

2021

## Enhancing Therapeutic Alliances in Neonatal Care: Parents With Substance Use Disorders

Shannon A. Starkey  
*University of Massachusetts Amherst*

Follow this and additional works at: [https://scholarworks.umass.edu/nursing\\_dnp\\_capstone](https://scholarworks.umass.edu/nursing_dnp_capstone)



Part of the [Psychiatric and Mental Health Nursing Commons](#)

---

Starkey, Shannon A., "Enhancing Therapeutic Alliances in Neonatal Care: Parents With Substance Use Disorders" (2021). *Doctor of Nursing Practice (DNP) Projects*. 264.  
Retrieved from [https://scholarworks.umass.edu/nursing\\_dnp\\_capstone/264](https://scholarworks.umass.edu/nursing_dnp_capstone/264)

This Open Access is brought to you for free and open access by the Elaine Marieb College of Nursing at ScholarWorks@UMass Amherst. It has been accepted for inclusion in Doctor of Nursing Practice (DNP) Projects by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact [scholarworks@library.umass.edu](mailto:scholarworks@library.umass.edu).

DNP Project Final Write up

**Enhancing Therapeutic Alliances in Neonatal Care:  
Parents With Substance Use Disorders**

Shannon A. Starkey

College of Nursing, University of Massachusetts, Amherst

Chair: Dr. Terrie Black

Mentor: Lindsey Hall

Date of submission: April 10, 2021

**Table of Contents**

Abstract.....	4
Introduction.....	5
Problem Statement.....	8
Background.....	9
Organizational Gap Analysis of Project Site.....	9
Review of the Literature.....	10
Theoretical Framework.....	19
Methods .....	22
Goals and Objectives.....	22
Project Site and Population.....	23
Measurement Instruments.....	24
Data Collection Procedures.....	25
Data Analysis.....	27
Ethical Considerations and Protection of Human Subjects.....	28
Results.....	30
Discussion.....	35
Conclusion.....	39
References.....	40
Appendix.....	49
Appendix A: Facilitating Attuned Interactions (FAN) Model.....	49
Appendix B: FAN Arc of Engagement Diagram.....	50
Appendix C: FAN Processes Survey.....	51

Appendix D: SUD Content Exam.....52

Appendix E: Perceived Stigma of Substance Abuse Scale (PSAS).....53

Appendix F: Demographic Questionnaire on Pretest.....54

Appendix G: Project Timeline .....56

Appendix H: Cost-Benefit Analysis and Budget .....57

### Abstract

*Background:* The number of newborns exposed to opiates quadrupled in the United States from 1999 to 2014, from 1.5 per 1,000 hospital deliveries to 6.5 per 1,000. Many of these babies are admitted to the neonatal intensive care unit for neonatal abstinence withdrawal syndrome. While neonatal nurses are trained to care for babies exposed to substances in utero, they often struggle to meet the unique psychosocial needs of the babies' parents. Negative attitudes and strained interactions between neonatal nurses and families with substance use disorders (SUDs) result in subtherapeutic alliances and suboptimal outcomes in neonatal nurseries. *Purpose:* Educational quality improvement (QI) interventions aimed at reducing stigma and improving therapeutic communication skills and SUD knowledge help neonatal nurses develop a therapeutic alliance with parents with SUDs, thereby improving outcomes. *Methods:* An educational quality improvement project was designed to meet these objectives based on Facilitating Attuned Interactions (FAN), a conceptual framework and practice model for therapeutic interactions. *Results:* Stigmatizing attitudes, SUD knowledge, and comfort with FAN processes were measured before and after the class to determine if there were improvements. One-sample *t*-tests on outcome measures revealed statistically significant improvements with moderate to large effect sizes in stigma ( $p .021$ ,  $d -.46$ ), SUD knowledge ( $p <.001$ ,  $d 2.86$ ), and FAN processes ( $p <.001$ ,  $d 1.38$ ). *Conclusion:* This QI project represents an effective, novel intervention that reduces stigma and improves the therapeutic alliance between neonatal nurses and families with SUDs.

*Keywords:* stigma, therapeutic communication, Facilitating Attuned Interactions, substance use disorder, neonatal intensive care, neonatal abstinence syndrome.

## **Enhancing Therapeutic Alliances in Neonatal Intensive Care: Parents With Substance Use Disorders**

Across the United States, increasing numbers of babies are born to parents with substance use disorders (SUDs). The number of newborns exposed to opiates quadrupled from 1999 to 2014 in the United States, from 1.5 per 1,000 hospital deliveries to 6.5 per 1,000 (Haight et al., 2018). Babies exposed to opiates and other substances are often treated in the neonatal intensive care unit (NICU) for neonatal abstinence syndrome (NAS), which is an infant withdrawal syndrome characterized by irritability and developmental problems (Cleveland & Gill, 2013; Romisher et al., 2018; Tobin, 2018). The number of NAS admissions to the NICU increased from seven per 1,000 admissions to 27 per 1,000, between 2004 and 2013 (Tobin, 2018).

Parents of babies with NAS have unique therapeutic needs relative to their SUDs, personal histories of trauma and adverse childhood experiences (ACEs), as well as distress associated with the NICU environment and the NAS diagnosis. This can bring up guilt, shame, and worry over watching their infant withdraw (Cleveland & Bonugli, 2014; Cleveland & Gill, 2013; Hall, Cross, et al., 2015; Latuskie et al., 2019; Tobin, 2018). The perinatal period is a time when women with SUDs are most likely to engage in treatment for several reasons, including an overall readiness to recover, concern about the baby's welfare, potential loss of custody, a desire for structure in their lives, and wanting to escape homelessness or a violent environment (Frazer et al., 2019; Kennedy-Hendricks et al., 2016).

For these reasons, a NICU admission, despite the stressors, is an important opportunity for recovery for the baby's parents. Thus, to optimize outcomes, parents with SUDs need to receive supportive, nonjudgmental care within a trusting, therapeutic alliance with health professionals to engage with their baby in the NICU and with their recovery programs

(Cleveland & Bonugli, 2014; Cleveland & Gill, 2013; Latuskie et al., 2019; Romisher, 2018; Tobin, 2018). Unfortunately, research has shown that perceived negative attitudes, mistrust, and judgement toward these parents on the part of neonatal nurses adds to parental distress and inhibits the formation of a therapeutic alliance, which is central to quality care (Cleveland & Bonugli, 2014; Cleveland & Gill, 2013; Hall, Cross, et al., 2015; Latuskie et al., 2019; Romisher et al., 2018).

Common themes regarding these negative dynamics have emerged from qualitative studies. Mothers with SUDs express concerns that neonatal nurses judge them negatively, prevent them from performing the parental role in the NICU, do not trust them to care for their infants properly, do not understand addiction or the recovery process, do not empathize with them or care for them as people, and discourage them from visiting their babies in the NICU (Cleveland & Bonugli, 2014; Cleveland & Gill, 2013; Romisher et al., 2018). When parents perceive negativity from nurses in these ways, it increases the risk that they will abandon the baby's bedside and/or their substance use disorder (SUD) treatment program, both of which significantly impact outcomes for babies with NAS and their families (Cleveland & Gill, 2013; Hall, Cross, et al., 2015; Latuskie et al., 2019).

