Improving Reach Out and Read Implementation in the NICU

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Abstract

Neonates in the Neonatal Intensive Care Unit (NICU) are at high risk for neurocognitive and behavioral deficits. Reading to these neonates is shown to improve short- and long-term outcomes. Reach Out and Read (ROR) expanded its reading program to the acute care setting of NICUs in 2018. Expansion to NICUs has proven difficult as evidenced by only eight NICU sites utilizing ROR in the United States. The implementation model of ROR in the NICU designates a medical doctor as the leader of ROR enrollment and education. Surveys were designed to identify the inner workings of the NICU and identify barriers and facilitators to book program implementation. Surveys were sent out to NICU sites that utilize this program, those that utilize additional book programs, and those that do not implement any book program. The data identified bedside registered nurses (RN) as the individual who most often initiated ROR enrollment and did the most education to parents. It is recommended that a ROR unit committee be established as a site liaison role in the ROR implementation model.

Keywords: Reach Out and Read, neonatal intensive care unit, early brain development, survey, program implementation

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Section I. Introduction

Background

The Neonatal Intensive Care Unit (NICU) supports babies born prematurely or burdened with other disease processes. A large-scale study conducted at an extensive integrated health

system found that out of 320,340 births, 10.9% of these babies ended up in the NICU (Braun et al., 2020). The inconsistent language exposure and the loud sounds in a NICU contribute to poor growth, cognition, language, and motor development (Best et al., 2018). Reading to babies while in the NICU has shown improvement in cognitive and language development, as well as improved cardiovascular health and decreased perception of pain (Ding et al., 2022; Fifer & Moon, 1994; Neri et al., 2021).

Reach Out and Read (ROR) is a non-profit organization endorsed by the American Academy of Pediatrics that aims to promote reading to children. Their evidence-based method emphasizes the benefits of daily reading, including language and brain development and building strong family bonds. ROR expanded its interventions from primary care offices to neonatal intensive care units (NICU), with its first official site established in 2018 (T. Ramos, personal communication, July 12, 2022). ROR has noted that the consistency in implementing their initiative is one of the primary barriers to expansion into other NICUs. (T. Ramos, personal communication, June 9, 2022).

Organizational Needs Statement

Reach Out and Read began implementation in NICUs in 2018 and, in four years, have established in eight NICUs across the United States (L. Gillen, personal communication, May 1, 2023). Multiple barriers contribute to the lack of expansion, including cost, inconsistent implementation, and minimal evaluation practices (T. Ramos, personal communication, June 9, 2022).

Once a hospital administrator desires to participate in ROR, specific training and organizational requirements are required, as detailed in Appendix A. A Site Coordinator must order books, ensure training requirements are met, and maintain communication with the national organization. A neonatologist fills the role of Medical Consultant and is required to lead

the implementation. The Core Clinical NICU staff, such as additional neonatologists and advanced practice providers, must complete and maintain at least a 75% online educational module completion rate for the site to become active. The NICU Site Staff, such as nurses and volunteers, are encouraged to complete a separate Pathwright educational training on the benefits and importance of ROR. The site coordinator ensures the training is complete and incorporated into new-hire education (Reach Out & Read, n.d.).

The current ROR model in the NICU designates the Medical Consultant as the implementation leader for the program. ROR leadership has expressed that this requirement is a barrier to expanding and maintaining NICU sites (T. Ramos, personal communication, February 10, 2023). To create a change to the NICU model, evidence must be presented highlighting how important ROR is to these babies, who in the NICU has the most interaction with the babies, and what is the best way education can be provided to the staff and parents.

It is known that improving education for staff will increase knowledge, promote anticipatory guidance to parents and improve the implementation of ROR. Education provided as a video, both as primary and supplementary education, has improved knowledge retention and understanding (Sarkies et al., 2019). Nurses found their nurse-led education for parents was more consistent and thorough when provided with a supplemental educational video. Additionally, the video increased the frequency of nurse-led education to parents (Fryfenberg, 2022). Increasing healthcare workers' knowledge of ROR has the potential to improve the consistency of implementation and enhance anticipatory guidance to parents.

The need for improved implementation of the ROR initiative intersects with the Healthy People 2030 goal of increasing the proportion of children whose families read to them at least four days per week (Office of Disease Prevention and Health Promotion, n.d.). Promoting family reading to newborns in the NICU leads to increased reported reading after discharge (Jain et al.,

2021). In 2019, North Carolina had only 67% of fourth graders and 72% of eighth graders at a basic reading level (Nations Report Card, 2020).

The promotion of reading to infants in the NICU through the ROR initiative has the potential to help improve child literacy. Torr (2019) found that shared reading in an infant's first two years of life strongly affected future language development, vocabulary, and literacy achievement. This project will also assist in meeting the Triple Aim by opening dialogue between parents and NICU staff through anticipatory guidance education, increasing parent reading, and enhancing the patient experience (Berwick et al., 2008). Increased readings and the promotion of parental bonding will improve patient health (Ding et al., 2022; Neri et al, 2021).

Problem Statement

The utilization of ROR in the NICU could be improved as evident by the establishment of only 8 NICU programs since 2018 in the United States (L. Gillen, personal communication, May 1, 2023). Additionally, NICU premature neonates are at high risk for neurocognitive deficits (Gasparrini et al., 2019). The ROR current model within the NICU requires a Neonatologist to lead the implementation, which has created barriers to implementation for sites (T. Ramos, personal communication, February 10, 2023).

