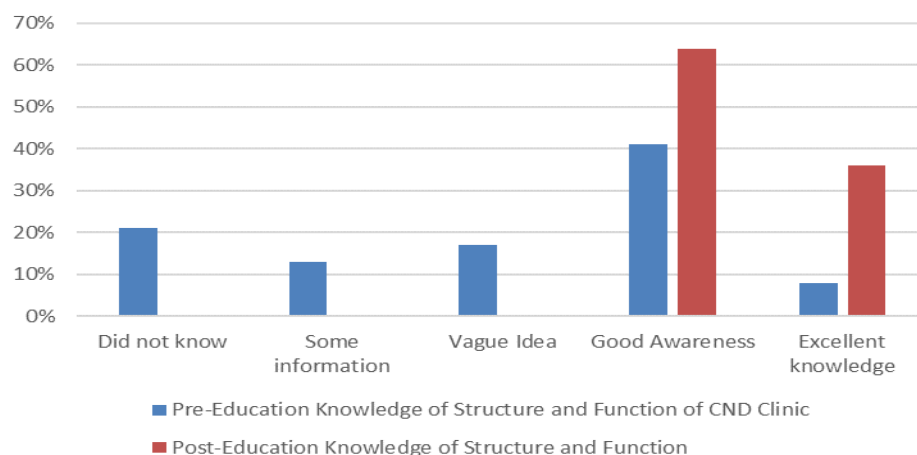
Improvement in awareness of Cardiac Neurodevelopmental Clinic following education.



Provider knowledge of the structure and function of the Cardiac Neurodevelopmental Clinic doubled following provider completion of the education, as seen in Figure 4. Twelve of the 24 participants (50%) had minimal knowledge of the structure and function of the Cardiac Neurodevelopmental Clinic. Following completion of the education, all participants indicated good/excellent knowledge of the structure and function of the clinic.

Figure 4

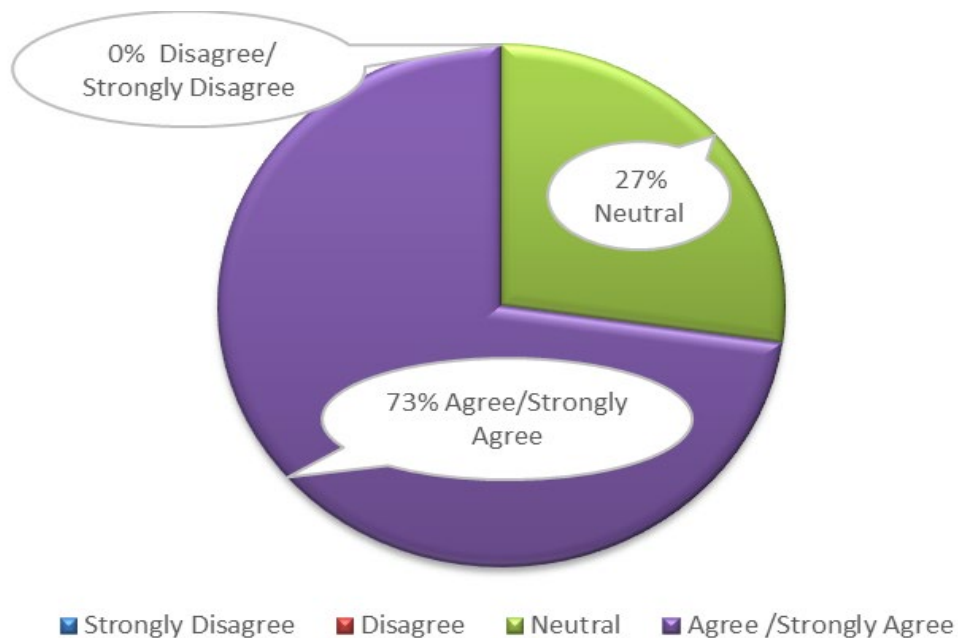
Cumulative calculation of provider knowledge of structure and function of Cardiac Neurodevelopmental Clinic.



The final question of the post-education survey addressed the likelihood of the provider to refer patients to the Cardiac Neurodevelopmental Clinic based on the information provided by the education. Eight of the eleven respondents to the post education survey indicated they were likely to refer patients to the Cardiac Neurodevelopmental Clinic. There were three respondents who indicated they were neutral in their likelihood to refer patients. There were no responses indicating that the provider would not refer their cardiology patients.

Figure 5

Likelihood of future patient referrals to Cardiac Neurodevelopmental Clinic after receiving and reviewing education.



Discussion

There was diverse participation in the pre-education survey among all levels of participants within the Pediatric Cardiology Department. This diversity among participants provides insight into the level of understanding of patient neurodevelopmental assessment resources among the multidisciplinary team. Additionally, understanding the awareness of the staff and providers who work in the inpatient versus the outpatient setting is significant in understanding variances in the timing of referrals for patients. Staff and providers who are primarily in the inpatient setting ideally should be the first to refer for initial assessment, while outpatient staff and providers would primarily refer for future follow-up assessments. Participation by nurse practitioners, physician assistants, and leadership staff was minimal in the pre-education survey, which would have been helpful to better understand the knowledge the

non-physician provider and leadership staff since it is a provider level that was not well discussed in the literature review completed for this project.

The post-education survey did not have the same diverse participation as the pre-education survey. This may have been related to the education content and the perception that the post-education survey did not need to be completed if the participant identified themselves as someone who does not place referrals. Reinforcing the value of supporting team members supporting providers by notifying them of referral opportunities may be helpful in future education. Another contributing factor to the decrease in post-education survey completion may have been that the pre-education survey link was available in the body of the email with instructions on how to complete the education. The post education survey was available on the last slide of the education. The survey link was included on the last slide of the education to encourage completion and save time from exiting the education PowerPoint and returning to the email, however an increase in participation may have been possible if the link was available in the email where the instructions were, as well as the PowerPoint.

The outcomes of this project demonstrate that provision of education effective in increasing provider awareness of clinic availability, increasing knowledge of the structure and function of the clinic, and increasing the likelihood of referrals to the Cardiac Neurodevelopmental Clinic. The provider responses to the survey correlate with the findings of the study completed by Milanaik, et al. (2019), which found that many cardiology providers had limited knowledge regarding neurodevelopmental clinic availability as a referral option for children with congenital heart defects. Following the education of the patient, awareness of the clinic improved by 42%, which will help to mitigate the barrier of lack of awareness of clinic accessibility for future patient referrals.

Provider responses reporting good/excellent knowledge of the structure and function of the Cardiac Neurodevelopmental Clinic doubled following education. This knowledge improvement is aimed at positively supporting staff and providers in their decision to refer their patients to the clinic. An additional benefit of improved provider knowledge of clinic function is the increase in the provider's ability to encourage patients and families to follow through on their appointments with the clinic. Key members of the staff and providers are now aware of the clinic's process and availability of resources that can palliate the effects of congenital heart defects on the neurodevelopment of the child and the effect of medical management on the quality of life of the patient and their family.