Qualitative and cross-sectional survey research with neonatal nurses provides additional context to this problem. While some nurses do openly express negative judgement and mistrust toward mothers with SUDs, many nurses reject such negative attitudes, affirm commitment to providing quality care, and strive to develop therapeutic alliances with parents with SUDs (Cleveland & Bonugli, 2014; Maguire et al., 2012; Romisher et al., 2018; Tobin, 2018).

Regardless of their reported attitudes toward parents with SUDs, neonatal nurses commonly express frustration and stress in working with these families, as parents with SUDs are frequently

defensive, and at times, verbally and physically aggressive toward nurses (Cleveland & Bonugli, 2014; Maguire et al., 2012; Romisher et al., 2018). Many nurses report feeling ill-equipped to manage these strained relationships and have expressed interest in learning how to communicate more therapeutically to facilitate parental engagement at the bedside (Cleveland & Bonugli, 2014; Maguire et al., 2012; Romisher et al., 2018; Tobin, 2018). NICU nurses also report needing education about addiction and recovery to help them better support parents struggling with SUDs (Cleveland & Bonugli, 2014; Cleveland & Gill, 2013; Romisher et al., 2018).

Parents with SUDs have learning needs that could easily be met in the NICU, if relationships between families and neonatal nurses were improved. Mothers in recovery need help in learning basic caregiving skills, which is especially important given the irritability and developmental issues that babies with NAS exhibit (Cleveland & Gill, 2013; Romisher et al., 2018). However, perceived negative judgement from neonatal nurses discourages parents from being at the bedside and getting vital caregiving practice time with their infants (Romisher et al., 2018).

This opportunity for parents with SUDs to be at the bedside and receive support from neonatal nurses in infant care is important, since many parents may not realize they have significant learning needs. An observational study of 32 pregnant women in buprenorphine treatment in New York revealed that, as a group, they were unaware of deficits they had in their parenting skills, including basic newborn care, feeding practices, and developmental knowledge, which posed a moderate risk for child abuse and signaled significant teaching needs from health professionals (Rizzo et al., 2014). Neonatal nurses thus have a unique opportunity to support parents with SUDs during a particularly important time for their recovery and vital parent-infant



development, which will improve outcomes for the entire family. However, nurses themselves need support in learning to work with these families effectively and therapeutically.

### **Problem Statement**

Although a therapeutic alliance between neonatal nurses and parents with substance use disorders is central to high quality care, there is increased risk of subtherapeutic interactions between nurses and parents secondary to stigma, lack of nurse knowledge about substance use disorders, and lack of nurse training in therapeutic modalities (Cleveland & Bonugli, 2014; Cleveland & Gill, 2013; Hall, Cross, et al., 2015; Romisher et al., 2018; Tobin, 2018). The prevalence of stigma and the detrimental effects of prejudice against NICU parents with SUDs is well established in the literature, as indicated by nurses' expressions of bias toward, and difficulties in working with, these parents, as well as parental perceptions of discrimination from, and subtherapeutic communication with, neonatal nurses (Cleveland & Bonugli, 2014; Cleveland & Gill, 2013; Maguire et al., 2012; Romisher et al., 2018; Tobin, 2018). However, studies on nurse attitudes also reveal an interest in improving therapeutic relationships and communication with parents with SUDs (Cleveland & Bonugli, 2014; Maguire et al., 2012; Romisher et al., 2018; Tobin, 2018). Negative attitudes, as well as a lack of knowledge about SUDs and therapeutic techniques to address the unique needs of the neonatal SUD population, have been cited as reasons for nurses' difficulty in establishing a therapeutic alliance (Cleveland & Bonugli, 2014; Romisher et al., 2018; Tobin, 2018). An educational quality improvement (QI) intervention aimed at reducing stigma and improving therapeutic communication skills and SUD knowledge was created to help neonatal nurses develop a therapeutic alliance with parents with SUDs, thereby improving outcomes for parental SUD treatment, as well as overall infant outcomes, by providing a framework through which parents with SUDs can learn vital parenting

skills (Cleveland & Bonugli, 2014; Hall, Cross, et al., 2015; Latuskie, 2019; Maguire et al., 2012; Rizzo et al., 2014; Romisher et al., 2018; Tobin, 2018).

## **Background**

### **Organizational Gap Analysis of Project Site**

Guided by the gap analysis model described by the Agency for Healthcare Research and Quality (2017), an organizational gap analysis on neonatal nurse learning needs and attitudes toward parents with SUDs was conducted at a NICU in a large medical center in the southwest United States. Gaps in nursing practice and related learning needs were uncovered through a series of interviews with key stakeholders, including unit directors, developmental specialists, social workers, staff educators, departmental nurse committee members, the nursing research director, charge nurses, and staff nurses.

These interviews revealed a significant gap in nurse training that affects care. Although neonatal nurses at the medical center receive training in how to care for babies with NAS, they are not trained to meet the unique and complex needs of these babies' parents. This gap in skills results in suboptimal care for families with SUDs, as well as high stress and burn out levels among the nurses struggling to work with them.

The difficulties in these interactions and clinical relationships are reported by nurses and patients alike at the nursery. Many of the nurses openly express negative judgements toward parents with SUDs and express resistance to working with them in general. They also express significant frustration in working with these families, as they feel that interactions are often negative and psychologically difficult. Nurses explain that they simply do not know how to respond to parents with SUDs when parents are hostile or defensive toward them. In light of

these interactional difficulties, many nurses express interest in learning communication skills that they can use to respond to challenging interactions.

Many parents with SUDs in the nursery report that they, too, have difficulty interacting with neonatal nurses, citing judgmental attitudes, negative interactions, and strained clinical relationships. This negative atmosphere leads parents with SUDs to feel reluctant or fearful about visiting their babies in the nurseries. During interviews with staff and key stakeholders, a significant clinical practice need was identified: Neonatal nurses need to learn how to therapeutically work with families challenged by substance use disorders, because negative attitudes and a lack of knowledge in therapeutic communication techniques leads to a reduced quality of care, diminished outcomes for babies and parents with SUDs, and increased staff stress and burn out.

## **Review of the Literature**

### **Literature Review Methods**

A comprehensive literature review on these topics was conducted. The databases searched were PubMed, Cumulative Index of Nursing and Allied Health (CINAHL), PsycINFO, Web of Science, Education Resources Information Center (ERIC), and the Cochrane Library. The following search strings were used in the listed databases: (stigma OR bias OR implicit bias OR explicit bias OR bias in mental health assessment) AND (intervention OR empathy OR therapeutic communication OR communication skills training) AND (substance use disorders OR substance use OR mental health OR mental health care) AND (intervention OR education OR training) AND (health care professionals OR nurse OR nurses OR nursing care OR nurse practitioners OR mental health professionals OR providers OR prescribers OR physicians OR psychiatrists OR doctors) AND (neonatal abstinence syndrome or neonatal withdrawal syndrome

or NAS) AND (neonatal intensive care unit or NICU or baby unit or newborn intensive care or newborn nursery). Additional relevant citations were discovered using the snowball technique (Garrard, 2014) and consultations with experts. Peer-reviewed articles published in English between January 2000 and November 2019 were included in the review.