Purpose Statement

This project aims to construct a document highlighting the importance of ROR in NICUs and providing evidence highlighting which healthcare team members interact most with the patient and families. Research will also be presented on staff education. With this information, the overarching goal of this project is to provide information that will lead to a change in the delivery model of ROR in the NICU, allowing for greater involvement across the United States.

Section II. Evidence

Literature Review

A literature search was completed using the Cumulative Index to Nursing and Allied Health Literature (CINHAL) and ProQuest databases. The inclusion criteria for selection of appropriate articles included articles published within the last 5 years and those available in English. Exclusion criteria included any level of evidence below IV and any ongoing study. Levels of evidence indicate the quality, design method, and validity of studies, with level I representing the highest level of evidence and level VII representing the lowest.

The search phrase, ("professional development" OR "continuing education" OR "staff training") AND (video OR module OR webinar OR lecture OR printed OR brochure OR handout OR pamphlet) AND (NICU OR neonatal OR "labor and delivery" OR "mother baby unit"), was used. The CINHAL search yielded five results. After reading the results for relevancy, one article was kept. The ProQuest search yielded 9,597 results. Scholarly journal articles were selected as an inclusion criterion, producing 1,097 results. After reviewing the first 50 articles, relevancy to the topic and exclusion criteria was applied, with three articles kept.

A second literature search on the CINHAL and ProQuest databases was performed. The Boolean search phrase, ("patient education" OR "family education") AND (video OR module OR webinar OR lecture OR printed OR brochure OR handout OR pamphlet) AND (NICU OR neonatal OR "labor and delivery" OR "mother baby unit") was searched. The same inclusion and exclusion criteria as the original search were used. The CINHAL database had nine results, and one was kept. The ProQuest search yielded 581 results, the first 50 were reviewed and one was kept.

The third search was completed on PubMed, the National Institute of Health's library of medicine. The search term NICU Reading was used. The same inclusion and exclusion criteria as the first two searches were implemented. There were 41 results, and three were kept. A fourth search on the University Health Sciences library database was completed, and results were subjected to the inclusion and exclusion criteria. The search NICU Reading produced 55 results, with one kept; Video education yielded 8,332 results with one kept; Language exposure preterm yielded 87 results with two kept.

Two final literature searches were completed on Google Scholar. Inclusion criteria remained the same. Level VI evidence was allowed after examination for appropriateness of the material. The term evidence-based project (EBP) implementation was used, with ten results on

the first page and two kept after applying exclusion criteria and application to topic. Evidence based projects translate scientific evidence into clinical practice, utilizing patient feedback, clinical experience, and feasibility. The term, implementation science in acute care, was searched via google scholar, exclusion criteria was applied and relation to topic was considered, with one result being kept out of 10 on the first page.

Current State of Knowledge

Current literature states that successful implementation of an evidence-based program (EBP) in an acute care hospital setting requires participation by all directly affected staff members, supportive leadership, and the ability to integrate the innovation into routine nursing care (Chiwaula & Jere, 2022). Additionally, a meta-analysis found that a significant barrier to implementation was staff lacking knowledge of the new program. They determined that utilizing a foundational framework for implementation was essential for success (Cassidy et al., 2021; Chiwaula & Jere, 2022). Barriers to EBP implementation included heavy workload, limited knowledge of the EBP, insufficient motivation, and lack of time (Dagne & Beshah, 2021).

The Reach Out and Read initiative is unique in that it involves both staff and parental engagement. Parental education in the hospital has barriers, including timing, competing job demands, rapport with educators, and literacy (Berry et al., 2022). Additional research highlighted specific barriers and facilitators to parents reading to their newborn in the NICU and at home. Barriers included the belief that reading was developmentally inappropriate, fear of spreading germs to their baby, life stressors, and time restraints. Facilitators identified were proper understanding of developmental benefits, bonding time, and having a daily schedule dedicated to reading (Hill et al., 2022).

The ROR initiative is based on a foundation of evidence-based research. This project extensively explored the benefits of reading to newborns in the NICU. Early language exposure

in the NICU helps infant brain development, cortical thinking, and vocabulary (Best et al., 2018). Exposure to the mother's voice in the NICU has been shown to increase infant awareness, improve feeding, reduce procedural pain levels, decrease desaturation and apnea events, and improve sleep patterns (Ding et al., 2022; Fifer & Moon, 1994; Filippa et al., 2017; Scala et al., 2018; Shellhaas et al., 2019). Additionally, parental reading reduced the expected decline in language development usually associated with preterm infants (Neri et al., 2021). Implementing a book share program in the NICU increased the likelihood of at-home reading after discharge (Jain et al., 2021). Implementing the ROR initiative in a NICU increased bedside parental readings by 59% (Levesque, 2018).

Current Approaches to Solving Population Problem

The education of hospital staff is essential for successfully implementing a new program (Cassidy et al., 2021; Dagne & Beshah, 2021). Successfully implementing the ROR program must include both direct staff and parental education. Increasing education to parents in the intensive care unit (ICU) has been shown to increase parental confidence and involvement in the care of their child (Smith et al., 2022). The current implementation model of ROR in the NICU begins with staff education through the online Pathwright module. Additionally, a site coordinator and a Medical Consultant are assigned. The Medical Consultant must be a Neonatologist, and they are responsible for leading the caregiver education and implementation of the ROR program (Reach Out & Read, n.d.).