After reviewing the educational presentation, most staff and providers indicated that they would be likely to refer patients to the Cardiac Neurodevelopmental Clinic. There were 27% of the respondents who responded that they were neutral regarding the impact of the education presentation on future referrals. The possible rationale for a response of neutral may be that the respondent may be a provider that does not issue the referral due to the role of leadership or nursing. Another explanation may be that the education had a minimal impact on the provider's current practice since the provider may already be aware and actively referring their patients to the clinic as recommended.

Cost vs Benefit

This project was aimed to address the immediate and long-term impact of neurodevelopmental outcomes in children with congenital heart defects. Cohen & Earing (2018) note that neurocognitive deficits among adults with history of congenital heart defects leads to lower educational attainment, increased unemployment, decreased relationships/marriages, and depression, all of which contribute to patient's quality of life. Early assessment and access to

necessary interventions would provide a reduction of the societal burden of untreated or undertreated neurodevelopmental disorders.

The cost of this project was minimal. There was a nominal fee for the online survey company, the cost associated with the time to create the education and the cost associated with staff and provider time to review the education. Additionally, there is anticipation of an increase in cost associated with utilization of additional medical resources related to increased referrals, however those costs would be offset by the improvement in patient outcomes resulting from the decrease in negative contributing factors related to absence of early interventions to address neurodevelopmental disorders. Other balancing factors include improved compliance with AHA and AAP guidelines, improved contribution to determining best practices through the reporting of data to the national registry, and increased patient satisfaction with care providers.

Limitations

The pre and post education surveys were only open for ten days and were not linked. The design of this survey minimized the ability to track improvement specific to the individual completing the survey. In future surveys it is recommended that the pre and post education survey be linked while maintaining anonymity to track outcomes more specifically. Additionally, allowing free text opportunities to participants in the survey may improve understanding of participant responses to questions regarding future referrals. Increasing the time of availability of the surveys may increase the number of participants, thereby further substantiating the value of education to increase referrals of children with congenital heart defects to neurodevelopmental clinics for initial assessment and follow up. Survey questions could also be improved to delineate provider roles. This may have an impact on future referral prediction, since support roles will not

directly refer patients for services, but instead recommend and support patient referrals in collaboration with the physician or non-physician provider.

During the initial development and implementation of this project, the Cardiac Neurodevelopmental Clinic was undergoing process changes to improve patient access. This improvement project may have had some impact on provider knowledge of structure and function of the clinic, as updated information was reviewed during the education.

Since participation rates for the post-education survey were less than half that of the pre-education survey, the effectiveness of this project may be more substantial than the data outcomes were able to illustrate. Future follow-up to referral rates will be necessary to determine the true efficacy of this project.

Recommendations

Continued assessment of the long-term goal of increasing the number of referrals to the Cardiac Neurodevelopmental Clinic should be performed at regular intervals. During the time the clinic was closed for process improvements, patients who received a referral to the neurodevelopmental clinic were not seen. Evaluation of long-term referral rates should be adjusted in consideration of the potential impact of clinic closure on provider referral rates. Continued assessment of clinic workflow efficiency clinic and clinic support requirements are also important in anticipation of increasing referral rates.

Depending on the long-term outcome of referral rates, further study of barriers for patients with congenital heart defects receiving timely neurodevelopmental assessment and follow-up as recommended by the AHA and AAP may be required. This may include a review of system processes within the institution to evaluate barriers to placement of referrals to the appropriate neurodevelopmental clinic. Literature also suggests consideration of actual or

perceived barriers experienced by patients as another potential barrier to timely neurodevelopmental assessment among children with congenital cardiac defects (Mussato et al., 2018). An increase in provider referrals but maintenance of the same number of patients seen in the Cardiac Neurodevelopmental Clinic may require further exploration of actual or perceived barriers by patients in scheduling timely assessment and follow-up in the clinic.

The use of provider education to increase patient referrals for specialized assessment and potential recommendations to other support services may be effective in other subspecialty clinics. Collaboration with other clinics and clinicians to share these best practices may improve patient outcomes among other clinics designed to support the multidisciplinary needs of patients with complex needs.

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This evidence-based practice project received no specific grant from any funding agency, commercial or not-for-profit sectors.

Conflicts of Interest

None.

Ethical Standards

The Institutional Review Board review within the tertiary medical was not required due to a new evidence-based practice committee review process that determined that the proposed evidence-based practice project would be Institutional Review Board exempt due to no human subject research being conducted. The University Institutional Review Board evaluation also found the project would be an Institutional Review Board exempt study.

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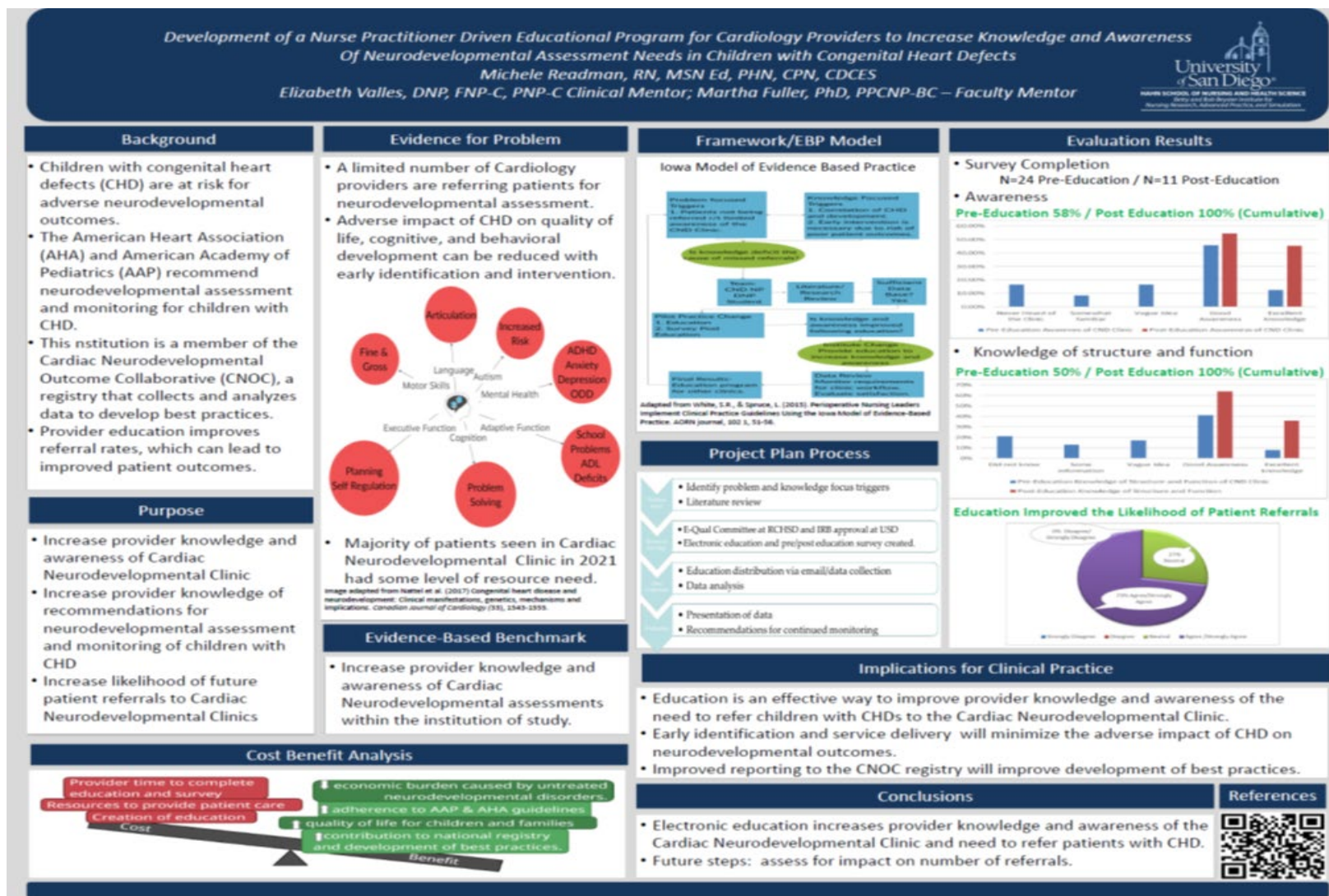
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Appendix A