### ***Title Review***

A title review was conducted on 4,623 citations discovered in the search. Titles were rejected if they were not peer reviewed, written before the year 2000, or unavailable in the English language. Titles were also excluded if they did not address interventions regarding health professionals' stigma or attitudes related to clients with SUDs, therapeutic modalities that could be used to enhance professional alliances with clients with SUDs, or educational needs of health professionals and/or students regarding SUD topics. Articles about interventions in non-English-speaking societies were excluded as well, because their content would likely not be relevant to this project, due to the culture-specific nature of stigma and therapeutic relationships.

### ***Abstract Review***

After the title review, an abstract review was conducted on 534 articles. Abstracts were included if their topics involved health professionals and health science students, anti-stigma research for SUDs, any therapy or educational intervention relevant to the therapeutic alliance with clients with SUDs, and evidence showing needs for training and education of health professionals or students relative to reducing stigma and improving the therapeutic alliance with clients with SUDs. Abstracts that involved studies in non-English-speaking countries, self-stigma, social stigma in general, interventions directed at mental health issues that did not specifically include SUDs, barriers to SUD treatment other than nontherapeutic interactions with

health professionals, and student populations that were not health sciences students, were also excluded.

### ***Full Text Review***

After reviewing abstracts with the above inclusion and exclusion criteria, 195 articles were selected for full text review. Of these, 18 articles were selected for further analysis. All but two of these 18 articles, Kennedy-Hendricks et al. (2016) and McGinty et al. (2018), are specific to health professionals. Kennedy-Hendricks et al. (2016) and McGinty et al. (2018) were included because the studies' research aims – reducing social stigma against North Americans with SUDs and pregnant women with SUDs, in particular – are highly applicable to a very similar problem among NICU nurses, who are also likely susceptible to the same patterns of social stigma. Many of the 18 included articles in this review are specific to the NICU and/or SUDs in the perinatal period. Each of the articles is culturally relevant to health professionals in the United States and was published within five years of the first literature search, except Livingston et al. (2012), which was included as an important early systematic review on stigma-reducing interventions for SUDs.

### **Literature Appraisal Method**

This project utilized evidence from two randomized controlled trials (RCTs), nine quasi-experimental studies, two qualitative studies, two systematic reviews, two expert panel literature reviews with recommendations, and one clinical practice guideline, representing levels of evidence ranging from I to IV, graded A through B, according to the Johns Hopkins Hospital/ Johns Hopkins University (JHNEBP) Evidence Rating Scales (Dang & Dearholt, 2017). While the majority of evidence in this review represents higher JHNEBP levels I and II and grade A quality, studies at lower JHNEBP levels III and IV, and studies with grade B quality, are also

included, because literature specific to nursing therapeutic communication and stigma toward NICU parents with SUDs is relatively limited (Dang & Dearholt, 2017).

The quality of the evidence in this review was appraised with criteria appropriate to each study's methodological design. In addition to using the JHNEBP Evidence Rating Scales to level and grade individual studies, various appraisal systems were also used to evaluate the quality of evidence in each article, including the Appraisal of Guidelines for Research and Evaluation (AGREE) II, Preferred Reporting Items for Systematic Reviews (PRISMA), and appraisal guides for qualitative and quantitative research published by the American Nurse Association (ANA) and the Centre for Evidence Based Medicine (CEBM) (American Nurse Today Editors, 2015; Brouwers et al., 2010; CEBM, 2020; Dang & Dearholt, 2017; Kaplan, n.d.; Liberati et al., 2009). Methodological critiques of studies were also carried out with criteria described in Polit and Beck (2017).

### **Synthesis of Literature Reviewed**

This literature review synthesizes 18 articles describing individual interventions, literature reviews, and expert recommendations for improving the therapeutic alliance and reducing SUD stigma in the NICU. Two main categories of interventions are reviewed here: (a) educational interventions designed to reduce stigma that incorporate narrative, reflective, and didactic components, and (b) educational interventions designed to improve the therapeutic alliance. The goal of the review is to identify educational interventions to incorporate in a quality improvement project designed to reduce stigma and improve the therapeutic alliance.

#### ***Educational Interventions for Reducing Stigma***

Thirteen articles, including nine individual studies, two systematic reviews, and two expert panel reviews with recommendations, evaluated educational programs designed to reduce

stigma using various methods, such as didactic sessions, exposure to written, video, or live narratives of people with SUDs, group discussions, written reflection, and role play (Brannock et al., 2020; Crapanzano et al., 2014; Crapanzano & Vath, 2017; Flanagan et al., 2016; Kennedy-Hendricks et al., 2016; Hooks, 2019; Livingston et al., 2012; McGinty et al., 2018; National Academies of Sciences, Engineering, & Medicine [NASEM], 2016; Nyblade et al., 2019; Roussy et al., 2015; Schiff et al., 2017; Tobin, 2018).

**Narratives.** Narratives are a powerful way to reduce stigma toward people with SUDs (Flanagan et al., 2016; Kennedy-Hendricks et al., 2016; McGinty et al., 2018). The attitudes of health providers toward people with SUDs improved following participation in “Recovery Speaks,” a strengths-based photovoice performance offered by individuals describing their personal recovery from SUDs (Flanagan et al., 2016). Negative stereotypes, fear, avoidance, and perception of dangerousness decreased, while positive attitudes, including a desire to help and more hope for SUD recovery, improved among health providers who viewed these performances (Flanagan et al., 2016).

Narratives with specific components seem to be most helpful in improving attitudes (Kennedy-Hendricks et al., 2016; McGinty et al., 2018). Sympathetic narratives that humanize the SUD experience, along with messages about treatment efficacy and structural barriers to treatment, are effective in improving attitudes (McGinty et al., 2018). Narratives featuring pregnant women with SUDs with high socio-economic (SEC) status who successfully recovered seem to be more effective than other variations in narratives involving low SEC status, barriers to successful treatment, and unsuccessful treatment experiences (Kennedy-Hendricks et al., 2016).

Various formats for exposure to SUD narratives are helpful in improving attitudes of health professionals. Watching a video narrative or listening to live speakers discussing their experience with SUDs seem to be consistently effective for improving attitudes and reducing stigma among health professionals (Brannock et al., 2020; Crapanzano et al., 2014; Crapanzano & Vath, 2017; Flanagan et al., 2016; Hooks, 2019; Livingston et al., 2012; NASEM, 2016; Nyblade et al., 2019; Roussy et al., 2015; Schiff et al., 2017). Although written narratives are also effective, live or video narratives seem to be more powerful (Livingston et al., 2012; Nyblade et al., 2019; Roussy et al., 2015).

**Reflection.** Interventions with reflective components have been consistently effective, to varying degrees, in reducing stigmatizing attitudes. Critical reflection on the SUD experience seems to reduce stigma among health professionals (Brannock et al., 2020; Livingston et al., 2012; Nyblade et al. 2019). Participatory learning and peer interaction are group-level reflective processes that also reduce health professionals' stigma toward clients with SUDs (Hooks, 2019; Nyblade et al., 2019; Schiff et al., 2017; Tobin, 2018). The self-reflection process helps health care professionals to reduce outward expressions of bias (*explicit bias*), recognize unconscious negative attitudes (*implicit bias*), and identify individual strengths and weaknesses in therapeutic dynamics with clients with SUDs (Crapanzano et al., 2014; Crapanzano & Vath, 2017; Hooks, 2019; Tobin, 2018).