Leadership at ROR believes that the requirement to have a Neonatologist lead the implementation may be a barrier for potential NICU sites (T. Ramos, personal communication, February 10, 2023). This project will provide data to help identify the core healthcare team

members in a better position to provide this ROR education to caregivers and lead the program's implementation. This person identified will be the ROR liaison, and their role will be to lead the implementation and education of the ROR initiative.

Supplemental research was conducted to highlight the most effective staff and parental education methods. Literature has shown that there are many techniques to educate healthcare staff in the hospital. Video educational strategies increased healthcare professionals' knowledge retention and understanding compared to written education (Sarkies et al., 2019). Additionally, researchers found that tele-education improved knowledge among NICU staff members by 31% (Sarin-Guilian et al., 2021). Simulation-based education of healthcare students compared to education provided through written case studies significantly impacted educational outcomes and increased student confidence (Clinard, 2022).

Evidence shows that parent education became more consistent when healthcare professionals utilized an additional educational video (Frydenberg et al., 2022). Additionally, the availability of tablets for video discharge instruction increased compliance to 99% (Pavuluri et al., 2021). One study found that mothers' confidence in returning home with their newborn was equal with video and in-person discharge instructions (Cece et al., 2021).

Evidence to Support the Intervention

The use of web-based surveys for conducting research has a multitude of advantages. Using an online survey platform is cost-effective, allows for rapid development and distribution, and provides instant data collection (Maymone et al., 2018). Additionally, a web-based survey allows research participants to complete the questionnaire on their electronic devices. Non-response rates have shown to be a problem for web-based survey research; however, a meta-analysis found that the non-response rates for web-based surveys were not statistically more significant than the non-response rate of written surveys (Cehovin, et al., 2022). Methods to

combat non-response rates include sending an email or phone call reminder and offering incentives (Maymone et al., 2018). This project will send email reminders one week and two-week post initial survey.

The platform used for this Doctor of Nursing Practice (DNP) project survey, Survey Monkey, allows for personalization of the format and types of questions. This project utilized open-ended and close-ended questions to produce well-rounded and thorough responses. Research has shown that using different communication approaches in surveys provided the most response data (Chen et al., 2019).

Evidence-Based Practice Framework

This DNP project utilized the Reach-Effectiveness-Adoption-Implementation-Maintenance (RE-AIM) framework. This framework was initially designed to standardize and improve how to report and translate research findings (RE-AIM, 2023). The Plan-Do-Study-Act (PDSA) cycle model was also used to help execute and redesign implementation steps when needed.

Ethical Consideration & Protection of Human Subjects

This project aimed to collect data from NICU healthcare team members through a survey. There was no associated risk of exposing patient health information. The survey was sent to healthcare professionals in leadership positions and forwarded to additional unit staff, all of whom had college degrees. Therefore, a high school reading level can be assumed, and this knowledge was utilized when constructing the survey.

The Collaborative Institutional Training Initiative (CITI) modules were completed in preparation for the approval process of this project. These modules review the ethics behind research and highlight how to maintain compliance. This DNP project was determined to focus

on quality improvement. It did not require an Institutional Review Board (IRB) review or approval process with the project site or project champion.

Section III. Project Design

Project Site and Population

This project partners with Reach Out and Read (ROR), a non-profit organization whose mission is to give children a literacy foundation by incorporating age-appropriate books into pediatric and primary care. ROR emphasizes the strong family bonds reading with your child can foster and the abundance of benefits early childhood reading can develop. This organization took its reach one step further with the addition of NICU's into their network of healthcare providers. In the NICU setting, ROR introduces books to caregivers to promote bedside readings.

The Regional Director of the Carolinas facilitated this project. With her guidance, the project was developed to be implemented in NICU sites throughout the United States. Eleven NICU sites were identified for survey distribution. Barriers to implementation included a lack of response from initial and follow-up emails.

Description of the Setting

Reach Out and Read is established in eight NICU's across the United States (L. Gillen, personal communication, May 1, 2023). The NICU is a critical care unit of the hospital that cares for neonates born prematurely, of low birth weight, or with critical medical conditions requiring

a high level of medical care. These units require medical staff to be present and attentive to patients twenty-four-seven. This high level of care comes with an atmosphere of constant fluorescent lights and ringing alarms. Newborns are attached to multiple monitors, medication lines, and medical devices. Additionally, many neonates are isolated in incubation boxes, preventing frequent skin-to-skin contact.

Description of the Population

This project aimed to identify valuable intel within NICU's that can facilitate the rewrite of the ROR NICU implementation model. The main point of contact for each NICU was the NICU Nurse Manager, NICU Medical Director, or the ROR NICU coordinator. This point of contact distributed the survey to additional staff members, including Advanced Practice Providers, Doctors, Respiratory Therapists, Physical Therapists, charge nurses, and bedside nurses.