Poster Presentation



Appendix B

PowerPoint Stakeholder Presentation





Development of a Nurse Practitioner Driven Program for Cardiology Providers to Increase Knowledge and Awareness of Neurodevelopmental Assessment Needs in Children with Congenital Heart Defects


Michele Readman, MSN, RN, PHN, CPN, CDCES
Elizabeth Valles, DNP, CPNP-PC, FNP-C, Clinical Mentor
Martha Fuller, PhD, PPCNP, Faculty Advisor

University of San Diego

1

Background

- Approximately 40,000 children are born in the U.S. with a Congenital Heart Defect (CHD)
 - 1 in 4 will have a critical congenital heart defect
- 40% of young adults with congenital heart defects will have some type of disability
- Studies suggest a national knowledge deficit among cardiology providers regarding recommendations for neurodevelopmental assessment and follow up
- Utilization rates of the Cardiac Neurodevelopmental Clinic (CND) have been lower than anticipated
- The American Heart Association (AHA) and American Academy of Pediatrics (AAP) scientific statement recommends periodic developmental, behavioral, and mental health screening and evaluation throughout childhood



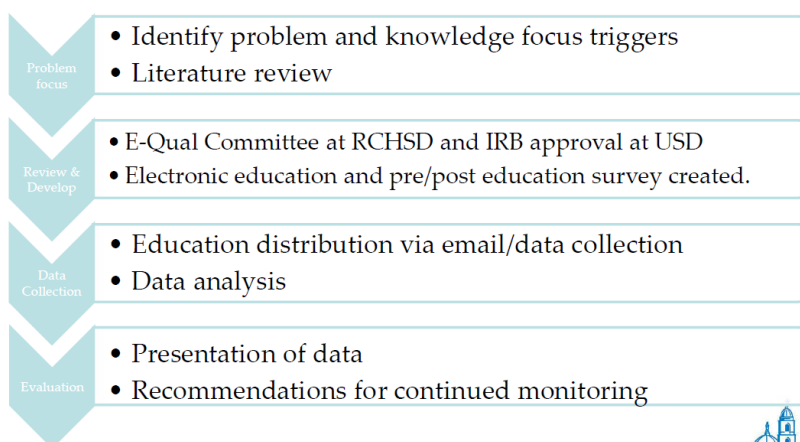
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Synopsis of the Evidence

Author(s) Name of article	Evidence Ranking	Summary of Evidence
Derridj et al. (2022). Quality of life of children born with a congenital heart defect.	IV	The quality of life of children with a congenital heart defect who required a hospital admission for intervention is reduced notably at the age of 8 years.
Marino et al. (2012). Neurodevelopmental outcomes in children with congenital heart disease: Evaluation and management.	VII	Children with CHD are at increased risk of developmental differences. Recommendation for routine screening, surveillance and re-evaluation throughout childhood to identify deficits and allow for prompt intervention.
Milanaik et al. (2019) Assessment of pediatric cardiologist adherence to the 2012 American Heart Association recommendations on neurodevelopmental evaluation and management of children with congenital heart disease	IV	National study of cardiac providers indicates that 54% of pediatric cardiologists are somewhat familiar and 18% are not familiar with the AHA/AAP recommendations for neurodevelopmental screening. 25% of providers do not refer for neurodevelopmental follow up.
Nattel et al. (2017) Congenital heart disease and neurodevelopment: clinical manifestations, genetics, mechanisms, and implications.	III	Provides correlational information between Neurodevelopmental delays and CHD. Article is a review of current literature, recommendations, and future opportunities for improving outcomes.
West et al. (2021). Utilisation of early intervention services in infants with congenital heart disease following open-heart surgery.	IV	Review of assessment and medical history forms were reviewed to analyze utilization of developmental referrals/services. Findings include lack of utilization may be due to poor availability of neurodevelopmental programs, lack of provider referral and patient barriers to access/value of care.

5

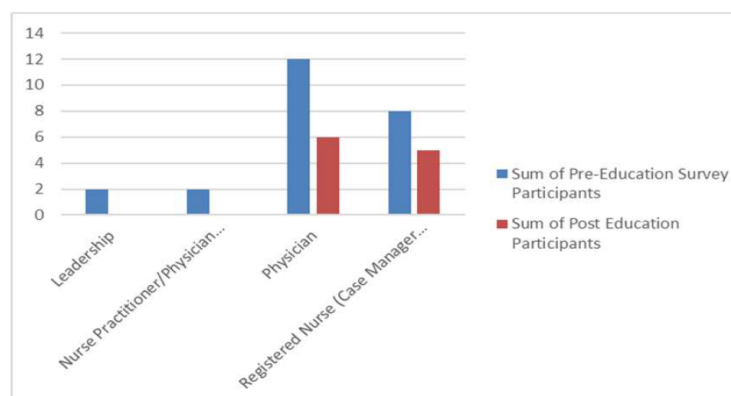
Project Implementation



6

Outcomes – Survey Participants

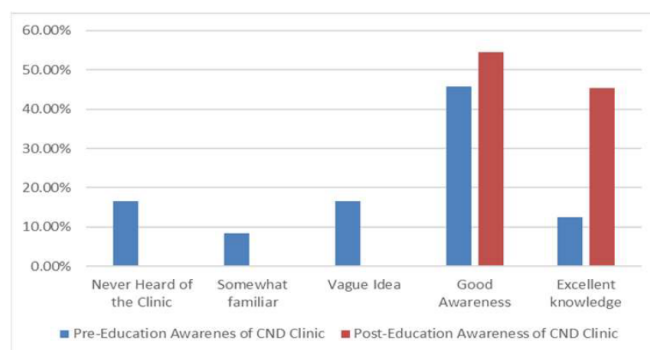
Pre-Education Survey N=24 / Post Education Survey N=11