**Didactic Sessions.** Two main categories of didactic topics have been found to be helpful in reducing health professional stigma toward people with SUDs: (a) therapeutic approaches and communication styles that professionals can use to work with, and/or teach to, clients with SUDs, and (b) perinatal mental health and SUDs issues, including the neurobiology of addictions, traumatic roots of SUDs, psychosocial impacts, treatment, and recovery (Brannock et



al., 2020; Hall, Cross, et al., 2015; Hooks, 2019; Latuskie et al., 2019; Livingston et al., 2012; MacKinnon, 2019; Nyblade et al., 2019; Roussy et al., 2015; Schiff et al., 2017; Spielberger et al., 2016, 2019; & Tobin, 2018).

### ***Educational Interventions for Improving the Therapeutic Alliance***

Professional training in a variety of therapeutic communication styles and approaches are effective in improving the therapeutic alliance with clients with SUDs, including trauma-informed care (TIC), crisis communication, family-centered care, boundary-setting, teach back methods, active listening, coaching and motivational interviewing (MI) techniques, appreciative inquiry (AI), dialectical behavior therapy (DBT), acceptance and commitment therapy (ACT), honoring behavior, such as providing honorariums for lunch, and respectful language use (Hall, Cross, et al., 2015; Hooks, 2019; Latuskie et al., 2019; Livingston et al., 2012; Nyblade et al., 2019; Schiff et al., 2017; Tobin, 2019). TIC education about SUDs in the context of ACEs is especially effective in improving professional attitudes and therapeutic relationships (Hall, Cross, et al., 2015; Hooks, 2019; Latuskie et al., 2019; Livingston et al., 2012; Nyblade, 2019; Schiff et al., 2017).

Clinical experts also recommend that nurses working in perinatal and neonatal SUDs contexts receive training in therapeutic techniques. Based on focus group results, Latuskie et al. (2019) recommend trainings for perinatal professionals in trauma-informed care, general education about SUDs, and empathy interventions in order to enhance recovery outcomes for mothers with SUDs. A NICU guideline mirrors these suggestions, recommending that neonatal nurses receive training to enhance therapeutic dynamics with distressed parents by improving communication, reducing stress, and promoting a therapeutic alliance (Hall, Cross, et al., 2015).

*Facilitating Attuned Interactions* (FAN) is an effective approach that meets these guidelines and incorporates many of the therapeutic elements highlighted in the literature (MacKinnon, 2019; Spielberger et al., 2016, 2019). FAN is a therapeutic interaction and alliance-building intervention that is used to help health professionals and families learn how to work together to optimize infant mental health and promote parent-infant development (MacKinnon, 2019; Spielberger et al., 2016, 2019). FAN is frequently used in infant mental health contexts and with families struggling with SUDs, both of which are important in the neonatal nursery environment (Heffron et al., 2016; MacKinnon, 2019). Although it has not been formally studied in NICU contexts, FAN is employed in NICUs around the country, because it provides a framework through which nurses can develop a therapeutic alliance with parents and support them in capacity building (Gilkerson et al., 2017; P. MacLean, personal communications, January 15, 2020, January 31, 2020).

FAN has five main components: calming through mindful self-regulation, empathic inquiry about feelings, thinking through a problem with collaborative exploration, working through problems while building capacity, and integrating new insights through reflection (Spielberger et al., 2016). FAN professionals and parents explore concerns in a manner that is calming, empathic, and collaborative (Spielberger et al., 2016). As FAN professionals learn to focus on parental concerns and cues, they attune their interactions to parental/infant needs in the moment, which enhances not only infant development, but also parental skill and self-efficacy (Spielberger et al., 2016).

FAN improves the confidence, reflective capacity, and ability of health professionals to develop a therapeutic alliance with families (MacKinnon, 2019). Through FAN, health professionals develop emotional awareness and self-regulation abilities using reflective practices

and mindfulness, which allows them to support parents in an empathic manner that enhances the therapeutic alliance (Gilkerson & Norton, 2020; Spielberger et al., 2016). Additionally, FAN practices, such as self-calming, professional boundaries, reflective supervision, and social connection, also serve as protective factors against burnout (MacKinnon, 2019). These FAN benefits of reducing health professional stress, enhancing infant mental health, and improving the therapeutic alliance with at-risk families are invaluable in the NICU context. A diagram of the FAN model is available in Appendix A (Spielberger et al., 2016).

FAN training has been adapted to many contexts, including the NICU, and varying lengths of FAN training have been found to be effective for health professionals (P. MacLean, personal communications, January 15, 2020; Spielberger et al., 2016, 2019). Although FAN is often taught over six to 18 months, shorter, three-hour trainings followed by six months of mentorship and practice are also effective (Gilkerson et al., 2017; Spielberger et al., 2016, 2019). A NICU expert and FAN trainer, Dr. Peggy Maclean, has trained NICU nurses in even shorter training periods of one to two hours (personal communications, January 15, 2020).

### ***Educational Program Design***

This literature review contains a mix of evidence levels and quality grades, but most of the evidence ranks at level I, II, or III, grade A (Dang & Dearholt, 2017). This high-quality evidence suggests that training programs that utilize specific educational approaches are effective in reducing stigma and improving the therapeutic alliance. Interactive and participatory learning formats that incorporate reflection and discussion are likely to optimize health professionals' ability to learn and implement therapeutic techniques (MacKinnon, 2019; Nyblade et al., 2019; Schiff et al., 2017; Spielberger et al., 2016, 2019; Tobin, 2018). Reflection about in-person or video narratives about people with SUDs are likely to be more effective in reducing

negative attitudes than didactic sessions alone that focus exclusively on knowledge acquisition (Brannock et al., 2020; Flanagan et al., 2016; Hooks, 2019; Kennedy-Hendricks et al., 2016; Livingston et al., 2012; McGinty et al., 2018; NASEM, 2016; Nyblade et al., 2019; Roussy et al., 2015; Schiff et al., 2017). An evidence-based educational program designed to reduce stigma and improve interactions between health professionals and people with SUDs would utilize a participatory learning approach and several specific components, including live or recorded narratives, reflection, didactic sessions, and the FAN therapeutic model.

### **Evidence-Based Quality Improvement Project**

Building on the evidence in this review and guided by the FAN model, an educational quality improvement (QI) project was created to enhance the therapeutic alliance between NICU nurses and parents with SUDs. A QI inservice was designed to help nurses improve their relationships with families with SUDs by developing therapeutic interaction skills, reducing negative attitudes, and enhancing knowledge about SUDs from a trauma-informed care perspective in the neonatal context. The inservice included participatory didactic sessions about SUDs, interactive FAN training, and a recorded interview with a former NICU mother in SUD recovery, followed by a reflective group discussion. Due to precautions related to Covid-19, the class took place over Zoom, a video conferencing platform (Zoom Video Communications, 2020).