Project Team

The project was accomplished with two additional East Carolina University (ECU) DNP students. Each student completed the research separately, and the development of the survey and creation of the official ROR document of findings was a collaboration. An ECU DNP professor served as the project faculty, guiding the entire process, and ensuring all requirements were met. The regional director of medical engagement and training for ROR in North Carolina, South Carolina, Virginia, and DC was the project site champion and liaison between the students and ROR. Additional organizational support was provided by an assistant program manager. Together they provided information on the organization's needs that guided the project's direction.

Project Goals and Outcome Measures

The project aimed to gather valuable information through in-depth research and survey distribution to construct a document to be presented to ROR. The information extracted from the surveys included key healthcare team members interacting with NICU babies and their caregivers and reading program implementation barriers, facilitators, and usage. The survey was sent out to 11 NICU points of contact, expecting these contacts to forward the survey to NICU staff members. This project's outcome measure was the number of survey responses received. The goal was to have survey data from seven NICU sites. The long-term outcome measure for this project will be if ROR adjusts the structure of its inpatient NICU implementation model.

Description of the Methods and Measurement

The survey was sent using Survey Monkey. The initial survey was emailed to the NICU point of contact. The survey data collected through Survey Monkey was converted into a Google Excel Sheet for interpretation. The data was then collaboratively dissected and organized by the ECU DNP students. The outcome measure was determined to be met by receiving confirmation email responses from the NICU contacts that correlated to the completion of surveys.

Discussion of the Data Collection Process

The survey data was collected and stored by Survey Monkey. This data remained available to all group members through a secure login. Throughout implementation, survey completion numbers were assessed periodically.

Implementation Plan

The surveys were sent out in an email to each of the 11 NICU point of contacts. The surveys can be seen in Appendix B, C, and D. A request for the survey to be forwarded to additional NICU healthcare professionals was stated in the email. A follow-up email was sent to 9 NICU contacts one week following the initial email. Secondary follow-up emails, sent two

weeks after the initial survey, were sent to 7 NICU sites. After analyzing the results and completing a PDSA cycle, a third follow-up email was sent to 5 NICU sites 3 days after the second follow up email.

The data collected by the surveys was collaboratively organized and interpreted by the ECU DNP students. This data was then incorporated into a document for presentation to ROR. The document also consisted of the concise version of the in-depth literature search completed independently by each student.

Timeline

The idea to partner with ROR for this DNP project was established in the summer semester of 2022. The initial meeting with the ROR regional manager was held at this time, and the DNP student group was created. The initial project idea was developed by the end of the summer 2022 semester. In the fall semester of 2022, the research portion of this project was completed. The outcome measures, methods, and implementation plan were developed this semester. At the end of the fall semester, an ECU DNP student group member had to leave the program unexpectedly. For this reason, the initial project idea had to be transformed.

In the spring semester of 2023, the new project idea was established with the support of the ECU DNP faculty and the ROR regional manager. The previous research and implementation plan was transformed and rewritten to align with the new project goal. Implementation was then executed during this semester. In the Summer of 2023, the survey data and research were compiled into a document to be presented to ROR leadership. See a detailed timeline in Appendix E.

Section IV. Results and Findings

Results

Across the 11 healthcare systems that received the surveys, responses were received from five sites that utilize ROR, two sites with no early literacy programs, and one currently utilizing a program other than ROR. Within these organizations, there were 40 total responses. Thirty-two responses came from Registered Nurses (RN), while the rest came from Physicians, Unit Managers, Family Support Directors, and a NICU Quality Coordinator.

Sites utilizing ROR identified bedside RNs as the healthcare team member who most often initiated ROR enrollment. Additionally, RNs were identified as providing the most ROR education to families. The data was obtained using a Likert scale. The neonatologist's interaction with the family was reported as 'always' 47% of the time. The utilization of ROR and the additional book program were reported as *(usually)* 57% of the time, *(sometimes)* 20% of the time, *(rarely)*, or *(never)* 26% of the time, and 0% reported that ROR was *(always)* utilized. Barriers that reduce the implementation of these early literacy book programs listed in order of how often they were reported included lack of knowledge within medical teams, cell phone use by families, how often the parent visits or how involved they are in the care, and lack of access to books in a foreign language.

The most reported factors contributing to the use of ROR included having sufficient education about ROR to educate the family and reinforce the education and access to free books. Within the organizations that do not have an early literacy program, the most common barrier to

implementing a program included cost/budget concerns and time restraints of care providers. 70% of these respondents reported that their unit had never considered implementing an early literacy program.

Discussion of Major Findings

The findings found that the factor contributing the most to the use of ROR in the NICU was having adequate education about ROR. The literature states that the education of hospital staff is essential for implementing a new program (Cassidy et al., 2021; Dagne & Beshah, 2021). The findings demonstrated that ROR was never reported as always being used, and the Neonatologist was never reported as always interacting with the family. These results demonstrate a gap in ROR implementation and room for growth. The literature supports that the successful implementation of a new program must be one that can integrate into routine nursing care (Chiwaula & Jere, 2022). The nursing staff was reported as most often educating families about ROR. Implementation in the NICU should be initiated and run by nursing staff.