7

Outcomes – Provider Awareness of CND Clinic

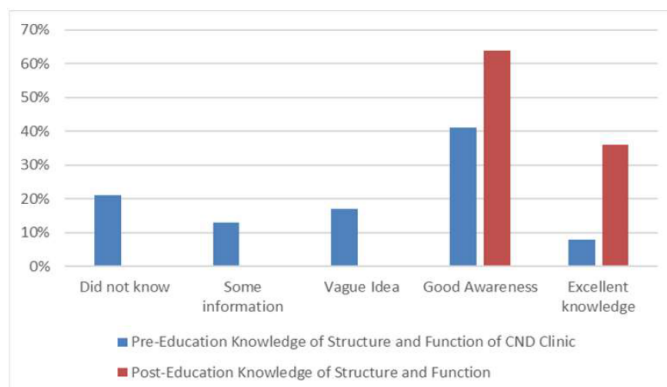
Cumulative Calculation of Good/Excellent Awareness
Pre-Education 58.33% / Post Education 100 %



8

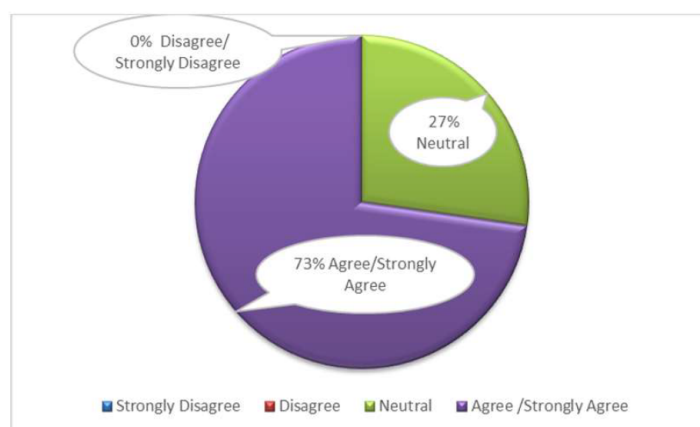
Outcomes – Provider Knowledge of Structure and Function of CND Clinic

Cumulative Calculation of Good/Excellent Knowledge
Pre-Education 50% / Post Education 100 %



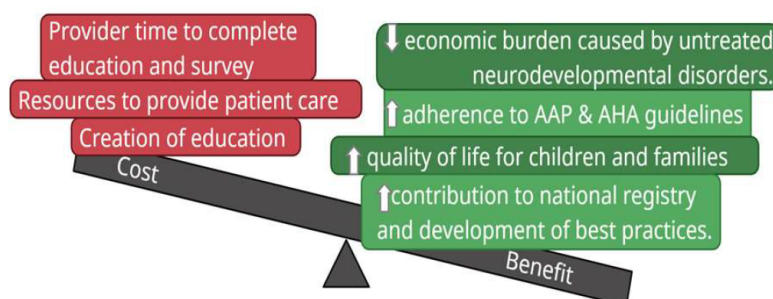
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Outcomes – Electronic Education Improved Likelihood of Future Patient Referrals



10

Cost-Benefit Analysis



11

Implications for Clinical Practice

- Electronic education is an effective way to improve provider knowledge, awareness and increase the likelihood of future referrals.
- Early identification and implementation of resources for neurodevelopmental deficits diminishes the adverse impact of congenital heart defects on quality of life, cognitive and behavioral outcomes.
- Improved data reporting to the CNOC registry will improve development of best practices.

12

Sustainability

- Ongoing assessment of referrals to be completed at regular intervals following education.
- Ongoing assessment of additional support needs in CND clinic as patient referrals increase.
- Ongoing assessment of CND workflow for efficiency.
- Collaboration and shared best practice of provider education with other sub-specialty clinics.



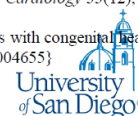
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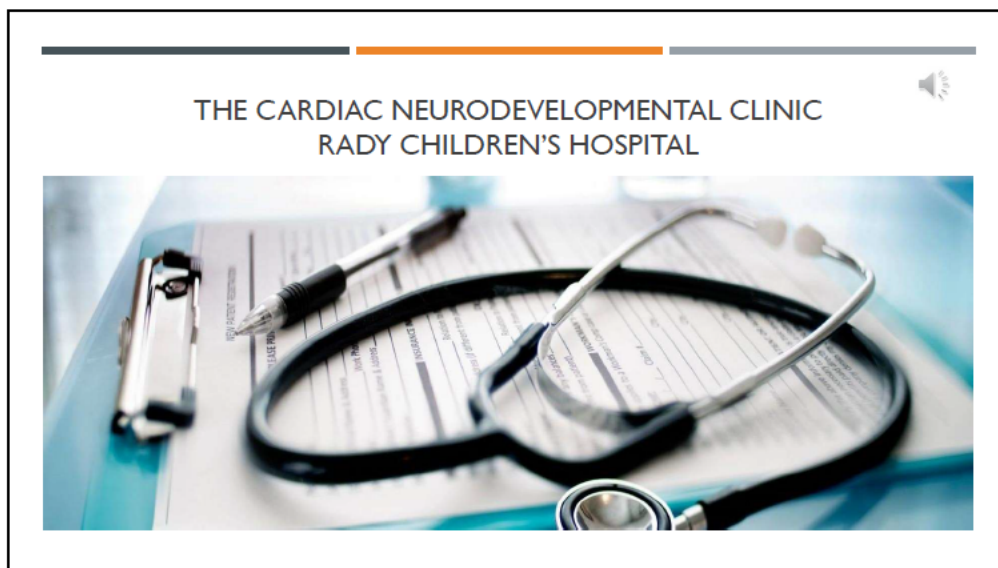
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Appendix C

Provider Education




1

WHAT IS THE CARDIAC NEURODEVELOPMENTAL CLINIC (CND)?