### **Theoretical Framework**

FAN is both a conceptual framework and an evidence-based practice model for understanding and developing attunement between health professionals and parents (Spielberger et al., 2016, 2019). As a practice model, FAN promotes attunement between neonatal nurses and NICU parents with SUDs through a collaborative, interactive process that promotes parental

capacity (Spielberger et al., 2016, 2019). FAN is also a reflective practice for nurses that allows for a reduction of stigmatizing attitudes and greater therapeutic efficacy through mindfulness, self-regulation, and self-examination (Spielberger et al., 2016, 2019). In these ways, FAN as a practice model encapsulates the objectives of this QI project. See Appendix A for the FAN model diagram.

The FAN model provides a framework for developing a therapeutic alliance between neonatal nurses and parents with SUDs. The FAN model guides nurses to interact with parents about their concerns empathically and to match their responses to parental engagement cues, which may oscillate between a need to focus on feelings or thoughts about a concern, to an interest in building caregiving capacity or reflecting on a recent insight (Gilkerson & Norton, 2020; P. Maclean, personal communication, July 29, 2020).

The *FAN Arc of Engagement* in Appendix B provides an interactional structure for nurses to use while engaging the FAN model processes with parents (Gilkerson & Norton, 2020; P. Maclean, personal communication, July 29, 2020). The Arc of Engagement emphasizes the need for nurses to calm and self-regulate before, during, and after an interaction to maximize their therapeutic capacity and ability to recognize parental cues (Gilkerson & Norton, 2020; P. Maclean, personal communication, July 29, 2020). Guided by the Arc of Engagement, nurses are able to locate where parents are in the FAN processes and match their nursing response to parental cues based on the FAN model (Gilkerson & Norton, 2020; P. Maclean, personal communication, July 29, 2020).

This matching process with the FAN model resolves a common source of neonatal nurse-parent discordance that could otherwise weaken the therapeutic alliance (Gilkerson & Norton, 2020; P. Maclean, personal communication, July 29, 2020). When nurse responses do not match

parental cues according to the FAN model, the alliance can be weakened or ruptured (Gilkerson & Norton, 2020; P. Maclean, personal communication, July 29, 2020). For example, when a nurse tries to introduce a new positioning technique to address a feeding problem while the parent is in a feeling or thinking mode, and thus not yet ready to start working on a new feeding technique per the FAN model, mistrust, disharmony, and reactivity between the nurse and parent can result. In contrast, if the nurse were to match her response per the FAN model to the parent's feelings and thoughts by expressing empathy and talking through the parent's concern, greater trust and rapport would develop, which would strengthen the therapeutic alliance.

The FAN model is not only a structured practice model for therapeutic interactions in the NICU, but it is also a conceptual framework that guided this QI project. The five FAN processes depicted in the model in Appendix A provided organizational and content structure to this QI project. The *calming* component of FAN (Spielberger et al., 2016, 2019) was represented by mindfulness exercises and discussions about emotional self-regulation for nurses. Ways that nurses can help NICU parents to calm was also incorporated. The *feeling* component (Spielberger et al., 2016, 2019) was represented by asking nurse participants to discuss their feelings and attitudes about working with families with SUDs and related challenges. The feelings of NICU parents with SUDs was also discussed and honored, especially during the interview with the former neonatal nursery mother in recovery from SUDs. The *thinking* component (Spielberger et al., 2016, 2019) was represented by didactic discussions about SUDs, TIC, ACEs, and it included formal training in FAN. The phase of *doing and capacity building* (Spielberger et al., 2016, 2019) was represented by group discussion about FAN processes using scenarios involving NICU parents with SUDs. The *reflection* phase of FAN (Spielberger et al., 2016, 2019) was represented by group discussion.

## Methods

This quality improvement project was an educational intervention designed to enhance the therapeutic alliance between neonatal nurses and parents with SUDs by reducing negative nurse attitudes, increasing nurse knowledge about SUDs from a TIC perspective in the NICU context, and improving therapeutic interaction skills through FAN training.

### Goals and Objectives

The primary, long-term goal of the capstone QI project was to improve the therapeutic alliance between neonatal nurses and parents with SUDs. To meet this overarching goal, the DNP student, in partnership with an expert FAN trainer, offered a 2.5-hour inservice that was part of a larger four-hour inservice for neonatal nurses facilitated by a departmental committee. The inservice was offered four times over Zoom to maximize the potential that nurses would attend. In addition to the overarching goal, there were three primary goals of the project, which had specific objectives as depicted in Table 1.

**Table 1**

*Goals and Objectives*

<i>Goals</i>	<i>Objectives</i>
(1) Reduce stigma by neonatal nurses toward parents with SUDs.	1) Neonatal nurses who attended the inservice watched a recorded interview with a former NICU mother in recovery regarding her NICU experiences and participated in a reflective group discussion.
(2) Increase neonatal nurse knowledge about SUDs from a neonatal and trauma-informed care perspective.	(2) Neonatal nurses who attended the inservice participated in an interactive didactic session about SUDs from a neonatal and trauma-informed care perspective.
(3) Improve the therapeutic quality of interactions between neonatal nurses and parents with substance use disorders.	(3) Neonatal nurses who attended the inservice participated in an interactive training session in FAN therapeutic techniques and mindfulness.

### **Project Site and Population**

The educational QI project was carried out with staff nurses who worked in a neonatal ICU at an academic medical center in the southwestern United States. The NICU treats babies for prematurity, perinatal complications, and congenital or genetic problems, in addition to in utero substance exposure. The NICU provides care for a high number of babies whose families have significant psychosocial problems and mental health comorbidities, including substance use disorders.

Unfortunately, most nurses at the project site were not trained to meet the unique therapeutic and mental health needs of parents with SUDs, especially in the high-stress, high-acuity context of a NICU. Stakeholders at the medical center's neonatal nursery, including a unit director, staff nurses, unit-based educators, social workers, supervisors, and primary nursing committee members, recognized the need and interest that staff nurses had in learning how to nonjudgmentally and therapeutically work with families struggling with SUDs.

Based on evidence from the literature review, a staff training in an evidence-based therapeutic technique such as FAN, especially in combination with a stigma-reducing intervention and education on neonatal SUD issues, seemed likely to improve nurses' understanding of how to work with NICU families with SUDs, which, in turn, seemed likely to improve overall patient care, satisfaction, and health outcomes. It seemed that nurses using these new skills might experience less stress, because the incidences of verbal and emotional reactivity expressed by neonatal ICU families would probably decrease. It was also hoped that FAN could help reduce burn out in the NICU, as it has been shown to reduce burnout in other settings (MacKinnon, 2019).



Approximately 150 nurses worked in the neonatal ICU at the project site, and the majority of them were female, racially and ethnically heterogeneous, and relatively new to the unit and/or nursing, due to recent high levels of staff turnover. Key stakeholders supporting the QI project included the medical center's director of nursing research, two unit directors, three unit-based educators, an education department nurse, developmental specialists, a neonatal social worker, an expert FAN trainer and psychologist, a charge nurse, staff nurses, and the NICU Primary Nurse Committee. The NICU Primary Nurse Committee supported this QI project as part of a larger inservice that was aimed at building relationships between neonatal nurses and parents through primary nursing and therapeutic training. Administrative support for this QI project was expressed in a letter by the medical center's director of nursing research.

All neonatal nurses at the project site were actively recruited to participate in the inservice through emails with a flyer and short advertising video, created by this DNP student and primary nurse committee members. Nurses who did not work at the project site were excluded. CEU's and paid educational leave were offered for the class.