Section V. Interpretation and Implications

Costs and Resource Management

The tool used for the survey creation, SurveyMonkey, was free. Google Sheets was used as the collection medium, and this was free. The cost of this project is based on hours spent researching, planning, collaborating, implementing, and analyzing data. The time spent on this project was 300 hours. The median salary of a full time Family Nurse Practitioner (FNP) in the United States in 2021 was $113,000 (American Academy of Nurse Practitioners, 2022). This is an hourly rate of $54.30. The cost of this project being implemented by an FNP would be $16,290. See a cost breakdown in Appendix F.

If ROR conducted this project on a larger scale, they would save time and resources because the research and survey development has already been completed. Additional costs for the organization include time spent on implementation, revision, and analyzing the data. This time can be presumed to take 100 hours, costing the organization only 100 hours of labor. Potential expansion of this project would have minimal costs to ROR. The benefit of future implementation includes improved data accuracy, increased knowledge of the inner workings of the NICU, and, ultimately, the ability to improve implementation.

Implications of the Findings

This project worked to advance nursing practice, improve patient outcomes, and increase education to the healthcare team and patients. The DNP Essentials were used to direct and elevate this project to a doctoral level. See Appendix G. This project highlighted the inner workings of a NICU and what has been successful and unsuccessful regarding ROR implementation. The data revealed encourages a change in the ROR NICU implementation

model. This change has the potential to increase implementation in current practice, as well as facilitate growth in other NICUs. The findings suggest that RNs lead the initial introduction and education of the ROR program with families.

It is the recommendation of this author to create a site liaison role that is assigned to a nursing committee. Nurse committees exist within units of the hospital and focus on improving the unit through evidenced based practice. It has been shown through the data of this project that registered nurses are the ones who spend the most time educating patients. The future ROR Committee within the NICU could focus on the implementation and education of ROR.

As stated previously, ROR leadership believes the requirements of the Neonatologist may be a barrier to implementation (T. Ramos, personal communication, February 10, 2023). The site liaison should lead caregiver education and implementation of ROR from the Neonatologist. Allowing the site liaison to be a committee instead of a single individual will allow for greater patient access and less individual burden.

Implications for Patients

Patients in the NICU are at an increased risk for developmental and growth delays (Best et al., 2018). The benefits of reading to babies in the NICU have been proven extensively throughout this paper. Improving ROR utilization will lead to increased benefits for the patients. Additionally, changing the ROR implementation model will allow for easier adoption of the program into new NICU sites, reaching a more significant proportion of patients.

Implications for nursing practice.

Nurses are at the forefront of patient care in clinical settings. They are responsible for direct patient care, education, leadership, and innovation. Nurses in the NICU demonstrate involvement and leadership as seen in the findings of this project. Developing a ROR committee within the NICU will allow for improved implementation of the ROR program. Adding this

pivotal role to the unit allows for improved feedback in the day-to-day challenges associated with implementation.

Impact for Healthcare System(s)

Hospitals strive to improve their patient outcomes. Improving the implementation of ROR will subsequently improve the patient outcomes in the NICU of these healthcare systems. Moreover, expanding on this project and gathering data from within the healthcare system will help identify areas that need improvement and growth. Utilizing this project's survey and research methods will be very cost-efficient.

Sustainability

This project is unique in that all tasks can be done from a computer. A single individual can complete the online survey and post-survey analysis. As discussed earlier, the cost of expanding this project is minimal. As an organization, ROR can utilize this project to expand and gather data from more healthcare systems. Furthermore, individual healthcare systems can use this project internally to gather data to improve their operations regarding ROR implementation.

Dissemination Plan

This DNP project was submitted to ECU's digital research archive, the ScholarShip. This platform saves the academic work of both students and faculty. The project was also presented at ECU's College of Nursing poster presentation on July 11th, 2023. The findings of this project were presented as an executive summary to leadership on ROR on June 11th, 2023. See Appendix H.

Section VI. Conclusion

Limitations and Facilitators

Limitations

The primary limitation that impacted the completion of this project was one of the project group members unexpectedly leaving the program. This student secured the initial project site, and in her absence, the original project concept and project site had to be reimagined. An additional barrier was the uniqueness of this project group's situation. Receiving guidance from the university leadership and leadership from ROR was delayed due to scheduling conflicts and life interference.

Another limitation was the challenges associated with receiving email responses from NICU site contacts, whom there was no established relationship with. Electronic communication can be very impersonal, and it can be challenging to portray the importance and purpose of gathering survey data. If an email response was not received, it was assumed the survey was incomplete. However, it is possible that the survey was completed. Each survey sent out was not tracked to a specific party, so tracing where the responses came from was impossible. Additionally, designing appropriate survey questions for a NICU unit was challenging when none of the project group members had ever worked in the NICU.

Facilitators

Despite these limitations, this project could not have been completed without the flexibility of the Regional Director of the Carolinas for ROR. She allowed this project to continue despite a complete change in course for project implementation. The DNP project faculty Dr. Isaacs guided the project team to secure a successful DNP project. Additional facilitators of this project included the collaborating DNP students, DNP course faculty, and all

NICU site contacts who took the time to respond to the emails and give valuable survey responses.

Recommendations for Others

This project concept and design have the flexibility to be implemented on a much larger scale. The involvement of more NICU sites would allow for a greater depth and range of survey data. This project can be scaled down and used internally to identify potential growth areas within individual NICU sites. The project's sustainability is significantly high because it relied solely on electronic surveys and email communication. A recommendation for future use of this project design is to develop surveys that can be linked to the individual they were sent. Therefore, data can be kept on who has completed the survey without requiring a direct response from the site contact.