Goals of CND

- Assess and address potential neurodevelopmental differences associated with congenital heart defects.
- Provide early intervention resources and referrals to support patient and family cognitive, behavioral and quality of life needs.
- Provide follow up from ages 3.5 to 18 years for potential changes in neurodevelopmental status or mental health status or patient needs.
- Collect, organize, and report data to the CNOC registry to promote continued advancement in best practices for cardiology patients.



Cardiac Neurodevelopmental Outcome Collaborative

Rady Children's Hospital is a member of the Cardiac Neurodevelopmental Outcomes Collaborative (CNOC), a Clinical Registry that is collecting and analyzing data to determine and implement best practices related to neurodevelopmental services for children with pediatric and congenital heart disease through clinical, quality improvement and research initiatives (CNOC, 2022)

2

WHY REFER TO THE CARDIAC NEURODEVELOPMENTAL CLINIC (CND)

- Children with structural heart defects, cardiomyopathy and PPHN are at increased risk of:
 - neurodevelopmental delays
 - decreased learning outcomes,
 - increased risk of autism and ADD/ADHD
 - lower quality of life scores for both child and their parent
- American Heart Association (AHA) Scientific Statement Recommendation/American Academy of Pediatrics (2012)
 - Recommends periodic developmental surveillance, screening, evaluation and reevaluation throughout childhood
- Early identification, education, and prompt referral for developmental, behavioral, and mental health resources improve health related quality of life



3

THE PATIENT EXPERIENCE IN THE CARDIAC NEURODEVELOPMENTAL CLINIC

Any child with a structural heart defect, PPHN or cardiomyopathy should be referred to either the NICU Neurodevelopmental Clinic (NND) if under 3 years of age or the Cardiac Neurodevelopmental Clinic (CND) if over 3 years old

Patients with MyChart access are contacted via MyChart and asked to complete the following forms:
 1) patient/family history form
 2) Patient quality of life questionnaire
 3) Parent quality of life questionnaire.
 If there is no MyChart access, parents/children will be asked to complete these documents at their in-person visit.

Intake interview is conducted with parent and patient. A simple physical & neuromuscular exam are also performed. Appropriate neurodevelopmental testing is then assigned via online tools the parent and/or patient to complete. In person testing may also be required.
 This visit can be done via telemedicine.

Following completion and scoring of all testing materials, a visit is scheduled to review the results and discuss the plan with the patient and family.
 There is opportunity for questions and answers from the patient and family regarding next steps and future evaluations.

The CND Provider advises patients and their family of resources and referrals available for support. Resources may include information regarding IEP/504 accommodations, mental health resources, referrals to appropriate clinics to support continuing care and follow up recommendations. Documentation of visit and recommendations are available to the referring provider and PCP.

Initial Referral

Pre-Visit Paperwork

Intake Visit

Review Results and Plan

Referrals based on plan

4

RECOMMENDED EVALUATION DATES

NICU Neurodevelopmental Clinic (NND)

Ages 0-36 months

Visit	Target Age	
Infant visit	4-9 months	
Toddler visit 1	12-15 months	
Toddler visit 2	24-36 months	

Cardiac Neurodevelopmental Clinic (CND)

Age over 3 years

Visit	Target Age
Preschool Visit	40-48 months (3.5-4 years)
School Readiness/5-year visit	54-66 months (4.5-5.5 years)
Between 3 rd /4 th grade	8-9 years
Between 5 th /6 th grade or middle school transition	10-11 years
Between 8 th /9 th grade or high school transition	13-14 years
Transition to adulthood	17-18 years

Notes:

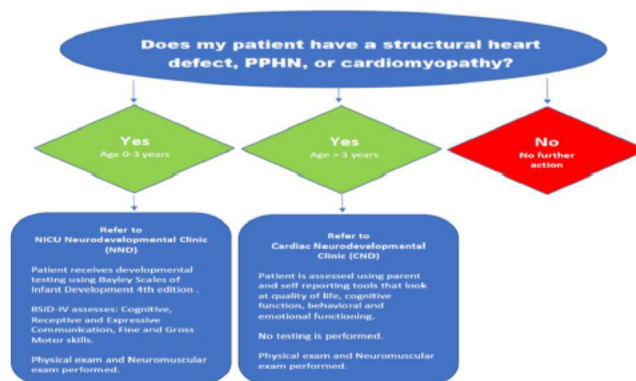
- Patients may be evaluated more frequently or at different points of time.
- Many patients are eligible for California Children's Services (CCS) which may assist in funding the cost of these visits.

5

5

REFERRAL PATHWAY

Neurodevelopmental Referral Pathway for Cardiology Patients



6

6

PLACING REFERRALS IN EPIC

Internal Referral
Search Neurodevelopment

NICU Neurodevelopmental Clinic
(NND)

Cardiac Neurodevelopmental Clinic
(CND)

7

THANK YOU!

Your feedback is important to us. Please click on the link below to anonymously evaluate this presentation. The evaluation questions should take no longer than 1 minute.

<https://www.surveymonkey.com/r/62GNWKW>

8

Appendix D

AACN DNP Essentials/NONPF Competencies/

USD DNP Program Outcomes Exemplars

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
<p>DNP Essential I: Scientific Underpinnings for Practice</p> <p>NONPF: Scientific Foundation Competencies</p> <p><i>The scientific foundation of nursing practice has expanded and includes a focus on both the natural and social sciences including human biology, genomics, science of therapeutics, psychosocial sciences, as well as the science of complex organizational structures. In addition, philosophical, ethical, and historical issues inherent in the development of science create a context for the application of the natural and social sciences.</i></p>	<p>2. Synthesize nursing and other scientific and ethical theories and concepts to create a foundation for advanced nursing practice.</p>	<p>Fall 2019: DNPC 611: Utilized Stetler Model as a basis to approach the transition of health care literacy assessment into medical practice to improve outcomes related to chronic illness. Creation of PICOT statement and review of literature completed as an underpinning of implementation and assessment of outcomes of advanced nursing practice.</p> <p>Spring 2020 APNC 523: Nursing and patient education information completed for Complementary Alternative Medicine products commonly used in conjunction with western medicine techniques in the care of the patient.</p> <p>DNPC 648: Utilized Malone Model to evaluate state of policy environment related to health literacy in the Medicare system to improve social justice and access to medical care.</p> <p>Summer 2020 DNPC 610: Utilized theories of reflective practice including the Kosha model and Mindfulness Essentials support develop a personal understanding and create an educational project for patients and practitioners.</p> <p>Fall 2020 DNPC622: Utilized Iowa Model (Revised) to complete a Gap Analysis between the research and practice of caring for patients with Type 1 Diabetes. Multiple PICOT questions formulated as recommendations for further research to bridge the gap between research and practice.</p> <p>Spring 2021</p>