### **Measurement Instruments**

To measure outcomes for this QI Project, three instruments were utilized: (a) a self-report survey developed by this author and Dr. Peggy Maclean that measured perceived comfort with FAN processes, (b) a content exam designed by this author that evaluated knowledge about SUDs, and (c) the Perceived Stigma of Substance Abuse Scale (PSAS) scale that measures change in stigma levels (Luoma et al., 2010; Tuliao & Holyoak, 2020). The FAN self-report survey was developed to measure the extent to which nurses are comfortable using FAN processes and interacting therapeutically with parents using mindful self-regulation, empathic inquiry, collaborative exploration, capacity building, and integration. The survey provides five

gradations of possible responses: *not at all comfortable, a little comfortable, somewhat comfortable, fairly comfortable, and very comfortable*. The tool was adapted from surveys utilized by Spielberger et al. (2016, 2019) and is available in Appendix C. The multiple-choice and true-false SUD content exam designed by this author is available in Appendix D.

The Perceived Stigma of Substance Abuse Scale (PSAS) scale measures perceptions of stigma toward people with substance use disorders. Its psychometric properties have been well-established among populations with SUDs as well as those without SUDs (Luoma et al., 2010; Tuliao & Holyoak, 2020). Luoma et al. (2010) developed the PSAS and demonstrated that it has good internal consistency, convergent validity, and discriminant validity. A more recent study by Tuliao and Holyoak (2020) also confirmed the internal consistency of the PSAS, as well as its construct validity. The PSAS is an eight-item self-report scale that measures attitudes with a Likert-like scale with four possible responses: *strongly disagree, disagree, agree, disagree, and strongly agree* (Luoma, n.d.). Possible final scores range from eight to 32, with higher scores indicating more negative attitudes toward people with SUDs (Luoma, n.d.). An example of the tool is available in Appendix E.

## **Data Collection Procedures**

### ***Pre-Intervention Phase***

All neonatal nurses at the project site were recruited to participate in the project via email invitations with a flyer and a video advertising the inservice. Four classes were offered at different times to maximize attendance possibilities.

### ***Intervention Phase***

The educational QI project took place with 28 neonatal nurses at the project site on October 28 and 29 and November 4 and 5, 2020, from 2:30-5:00 pm over Zoom. The

development of the inservice, including its educational components, format, content, and strategies, were based on evidence from the literature review. The course was designed to improve the therapeutic alliance between nurses and families with SUDs by reducing bias toward people with SUDs, increasing knowledge about SUDs, and improving comfort with therapeutic interaction skills. The inservice included interactive didactic sessions about FAN and substance use disorders in neonatal and trauma-informed contexts, as well as a recorded interview with a former NICU mother in recovery from a SUD, followed by a reflective group discussion. The inservice incorporated many interactive and reflective components, including question and answer periods, group discussions, prompts for self-reflection, Zoom polling questions, mindfulness instruction and practice, and a pretest and posttest.

Links to the anonymous pretest and posttest on REDCap were emailed to participants before and after the class (Vanderbilt University, n.d.). The pretest was completed before the class started, and it requested demographic information in addition to answers to the three outcome measures – the FAN survey, the SUD content exam, and the PSAS. The list of demographic questions included with the pretest is available in Appendix F, and the three outcome measures are available in Appendices C, D, and E. These same three outcome measures were included in the posttest, yielding quantitative results immediately after the intervention. All data from the QI project pretest and posttest were de-identified and stored securely on REDCap and an encrypted and password-protected hard drive, accessible only by the DNP student.

Anonymity was maintained by refraining from associating participant names with any stored demographic or outcome data on REDCap (Vanderbilt University, n.d.). Thus, no individual names were connected to either demographic or outcome data. Rather, participant names and email addresses were collected separately from the outcome and demographic data

and were used only for course registration, emailing course information, including REDCap pretest and posttest links, verifying course attendance, and, after course completion, emailing CEU certificates (Vanderbilt University, n.d.; Zoom Video Communications, 2020). The medical center's staff CEU administrator monitored attendance, verified course completion, and awarded CEUs.

### ***Postintervention Phase***

At the conclusion of each inservice, participants completed the posttest via REDCap (Vanderbilt University, n.d.). The posttest survey included the same three outcome measures used in the pretest. A separate CEU evaluation, created and managed by the staff CEU administrator using a separate REDCap account, was completed after the posttest survey. The CEU administrator verified attendance and completion of the CEU course evaluation prior to emailing CEU certificates to participants. After the completion of all four inservices, data analyses were conducted. A timeline for the project is available in Appendix G. A cost-benefit analysis and the project budget are available in Appendix H.

### **Data Analysis**

Quantitative data from the project were analyzed using SPSS statistics software, version 27 (International Business Machines [IBM], n.d.). The total participant sample included 28 nurses, not including one nurse who completed the pretest but was unable to complete the inservice. Demographic data were descriptively analyzed as an aggregate. There were three dependent variables, or outcome variables, that quantified change in (1) stigma levels, (2) SUD knowledge, and (3) FAN comfort level, as measured on the three scales described above at two time points: immediately before and immediately after the QI intervention. The results were compared within the same group of participants. Data from the multiple-choice and true-false

SUD exam were analyzed as the number of correct answers, with possible scores of zero through five, thus generating ratio-level data, as defined by Polit (2010). Because the PSAS and FAN surveys both used a Likert-like scale, results were analyzed as interval-level data, per Polit (2010). One-sample *t*-tests were used to compare the pre-intervention results to post-intervention results on each of the three measures. A factor analysis and one-sample *t*-test were conducted on the FAN survey results to determine if certain FAN components were differentially impacted by the intervention.

### **Ethical Considerations and Protection of Human Subjects**

Ethical principles and human participant protections were assured during this project in various ways, in accordance with the ethics and standards set forth in the Belmont Report and described in the Common Rule (Office for Human Research Protections [OHRP], 2020). Core ethical principles, including respect for people, justice, beneficence, and informed consent was upheld throughout the project (Borenstein, 2019). Institutional Review Board (IRB) approval (OHRP, 2020) was obtained through the University of Massachusetts Amherst. IRB approval at the project site was not needed. No financial, institutional, academic, commitment, or non-financial conflicts of interest influenced the project (Bell, 2019). Privacy and confidentiality (OHRP, 2020) were maintained for all nurse QI participants, as no individual identifying information was associated with any demographic or outcome data. Rather, REDCap (Vanderbilt University, n.d.), which is a secure virtual platform developed by Vanderbilt University to create and administer online surveys and databases, stored each participant's pretest and posttest answers anonymously and securely. Individual names were only used for the purposes of class registration, emailing class information, class participation verification, and awarding CEUs. All data were stored digitally, in a secure database controlled by REDCap (Vanderbilt University,

n.d.) as well as in a password-protected computer that utilizes encrypted storage, accessible only to this DNP student. These practices accord with standards established by Collaborative Institutional Training Initiative (CITI) recommendations to maintain the integrity, confidentiality, and proper stewardship of data (Cushman, 2019).