Recommendations Further Study

This project identified barriers and areas of improvement within the NICU implementation model of ROR. A significant barrier to implementation was identified as a lack of education on ROR. A future study should evaluate NICU ROR education and improve its implementation. Additionally, a recommendation is made for adding a NICU ROR committee. This committee infrastructure could be established in a future study and trialed on a floor implementing ROR.

This project's concept and design could apply to multiple different settings and with different populations. Analyzing the implementation of a program is imperative for improvement. It is important to highlight areas of improvement within programs, especially when the organizational leadership may not be involved with program implementation.

Final Thoughts

There is a magnitude of benefits to reading to babies in the NICU. ROR in NICUs is lacking in expansion and consistent implementation. A barrier identified by ROR leadership was the current requirement to have a Neonatologist lead the ROR program and be responsible for the initial enrollment of families. This project examined the current ROR NICU model to identify areas of improvement and gaps. It was found that RNs most often initiated enrollment and educated families on ROR.

These findings implicate a need for change within the NICU ROR program. Findings were presented to ROR leadership, and a recommendation was made to add a site liaison role to the implementation model. This site liaison should be responsible for family enrollment in the program and ensuring appropriate education for staff. This DNP student recommends that a NICU unit RN committee fill this role. Allowing a committee of RNs to take this role widens the reach of education. It allows for first-hand feedback on implementation and consistent leadership despite staff turnover.

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Appendix A

NICU Cheat Sheet for Affiliates

Neonatal Intensive Care Unit (NICU) Cheat Sheet for Affiliates

On-Site Coordinator
• The On-Site Coordinator (SC) will be responsible for the administrative aspects of the program, including progress reporting and book ordering.

Medical Consultant
• The Medical Consultant (MC) should be a neonatologist who takes the lead in implementing this program—not necessarily the head of the department or of the NICU, but someone who is committed to championing the program, to ensure widespread engagement across all staff.

Training Requirements

In order to assist in tracking and promoting the program training among the staff, Medical Consultants and Affiliates can identify Champion providers among the neonatologists, nurse practitioners and nurses, who can encourage their colleagues to complete the training and begin to practice ROR in the NICU.

- A minimum of 75% of **Core Clinical NICU Staff** (neonatologists and nurse practitioners) must complete the ROR Provider Training in myROR for sites to become active.

  o NursesareencouragedbutnotrequiredtocompletetheRORProviderTraining
  o AdditionalNICUteammembers(fellows,residents,socialworkers,childlifespecialists,physical, occupational, and speech therapists and cuddlers) are encouraged to complete the ROR 101 training in myROR as well as the NICU training in Pathwright.

- A minimum of 75% of **Core Clinical NICU Staff** must take an additional NICU training in Pathwright

  before the site can become active.

- Sites must incorporate the NICU training in Pathwright into the onboarding process of all new **full time**

  NICU nurses *and* have some (site can decide how many) champion RNs take the Pathwright training before the site becomes active.

Appendix B

Reach Out and Read (ROR) in the NICU Survey

Thank you for taking our short survey regarding ROR in the NICU. We value your time and input.

1. What is your role in the NICU?

Unit Manager

Supervisor/Educator

Charge RN

RN

Other (please specify)

2. What healthcare team member initiates patient/family enrollment in the ROR program?

3. How many patients/families would you say receive education to start the program?

All

Most

Some

A few

None

4. How do patients/families typically respond to being enrolled in ROR?

Very positive

Positive

Neutral

Negative

Very negative

5. Do you find parents utilize ROR books in the NICU?

Always

Usually

Sometimes

Rarely

Never

6. What factors contribute to the use of the program?

7. What barriers reduce the implementation of the program with NICU families?

8. In your unit, what healthcare team member(s) provides most of the education to patients and families? Please be specific (examples: PT, OT, RN, APP, Volunteers, Other).

9. What healthcare team members are provided ROR training and education? Please include all disciplines involved with patient care.

10. How much interaction would you say the Neonatologist/Neonatal NP has with the families?

Always

Usually

Sometimes

Rarely

Never

Appendix C

Other Book Program in the NICU Survey

Thank you for taking our short survey regarding early literacy programs in the NICU. We value your time and input.

1. What is your role in the NICU?

Unit Manager

Supervisor/Educator

Charge RN

RN

Other (please specify)

2. What healthcare team member initiates patient/family enrollment in your book program?

3. How many patients/families would you say receive education to start the program?

All

Most

Some

A few

None

4. How do patients/families typically respond to being enrolled in the book program?

Very positive

Positive

Neutral

Negative

Very negative

5. Do you find parents utilize books in the NICU?

Always

Usually

Sometimes

Rarely

Never

6. What factors contribute to the use of the program?

7. What barriers reduce the implementation of the program with NICU families?

8. In your unit, what healthcare team member(s) provides most of the education to patients and families? Please be specific (examples: PT, OT, RN, APP, Volunteers, Other).

9. What healthcare team members are provided with early literacy training and education? Please include all disciplines involved with patient care.