		<p>Roy Adaptation Association-International 2021 Virtual Workshops & Conference Presentation and review of methods of integration of the Roy Adaptation Nursing Model in various interventions to positively affect patient outcomes in acute and primary care settings.</p> <p>Fall 2021 CNOC 10th Annual Scientific Sessions Presentation and review of methods of treatment, outreach, support, and care of children with neurodevelopmental delays related to congenital cardiac disease.</p> <p>Spring 2022 EBP Project - Development of a Nurse Practitioner Driven Program for Cardiology Providers to Increase Knowledge and Awareness of Neurodevelopmental Assessment Needs in Children with Congenital Heart Defects Utilizing the IOWA model of EBP, an evidence-based practice project to improve provider knowledge and awareness of the need for neurodevelopmental assessment in children with congenital heart defects was created and implemented.</p>
<p>DNP Essential II: Organizational & System Leadership for Quality Improvement & Systems Thinking</p> <p>NONPF: Leadership Competencies/Health Delivery System Competencies</p> <p><i>Advanced nursing practice includes an organizational and systems leadership component that emphasizes practice, ongoing improvement of health outcomes, and ensuring patient safety. Nurses should be prepared with sophisticated expertise in</i></p>	<p>5. Design, implement, and evaluate ethical health care delivery systems and information systems that meet societal needs and ensure accountability for quality outcomes.</p>	<p>Spring 2020 DNPC 626: Comprehensive review of health care delivery system including SWOT Analysis, Strategic Planning Process Mapping, Driver Diagram and Executive Summary.</p> <p>Summer 2020: DNPC 653: Created a business proposal utilizing national quality standards as a basis of a quality improvement initiative to improve preventive care testing in the primary care setting.</p> <p>Spring 2021 DNPC686: Created a EBP change project to analyze and provide findings for a process improvement program to integrate health literacy assessment into the care of patients with chronic disease. The inclusion of health literacy in patient care assists in minimizing potential risks to lower socioeconomic populations and minority populations.</p> <p>Fall 2021</p>

<p><i>assessing organizations, identifying system's issues, and facilitating organization-wide changes in practice delivery. This also requires political skills, systems thinking, and the business and financial acumen needed for the analysis of practice quality and costs.</i></p>		<p>DNPC 630: Worked to design an EBP change project to improve patient knowledge about educational resources for children impacted by medical conditions. This is Phase 1 of a three-phase project that will be implemented over the next 3 months.</p> <p>Spring 2022 EBP Project - Development of a Nurse Practitioner Driven Program for Cardiology Providers to Increase Knowledge and Awareness of Neurodevelopmental Assessment Needs in Children with Congenital Heart Defects Utilizing the IOWA model of EBP, an evidence-based practice project to improve provider knowledge and awareness of the need for neurodevelopmental assessment in children with congenital heart defects was created and implemented.</p>
<p>DNP Essential III: Clinical Scholarship & Analytical Methods for Evidence-Based Practice</p> <p>NONPF: Quality Competencies/Practice Inquiry Competencies</p> <p><i>Scholarship and research are the hallmarks of doctoral education. Although basic research is viewed as the first and most essential form of scholarly activity, an enlarged perspective of scholarship has emerged through alternative paradigms that involve more than discovery of new knowledge. These paradigms recognize: (1) the scholarship of discovery and integration "reflects the investigative and synthesizing traditions of academic life"; (2) scholars give meaning to isolated facts and make connections across disciplines through the</i></p>	<p>4. Incorporate research into practice through critical appraisal of existing evidence, evaluating practice outcomes, and developing evidence-based practice guidelines.</p>	<p>Fall 2019: ANPC 520: Systematic review of research related to neurogenic bladder, nephrotic syndrome, pulmonary arterial hypertension, and type 1 diabetes as it related to pathophysiology of respective organ system(s).</p> <p>DNPC 625: Examined antibody detection opportunities related to early diagnosis of Type 1 Diabetes in children to promote wellness in advance of disease onset, improve outcomes of treatment and perhaps delay onset of disease through medication management.</p> <p>Summer 2020: DNPC 653: Examined implications associated with the implementation of point of care testing as an early detection and preventive mechanism for chronic disease, such as diabetes and cardiovascular disease. Utilized evidenced based resources to determine best practices, highlighting fiscal responsibility.</p> <p>Fall 2020 DNPC622: Utilized Iowa Model (Revised) to complete a Gap Analysis between the research and practice of caring for patients with Type 1 Diabetes. Multiple PICOT questions formulated as recommendations</p>