All information was protected through privacy practices, in accordance with Health Insurance Portability and Accountability Act (HIPAA) and Health Information Technology for Economic and Clinical Health (HITECH) regulations (Grace, 2018; Melnyk & Fineout-Overholt, 2015; Vanderbilt University, n.d.). Although no patient data were utilized in this QI project, privacy was maintained by asking nurses not to use any actual patient names during group discussions. The confidentiality of the former NICU mother in recovery, and that of her child, was protected by refraining from using either of their names. She also signed an informed consent form required by the medical center to permit the use of her recorded interview for this project. The original signed copy of her consent form is stored in a locked file cabinet, accessible only by this author, and it will be destroyed five years after the conclusion of this project.

Physical and psychological well-being was also maintained for participants in this QI project, thereby reducing risk of harm. Because the class was conducted virtually, there was little risk of physical harm. Psychological and cognitive safety was maintained by following educational standards for nurses set forth by the American Association of Colleges of Nursing through the Commission on Collegiate Nursing Education (CCNE) (2020). The class satisfied essential criteria established by the CCNE (2020) for nursing education by helping nurses integrate evidence-based practices into their care, by fostering interprofessional collaboration with developmental specialists to improve patient care outcomes in the NICU, and by enhancing professional skill sets, attitudes, and knowledge.

## Results

The QI project was conducted at an academic medical center in the southwest United States in late 2020. Four identical inservices were offered over a two-week period. The pretest survey, including the demographic questionnaire, was completed by 29 nurses. One of the 29 nurses who completed the pretest dropped out, leaving a total of 28 nurses who completed the full inservice and the posttest. Because all the data were de-identified, the demographic data and pretest answers from the nurse who dropped out were included in the aggregate analysis for the pretest and demographic data only. The sample number ( $n$ ) used for the  $t$ -tests was 28.

### Demographics

The neonatal nurses who participated in the project were a relatively homogenous group. See Tables 2, 3, and 4 for a complete overview of the participants' demographic data.

**Table 2**

*Demographics of NICU Nurse Participants*

<i>Gender</i>	<i>n</i>	<i>Age</i>	<i>n</i>	<i>Ethnicity</i>	<i>n</i>
Male	0	18-24 yrs	6	Hispanic or Latino	14
Female	29	25-34 yrs	14	Black or African American	2
Transgender	0	35-44 yrs	7	Native American/American Indian	0
Other	0	45-54 yrs	1	Asian/Pacific Islander	0
		55-64 yrs	1	White	13
		65-74 yrs	0	Other	0
		75 yrs/older	0		

**Table 3***Education, Training, and Experience of NICU Nurse Participants*

<i>Highest Education Level</i>	<i>n</i>	<i>Years of NICU Experience</i>	<i>n</i>	<i>National Neonatal Nurse Certification</i>	<i>n</i>
Diploma	0	5 years or less	25	Yes, certified	8
Associate Degree	2	More than 5 years	4	No, planning to certify	18
Bachelor's Degree	24			No, not planning to certify	3
Master's Degree	3				
Post-master's certification	0				
Doctorate	0				

**Table 4***Previous Education and Exposure to People with SUDS among NICU Nurse Participants*

<i>SUD Education Prior to Inservice</i>	<i>n</i>	<i>Context for Prior SUD Education</i>	<i>n</i>	<i>Frequency of Exposure to NICU Families With SUDS</i>	<i>n</i>	<i>Know Someone With a SUD</i>	<i>n</i>
Yes	20	Nursing degree program	15	Daily	3	Friend	14
No	9	CEU course	8	Weekly	19	Coworker	5
		Conference	3	Bimonthly	3	Spouse	1
		Independent study	3	Monthly	3	Immediate Family Member	11
		Professional training	4	Every few months	1	Extended Family Member	12
		Conversations with colleagues/experts	8	A few times per year	0	Self	0
		Other	2	About once per year	0	Acquaintance	9
				Other	0		

Of the 29 participants who completed the demographic questionnaire, all identified as female, and 69% were between 18 and 34 years of age. About half identified as either Hispanic or white, and two identified as African American. A large majority of participants (83%) held a bachelor's degree, and 90% of all participants were already nationally certified in neonatal



nursing or planning to become certified. Most of the participants (86%) had worked in the NICU five years or less, and most (69%) experienced previous education in SUDS. The majority of this prior training occurred in their nursing degree program, a CEU course, or through conversations with colleagues and/or experts. Most of the participants reported frequently interacting with parents with SUDS, on a daily (10%) or weekly (66%) basis. All participants knew someone personally who had a SUD, the largest categories of which were friends (48%), extended family (41%), or immediate family (38%).

### Outcome Measures

A one-sample *t*-test was used to evaluate the impact of the intervention on all three outcome measures – the Perceived Stigma of Substance Abuse Scale (PSAS) scale, the Facilitating Attuned Interactions (FAN) self-report survey, and the substance use disorder knowledge test (SUDKn). The results of the analysis showed statistically significant improvement for all three outcome measures. The change was a moderate to large effect size. (See Table 5.)

**Table 5**

#### *One-Sample t-Test Results for Outcome Measures*

Outcome Measure	<i>n</i>	<i>M</i> Pretest (SD)	<i>M</i> Posttest (SD)	<i>t</i> ( <i>df</i> )	<i>M</i> Differ- ence	<i>p</i>	Cohen's <i>d</i>	95% CI: Lower Limit	95% CI: Upper Limit
PSAS	28	23.28 (1.67)	21.96 (2.83)	-2.45 (27)	-1.31	0.021	-0.46	-2.41	-0.21
FAN	28	32.76 (5.22)	38.82 (4.40)	7.30 (27)	6.06	<.001	1.38	4.36	7.77
SUDKn	28	2.10 (1.01)	4.29 (.76)	15.14 (27)	2.18	<.001	2.86	1.89	2.48

*Note.* The *p* value indicates 2-tailed significance, *t* indicates the *t* statistic, *df* indicates degrees of freedom, *M* indicates mean value, *CI* indicates the 95% confidence interval of the difference.

As seen in Table 5, posttest scores on the PSAS ( $M= 21.96$ ,  $SD = 2.83$ ) were lower than the normed scores on the pretest, which indicates lower stigma levels following the intervention,  $t(27)= -2.45$ ,  $p = .021$ . The inservice had a moderate effect on reducing stigma among nurses,  $d = -0.46$ . Posttest scores on the FAN survey ( $M= 38.82$ ,  $SD = 4.40$ ) were higher than the normed scores on the pretest  $t(27)= 7.30$ ,  $p <.001$ . The inservice had a large effect on increasing nurse comfort with therapeutic interaction,  $d = 1.38$ . Posttest scores on the SUD knowledge test ( $M= 4.29$ ,  $SD = .76$ ) were higher than the normed scores on the pretest  $t(27)= 15.14$ ,  $p <.001$ . The inservice had a large effect on increasing nurse knowledge about SUDs,  $d = 2.86$ .

### **FAN Survey Factor Analysis**

A factor analysis was conducted on the FAN survey to identify specific components (*factors*) within the survey, to determine if inservice participants experienced more comfort in certain aspects of FAN training than others. Principle components analysis was used to look at all available factors, not just shared variance. All factors with an eigen value above one were included. Oblimin rotation was conducted to allow for correlated factors. The first factor accounted for 57.1% of the variance, and the second factor accounted for an additional 11.4%. See Table 6.