10. How much interaction would you say the Neonatologist/Neonatal NP has with the families?

Always

Usually

Sometimes

Rarely

Never

Appendix D

Early Literacy in the NICU Survey

Thank you for taking our short survey regarding early literacy programs in the NICU. We value your time and input.

1. What is your role in the NICU?

Unit Manager

Supervisor/Educator

Charge RN

RN

Other (please specify)

2. Has your unit considered an early literacy program for NICU infants and their families?

Yes

No

3. Can you identify barriers that are preventing the initiation of an early literacy program in your unit?

4. In your unit, what healthcare team member(s) provides most of the education to patients and families? Please be specific (examples: PT, OT, RN, APP, Volunteers, Other).

5. How much interaction would you say the Neonatologist/Neonatal NP has with the families?

Always

Usually

Sometimes

Rarely

Never

Appendix E

Project Timeline

May 2022-July 2022

- Project idea developed
- Identification of project components, problem, purpose, and goals
- Project partner, project site and stakeholders established
- Citi Modules completed

August 2022-December 2022

- Literature search and matrix
- IRB worksheet and documentation completed
- Development of original educational video
- Development of project outcome measures, methods, and implementation plan

- DNP student project partner left program
- Lost project site
- Biweekly team meetings

January 2023-May 2023

- Met with Reach Out and Read and reimagined project idea
- Revised research
- Created new timeline, implementation plan, methods, and outcome measures
- Developed contact sheet for NICU sites being surveyed
- Developed three surveys and sent them out
- Analyzed survey findings
- Biweekly Team meetings

May 2023-July 2023

- Construct executive summary
- Monthly Team Meetings
- Present findings to Reach Out and Read leadership
- Project Poster presentation at East Carolina University
- Published final paper to the ScholarShip

Appendix F

Budget

Item	Cost
300 Hours	$16,290

Appendix G

DNP Essentials Mapping Template

AANC DNP Essentials	
Essentials	**Competency / Description**
Essential I ***Scientific Underpinning for Practice***	**Competency** – Analyzes and uses information to develop practice
	Competency -Integrates knowledge from humanities and science into context of nursing
	Competency -Translates research to improve practice
	Competency -Integrates research, theory, and practice to develop new approaches toward improved practice and outcomes
Essential II ***Organizational & Systems Leadership for Quality Improvement & Systems Thinking***	**Competency** –Develops and evaluates practice based on science and integrates policy and humanities
	Competency –Assumes and ensures accountability for quality care and patient safety
	Competency -Demonstrates critical and reflective thinking
	Competency -Advocates for improved quality, access, and cost of health care; monitors costs and budgets
	Competency -Develops and implements innovations incorporating principles of change
	Competency - Effectively communicates practice knowledge in writing and orally to improve quality
	Competency - Develops and evaluates strategies to manage ethical dilemmas in patient care and within health care delivery systems
Essential III ***Clinical Scholarship & Analytical Methods for Evidence-Based Practice***	**Competency** - Critically analyzes literature to determine best practices
	Competency - Implements evaluation processes to measure process and patient outcomes
	Competency - Designs and implements quality improvement strategies to promote safety, efficiency, and equitable quality care for patients
	Competency - Applies knowledge to develop practice guidelines
	Competency - Uses informatics to identify, analyze, and predict best practice and patient outcomes
	Competency - Collaborate in research and disseminate findings
Essential IV ***Information Systems – Technology & Patient Care Technology for the Improvement & Transformation of Health Care***	**Competency** - Design/select and utilize software to analyze practice and consumer information systems that can improve the delivery & quality of care
	Competency - Analyze and operationalize patient care technologies
	Competency - Evaluate technology regarding ethics, efficiency and accuracy
	Competency - Evaluates systems of care using health information technologies
Essential V ***Health Care Policy of Advocacy in Health Care***	**Competency**- Analyzes health policy from the perspective of patients, nursing and other stakeholders
	Competency – Provides leadership in developing and implementing health policy
	Competency –Influences policymakers, formally and informally, in local and global settings
	Competency – Educates stakeholders regarding policy
	Competency – Advocates for nursing within the policy arena
	Competency- Participates in policy agendas that assist with finance, regulation and health care delivery
	Competency – Advocates for equitable and ethical health care
Essential VI ***Interprofessional Collaboration for Improving Patient & Population Health Outcomes***	**Competency**- Uses effective collaboration and communication to develop and implement practice, policy, standards of care, and scholarship
	Competency – Provide leadership to interprofessional care teams
	Competency – Consult intraprofessionally and interprofessionally to develop systems of care in complex settings
Essential VII ***Clinical Prevention & Population Health for Improving the Nation's Health***	**Competency**- Integrates epidemiology, biostatistics, and data to facilitate individual and population health care delivery
	Competency – Synthesizes information & cultural competency to develop & use health promotion/disease prevention strategies to address gaps in care
	Competency – Evaluates and implements change strategies of models of health care delivery to improve quality and address diversity
Essential VIII ***Advanced Nursing Practice***	**Competency**- Melds diversity & cultural sensitivity to conduct systematic assessment of health parameters in varied settings
	Competency – Design, implement & evaluate nursing interventions to promote quality
	Competency – Develop & maintain patient relationships
	Competency –Demonstrate advanced clinical judgment and systematic thoughts to improve patient outcomes
	Competency – Mentor and support fellow nurses
	Competency- Provide support for individuals and systems experiencing change and transitions
	Competency –Use systems analysis to evaluate practice efficiency, care delivery, fiscal responsibility, ethical responsibility, and quality outcomes measures