<p><i>scholarship of integration; and (3) the scholar applies knowledge to solve a problem via the scholarship of application that involves the translation of research into practice and dissemination and integration of new knowledge.</i></p>		<p>for further research to bridge the gap between research and practice.</p> <p>Spring 2021 Implementation Science for Clinicians: Accelerating the Uptake of Evidence into Practice for Best Outcomes (webinar): Attended information session to review the ARCC Model and newly updated toolkit to promote methods to of evidence-based practice in health care settings.</p> <p>2021 Clinical Inquiry Conference – 8th Annual Nursing Research and Evidence-Based Practice Conference University of California San Francisco: Virtual conference exploring the impact of nursing on healthcare, resilience, quality improvement projects, and skills to improve abstract writing, data analysis, poster, and presentation techniques.</p> <p>Summer 2021 NPTC 549: Reviewed content exploring REM and NREM events experienced by the pediatric population. Utilized evidenced based resource to determine best practices for treatment and patient/family education.</p> <p>Fall 2021 CNOC 10th Annual Scientific Sessions Presentation and review of methods of treatment, outreach, support, and care of children with neurodevelopmental delays related to congenital cardiac disease. This information will be utilized in the DNP Project that is being implemented.</p> <p>Spring 2022 EBP Project - Development of a Nurse Practitioner Driven Program for Cardiology Providers to Increase Knowledge and Awareness of Neurodevelopmental Assessment Needs in Children with Congenital Heart Defects Utilizing the IOWA model of EBP, an evidence-based practice project to improve provider knowledge and awareness of the need for neurodevelopmental assessment in children with congenital heart defects was created and implemented.</p>
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<p>DNP Essential IV: Information Systems/Technology & Patient Care Technology for Improvement & Transformation of Health Care</p> <p>NONPF: Technology & Information Literacy Competencies</p> <p><i>DNP graduates are distinguished by their abilities to use information systems/technology to support and improve patient care and health care systems and provide leadership within healthcare systems and/or academic settings. Knowledge and skills related to information systems/technology and patient care technology prepare the DNP graduates apply new knowledge, manage individual and aggregate level information, and assess the efficacy of patient care technology appropriate to a specialized area of practice along with the design, selection, and use of information systems/technology to evaluate programs of care, outcomes of care, and care systems. Information systems/technology provide a mechanism to apply budget and productivity tools, practice information systems and decision supports, and web-based learning or</i></p>	<p>7. Incorporate ethical, regulatory, and legal guidelines in the delivery of health care and the selection, use, and evaluation of information systems and patient care technology.</p>	<p>Spring 2020 HCIN 540: Examined the historical development, legislative governance, HIPAA compliance and risk of electronic health record downtime events and their impact to medical care delivery safety and efficacy.</p> <p>Summer 2020: DNPC 653: Examined implications associated with the implementation of point of care testing as an early detection and preventive mechanism for chronic disease, such as diabetes and cardiovascular disease. Utilized evidenced based resources to determine best practices, highlighting fiscal responsibility.</p> <p>Spring 2022 EBP Project - Development of a Nurse Practitioner Driven Program for Cardiology Providers to Increase Knowledge and Awareness of Neurodevelopmental Assessment Needs in Children with Congenital Heart Defects Utilizing the IOWA model of EBP, an evidence-based practice project to improve provider knowledge and awareness of the need for neurodevelopmental assessment in children with congenital heart defects was created and implemented. A Recorded power point was used as an educational vehicle for asynchronous learning.</p>
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<p><i>intervention tools to support and improve patient care.</i></p>		
<p>DNP Essential V: Health Care Policy for Advocacy in Health Care</p> <p>NONPF: Policy Competencies</p> <p><i>Health care policy, whether created through governmental actions, institutional decision-making, or organizational standards, creates a framework that can facilitate or impede the delivery of health care services or the ability of the provider to engage in practice to address health care needs.</i></p> <p><i>Engagement in the process of policy development is central to creating a health care system that meets the needs of its constituents. Political activism and a commitment to policy development are central elements of DNP practice.</i></p>	<p>3. Demonstrate leadership in collaborative efforts to develop and implement policies to improve health care delivery and outcomes at all levels of professional practice (institutional, local, state, regional, national, and/or international).</p>	<p>Spring 2020 DNPC 648: Collaborative completion of an evaluation of SB 276 and the impact vaccinations and the anti-vaccination movement leading to the passing of SB 276 and subsequent SB277 at the state level.</p> <p>DNPC 648: Created policy brief related to the state of health literacy from a national perspective. Expanded policy brief to incorporate a review of recent legislative processes pertaining to health literacy integration within state and national health care systems.</p> <p>Fall 2020 DNPC 602: Petitioned against a proposed regulation known as the 2020 Sunset Rule impacting the access to health care for Medicaid and CHIP Program Recipients.</p> <p>Summer 2021 NPTC 549: Attended partial CA Board of Registered Nursing Hearing regarding implementation of AB 890, Nurse Practitioner's Scope of Practice: Practice Without Standardized Procedures.</p>

<p>DNP Essential VI: Interprofessional Collaboration for Improving Patient & Population Health Outcomes</p> <p>NONPF: Leadership Competencies</p> <p><i>Today's complex, multi-tiered health care environment depends on the contributions of highly skilled and knowledgeable individuals from multiple professions. In order to accomplish the IOM mandate for safe, timely, effective, efficient, equitable, and patient-centered care in this environment, health care professionals must function as highly collaborative teams. DNP's have advanced preparation in the interprofessional dimension of health care that enable them to facilitate collaborative team functioning and overcome impediments to interprofessional practice. DNP graduates have preparation in methods of effective team leadership and are prepared to play a central role in establishing interprofessional teams, participating in the work of the team, and assuming leadership of the team when appropriate.</i></p>	<p>1. Demonstrate advanced levels of clinical practice within defined ethical, legal, and regulatory parameters in designing, implementing, and evaluating evidenced based, culturally competent therapeutic interventions for individuals or aggregates.</p> <p>3. Demonstrate leadership in collaborative efforts to develop and implement policies to improve health care delivery and outcomes at all levels of professional practice (institutional, local, state, regional, national, and/or international).</p>	<p>Fall 2019 DNPC 625: Examined antibody detection opportunities related to early diagnosis of Type 1 Diabetes in children to promote wellness in advance of disease onset, improve outcomes of treatment and perhaps delay onset of disease through medication management.</p> <p>Spring 2020 DNPC 648: Utilized Malone Model to evaluate state of policy environment related to health literacy in the Medicare system to improve social justice and access to medical care.</p> <p>Summer 2020: DNPC 610: Explored and analyzed the application of mindfulness-based stress reduction as a method of improved patient and self-assessment as well to improving patient outcomes associated with chronic disease, chronic pain, and reduction of adverse health behaviors.</p> <p>Fall 2020 NPTC 602: Completed ACEs Aware Training to promote trauma informed care in the front-line setting as an advanced health practitioner.</p> <p>Summer 2021 DNP 630: Formulated approach for project to improve access to education resources for children with neurodevelopmental disorders related to congenital cardiac defects.</p> <p>Spring 2022 EBP Project - Development of a Nurse Practitioner Driven Program for Cardiology Providers to Increase Knowledge and Awareness of Neurodevelopmental Assessment Needs in Children with Congenital Heart Defects Utilizing the IOWA model of EBP, an evidence-based practice project to improve provider knowledge and awareness of the need for neurodevelopmental assessment in children with congenital heart defects was created and implemented.</p>
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<p>DNP Essential VII: Clinical Prevention & Population Health for Improving Nation's Health</p> <p>NONPF: Leadership Competencies</p> <p><i>Consistent with national calls for action and with the longstanding focus on health promotion and disease prevention in nursing, the DNP graduate has a foundation in clinical prevention and population health. This foundation enables DNP graduates to analyze epidemiological, biostatistical, occupational, and environmental data in the development, implementation, and evaluation of clinical prevention and population.</i></p>	<p>6. Employ a population health focus in the design, implementation, and evaluation of health care delivery systems that address primary, secondary, and tertiary levels of prevention.</p>	<p>Fall 2019 DNPC 625: Examined antibody detection opportunities related to early diagnosis of Type 1 Diabetes in children to promote wellness in advance of disease onset, improve outcomes of treatment and perhaps delay onset of disease through medication management.</p> <p>Spring 2020 DNPC 648: Utilized Malone Model to evaluate state of policy environment related to health literacy in the Medicare system to improve social justice and access to medical care.</p> <p>Summer 2020 DNPC 653: Examined implications associated with the implementation of point of care testing as an early detection and preventive mechanism for chronic disease, such as diabetes and cardiovascular disease. Utilized evidenced based resources to determine best practices, highlighting fiscal responsibility.</p> <p>Spring 2021 DNPC686: Created a EBP change project to analyze and provide findings for a process improvement program to integrate health literacy assessment into the care of patients with chronic disease. The inclusion of health literacy in patient care assists in minimizing potential risks to lower socioeconomic populations and minority populations.</p> <p>Spring 2022 EBP Project - Development of a Nurse Practitioner Driven Program for Cardiology Providers to Increase Knowledge and Awareness of Neurodevelopmental Assessment Needs in Children with Congenital Heart Defects Utilizing the IOWA model of EBP, an evidence-based practice project to improve provider knowledge and awareness of the need for neurodevelopmental assessment in children with congenital heart defects was created and implemented.</p>
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<p>DNP Essential VIII: Advanced Nursing Practice</p> <p>NONPF: Independent Practice/Ethics Competencies</p> <p><i>The increased knowledge and sophistication of healthcare has resulted in the growth of specialization in nursing in order to ensure competence in these highly complex areas of practice. The reality of the growth of specialization in nursing practice is that no individual can master all advanced roles and the requisite knowledge for enacting these roles. DNP programs provide preparation within distinct specialties that require expertise, advanced knowledge, and mastery in one area of nursing practice. A DNP graduate is prepared to practice in an area of specialization within the larger domain of nursing.</i></p>	<p>1. Demonstrate advanced levels of clinical practice within defined ethical, legal, and regulatory parameters in designing, implementing, and evaluating evidence-based, culturally competent therapeutic interventions for individuals or aggregates.</p>	<p>Fall 2019: Successfully completed Collaborative Institutional Training Initiative (CITI) Program earning completion certificates in basic biomedical research, basic social and behavioral research, community research, research of special populations, and research ethics.</p> <p>Spring 2020 DNPC 648: Utilized Malone Model to evaluate state of policy environment related to health literacy in the Medicare system to improve social justice and access to medical care.</p> <p>Spring 2021 DNPC686: Created a EBP change project to analyze and provide findings for a process improvement program to integrate health literacy assessment into the care of patients with chronic disease. The inclusion of health literacy in patient care assists in minimizing potential risks to lower socioeconomic populations and minority populations.</p> <p>NPTC604: Progressed independence in creating plans of care for patients seen in the acute setting with specific attention to ethical practice, appropriate procedural coding, and cultural considerations.</p> <p>Spring 2022 EBP Project - Development of a Nurse Practitioner Driven Program for Cardiology Providers to Increase Knowledge and Awareness of Neurodevelopmental Assessment Needs in Children with Congenital Heart Defects Utilizing the IOWA model of EBP, an evidence-based practice project to improve provider knowledge and awareness of the need for neurodevelopmental assessment in children with congenital heart defects was created and implemented.</p>
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Appendix E