Appendix H

Executive Summary

Infants in the Neonatal Intensive Care Unit (NICU) are at increased risk for neurodevelopmental deficits related to preterm birth, illness, and constant exposure to nonconstructive noise in a high-stress environment (Best et al., 2018; Jain et al., 2021). Purposeful language exposure, such as reading aloud, in the NICU can help offset language delays commonly seen among this patient population and improve long-term health and outcomes (Best et al., 2018; Jain et al., 2021; Levesque et al., 2018; Neri et al., 2021; Newman & Munoz, 2021). Evidence supports promoting literacy starting at birth, making the ongoing utilization of Reach Out and Read (ROR) in the NICU setting essential for this at-risk population.

Changing the ROR NICU delivery model may help improve program implementation at current and future sites. ROR has designated a neonatologist as the site champion, assuming program education and implementation responsibility. However, in the acute care setting, the neonatologist may have brief and inconsistent interactions with the patients-families daily. Identifying a healthcare team member who can act as the ROR site liaison will help build a language-rich environment in the NICU for staff and patients-families.

Background

The current ROR guidelines designate the neonatologist as the team member who provides education to families on the neurodevelopmental benefits of reading aloud to neonates and establishes program enrollment. In addition to the neonatologist, each NICU site can designate a healthcare team member as the ROR site liaison to help increase program enrollment and improve implementation in their unit. This new role will assist with staff education and

training, patient-family education and enrollment, and continuous staff involvement to ensure ongoing, proper implementation of the ROR program is occurring on-site. A healthcare team member who consistently engages with NICU patients and families at the bedside would be most effective in the site liaison role.

Our project group conducted research and data collection in the form of web-based surveys to help determine the healthcare team member most appropriate to fulfill the role of ROR site liaison. The surveys were emailed to NICU managers and staff at eleven large acute care hospital organizations nationwide. The NICU contact sites included six locations currently utilizing the ROR program, three without an early literacy program, and two using a non-ROR/alternative early literacy book program.

Results

Across the eleven healthcare systems that received the surveys, responses were received from five sites that utilize ROR, two sites with no early literacy programs, and one currently utilizing a program other than ROR. Within these organizations, there were 40 total responses. 32 responses came from Registered Nurses (RN), while the rest came from Physicians, Unit Managers, Family Support Directors, and a NICU Quality Coordinator.

Sites utilizing ROR identified bedside RNs as the healthcare team member who most often initiated ROR enrollment. Additionally, RNs were identified as providing the most ROR education to families. The data was obtained using a Likert scale. The neonatologist's interaction with the family was reported as 'always' 47% of the time. The utilization of ROR and the additional book program was reported as *(usually)* 57% of the time, *(sometimes)* 20% of the time, *(rarely)*, or *(never)* 26% of the time, and 0% reported that ROR was *(always)* utilized. Barriers that reduce the implementation of these early literacy book programs listed in order of how often they were reported included lack of knowledge within medical teams, cell phone use

by families, how often the parent visits or how involved they are in the care, and lack of access to books in a foreign language. The most reported factors contributing to the use of ROR included having sufficient education about ROR to educate the family and reinforce the education and access to free books.

Within the organizations that do not have an early literacy program, the most common barrier to implementing a program included cost/budget concerns and time restraints of care providers. 70% of these respondents reported that their unit had never considered implementing an early literacy program.

Conclusion

Establishing a site liaison role could help increase enrollment and facilitate expansion. The site liaison role could be filled by a non-healthcare team member or created into an RN champion role. By modifying the current implementation model and creating a site liaison role, enrollment would increase, facilitating the program's expansion in the acute care setting. The surveys demonstrated that neonatologists do not see families daily. Allowing RNs or other healthcare team members to assume the role of site liaison would shift responsibility for establishing enrollment and initiating education on ROR to bedside staff who are already engaging with the patient and their families daily.

Creating a ROR committee in the NICU could also be another way to facilitate ROR enrollment and education. Multiple roles involved in the committee would be educated and capable of enrolling families and ensuring consistent implantation. Establishing this role and/or committee would take the stress off potential ROR NICU sites in designating a Neonatologist or bedside RNs to enroll families with the current nursing shortage, worsened by the pandemic. This implementation model change could lead to higher site enrollment.

This Doctor of Nursing Practice (DNP) project opened the door to expanding the idea of improving ROR implementation in the NICU and offers endless opportunities for future projects. The DNP project could be developed to follow up on the recommendations made to initiate a site liaison role that could be filled by healthcare and non-healthcare team members or created into an RN champion role/ site liaison. Future surveys could assess the effectiveness and impact of the new site liaison role and/or ROR committee on ROR implementation in the NICU.

ROR has rapidly expanded its program to NICUs nationwide in recent years. ROR's goal is to provide families with the knowledge and resources they need to make reading to their children a part of their daily routine as young as possible. Delivering healthcare team member education using a team model approach has been effective in many areas of healthcare. Expanding the current model beyond the role of a single provider would assist in increasing the implementation of ROR in NICUs nationwide, giving the smallest among us an opportunity to grow and develop to their full potential.