Certificates or Documentation of any Additional Certifications



Completion Date 16-Sep-2019

Expiration Date 15-Sep-2022

Record ID 33139926

This is to certify that:

Michele Pride-Readman

Has completed the following CITI Program course:

Human Subjects Research - SBR

(Curriculum Group)

Social & Behavioral Research - Basic/Refresher

(Course Learner Group)

1 - Basic Course

(Stage)

Not valid for renewal of certification
through CME.

Under requirements set by:

University of San Diego

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w3807cbe6-c94c-4a2b-9cc0-6816b9d64fcf-33139926

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2 COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Michele Pride-Readman (ID: 8011524)
- **Institution Affiliation:** University of San Diego (ID: 1652)
- **Institution Email:** mreadman@san Diego.edu
- **Institution Unit:** Nursing
- **Curriculum Group:** Human Subjects Research - SBR
- **Course Learner Group:** Social & Behavioral Research - Basic/Refresher
- **Stage:** Stage 1 - Basic Course
- **Description:** Choose this group to satisfy CITI training requirements for Investigators and staff involved primarily in Social/Behavioral Research with human subjects.
- **Record ID:** 33139926
- **Completion Date:** 16-Sep-2019
- **Expiration Date:** 15-Sep-2022
- **Minimum Passing:** 80
- **Reported Score*:** 91

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Belmont Report and Its Principles (ID: 1127)	16-Sep-2019	3/3 (100%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	16-Sep-2019	5/5 (100%)
Students in Research (ID: 1321)	16-Sep-2019	5/5 (100%)
History and Ethics of Human Subjects Research (ID: 498)	16-Sep-2019	2/5 (40%)
Defining Research with Human Subjects - SBE (ID: 491)	16-Sep-2019	5/5 (100%)
Informed Consent - SBE (ID: 504)	16-Sep-2019	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	16-Sep-2019	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?k10157b4d-a04f-41aa-a778-9b413406a0c8-33139926

Collaborative Institutional Training Initiative (CITI Program)

Email: support@citiprogram.org

Phone: 888-529-5929

Web: <https://www.citiprogram.org>

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 2 OF 2 COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Michele Pride-Readman (ID: 8011524)
- **Institution Affiliation:** University of San Diego (ID: 1652)
- **Institution Email:** mreadman@sandiego.edu
- **Institution Unit:** Nursing

- **Curriculum Group:** Human Subjects Research - SBR
- **Course Learner Group:** Social & Behavioral Research - Basic/Refresher
- **Stage:** Stage 1 - Basic Course
- **Description:** Choose this group to satisfy CITI training requirements for Investigators and staff involved primarily in Social/Behavioral Research with human subjects.

- **Record ID:** 33139926
- **Report Date:** 23-Feb-2022
- **Current Score**:** 99

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	16-Sep-2019	5/5 (100%)
Students in Research (ID: 1321)	16-Sep-2019	5/5 (100%)
Defining Research with Human Subjects - SBE (ID: 491)	16-Sep-2019	5/5 (100%)
Informed Consent (ID: 3)	16-Sep-2019	5/5 (100%)
The Federal Regulations - SBE (ID: 502)	16-Sep-2019	5/5 (100%)
Belmont Report and Its Principles (ID: 1127)	16-Sep-2019	3/3 (100%)
Assessing Risk - SBE (ID: 503)	16-Sep-2019	5/5 (100%)
Records-Based Research (ID: 5)	16-Sep-2019	3/3 (100%)
Informed Consent - SBE (ID: 504)	16-Sep-2019	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	16-Sep-2019	5/5 (100%)
Research with Prisoners - SBE (ID: 506)	16-Sep-2019	5/5 (100%)
Research with Children - SBE (ID: 507)	16-Sep-2019	5/5 (100%)
Research in Public Elementary and Secondary Schools - SBE (ID: 508)	16-Sep-2019	5/5 (100%)
International Research - SBE (ID: 509)	16-Sep-2019	5/5 (100%)
Internet-Based Research - SBE (ID: 510)	16-Sep-2019	4/5 (80%)
History and Ethics of Human Subjects Research (ID: 498)	16-Sep-2019	5/5 (100%)
History and Ethical Principles - SBE (ID: 490)	16-Sep-2019	5/5 (100%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	16-Sep-2019	5/5 (100%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	16-Sep-2019	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?k10157b4d-a04f-41aa-af78-9b413406a0c8-33139926

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