**Table 6***Factor Analysis on FAN Self-Report Survey*

FAN Survey Questions ( <i>Factor</i> )	Component 1	Component 2
Comfort with recognizing your own reactions ( <i>1</i> )	.929	.273
Comfort with mindful self-regulation ( <i>1</i> )	.746	-.113
Comfort reading parents' cues ( <i>1</i> )	.713	-.262
Comfort with collaborative exploration of parent concerns. ( <i>1</i> )	.709	-.141
Comfort responding to parents based on their cues ( <i>1</i> )	.689	-.131
Comfort with offering an empathic response to parents' feelings. ( <i>1</i> )	.630	-.256
Comfort with parental capacity building. ( <i>2</i> )	.097	-.836
Comfort with reflecting with parents on their new insights. ( <i>2</i> )	.067	-.829
Comfort with responding to parents' concerns ( <i>2</i> )	.010	-.805

*Note.* Above is the pattern matrix from the exploratory analysis conducted in SPSS, with the two factors numbered with their corresponding FAN survey questions.

FAN survey questions about capacity building, reflection, and responding to concerns represent factor two. FAN survey questions about recognizing your own reactions, self-regulation, reading parents' cues, collaborative exploration, and responding to parents based on cues represent factor one. These two factors are conceptually different. Factor one includes processes that are intuitive, while factor two includes processes that are cognitive. Mean responses were computed for the survey questions in both factors, and a one-sample *t*-test was conducted to evaluate the relative effect size that the inservice had on both intuitive and cognitive processes. See Table 7.

**Table 7***One-Sample t-Test Results for Two Factors in FAN Survey*

FAN Factors (Processes)	<i>n</i>	<i>M</i> Pretest (SD)	<i>M</i> Posttest (SD)	<i>t</i> ( <i>df</i> )	<i>M</i> Difference	<i>p</i>	Cohen's <i>d</i>	95% CI: Lower Limit	95% CI: Upper Limit
Factor 1 (Intuitive)	28	3.66 (0.64)	4.34 (.50)	7.24 (27)	.69	.000	1.37	.49	.88
Factor 1 (Cognitive)	28	3.63 (0.58)	4.31 (.53)	6.78 (27)	.68	.000	1.28	.47	.88

*Note.* The *p* value indicates 2-tailed significance, *t* indicates the *t* statistic, *df* indicates degrees of freedom, *M* indicates mean value, *CI* indicates the 95% confidence interval of the difference.

One-sample *t*-tests for the FAN survey's two factors show a difference in the magnitude of change in the nurses' reported comfort level with intuitive and cognitive processes after the inservice. Posttest scores on the intuitive factor in the FAN survey ( $M=4.34$ ,  $SD = .50$ ) were higher than the normed scores for the factor on the pretest  $t(27)= 7.24$ ,  $p =.000$ , with a large effect size,  $d = 1.37$ . Posttest scores on the cognitive factor in the FAN survey ( $M=4.31$ ,  $SD = .53$ ) were higher than the normed scores for the factor on the pretest  $t(27)= 6.78$ ,  $p =.000$ , with a slightly smaller effect size,  $d = 1.28$ . The inservice thus had a slightly larger impact on increasing nurses' comfort with intuitive processes ( $M$  difference = .69;  $d = 1.37$ ) compared to cognitive processes ( $M$  difference = .68;  $d = 1.28$ ).

### Discussion

This QI project was designed to enhance the therapeutic alliance between neonatal nurses and NICU parents with SUDs at a southwestern medical center by improving comfort with therapeutic interaction techniques, increasing knowledge about SUDs, and reducing stigmatizing attitudes toward people with SUDS. The content and educational design of the inservice aligned with successful components of comparable interventions in the literature as well as the FAN

conceptual model, which includes elements of calming, feeling, thinking, doing/capacity building, and reflecting (Spielberger et al., 2016, 2019).

The QI project goals and objectives were met. Results showed statistically significant improvement in attitudes toward people with SUDs, knowledge about SUDs, and comfort with FAN therapeutic processes. The effect of change in stigma was moderate, and the effects of change in SUD knowledge and comfort with the FAN were both large. The FAN training in this QI project had a slightly larger effect in improving comfort with intuitive processes compared to cognitive processes.

The results for this QI project compare favorably with results of similar interventions described in the literature, both in reaching statistical significance and in the effect size of the intervention. Stigma-reducing interventions by Brannock et al. (2020), Crapanzano et al. (2014, 2017), Flanagan et al. (2016), Hooks (2019), Roussy et al. (2015), and Schiff et al. (2017) reported statistically significant improvement in attitudes of health care professionals toward people with SUDs. Effect sizes for these stigma-reducing interventions was not generally reported (Brannock et al., 2020; Flanagan et al., 2016; Hooks, 2019; Roussy et al., 2015; Schiff et al., 2017), although Crapanzano (2014, 2017) reported a small effect size on one measure of attitudes. Systematic reviews of stigma-reducing interventions showed mixed results in intervention outcomes (Livingston et al., 2012; Kennedy-Hendricks et al., 2016; NASEM, 2016; Nyblade et al., 2019). Among reviews publishing effect sizes for interventions that reached statistical significance, effect sizes ranged from small to large (Livingston et al., 2012; NASEM, 2016).

In addition to improved attitudes toward people with SUDs, this QI project also demonstrated statistically significant improvement in SUD knowledge, with a large effect size.

The increase in knowledge with this project echoed results from Tobin (2018), who reported a statistically significant increase in knowledge following a training for neonatal nurses about neonatal abstinence syndrome. Tobin (2018) did not report an effect size for this intervention, however.

The short FAN training in this QI project produced statistically significant improvement in FAN comfort with a large effect size, which mirrors outcomes in the literature for longer FAN trainings. Gilkerson et al. (2017) reported statistically significant improvements in empathy and mindfulness, which are core FAN processes, after an initial three-hour long FAN training that was followed by six months of FAN practice and mentorship. Effect sizes for this change were not reported (Gilkerson et al., 2017). Spielberger et al. (2019) reported statistically significant increases in comfort with FAN processes after longer trainings lasting six, nine, and 12 months, with moderate to large effect sizes, while longer FAN trainings of 18 months did not yield statistically significant increases in quantitative measures of comfort (Spielberger et al., 2016). Qualitative measures of FAN training for all five of the training durations described here, however, showed improvements in comfort with FAN processes (Gilkerson et al., 2017; MacKinnon, 2019; Spielberger et al., 2016, 2019). Outcomes of FAN trainings less than two hours in duration or FAN trainings for NICU nurses, like the training conducted for this QI project, were not available in the literature.

This QI project represents a novel, evidence-based intervention, designed to improve the therapeutic alliance between NICU nurses and families with SUDs by reducing stigma, enhancing knowledge, and increasing comfort with therapeutic interaction skills. This project resulted in a new, effective intervention that yielded clinically significant results. A unique component of this QI project involved a short FAN training of less than two hours that was

tailored to NICU nurses. To this author's knowledge, the efficacy of such a short FAN training has not yet been evaluated, nor has FAN efficacy been studied in the NICU context previously. Results of this QI project and those of Gilkerson et al. (2017), suggest that short FAN trainings could be similarly effective in other NICUs and other health care contexts. The QI intervention as whole could easily be adapted to other NICUs and other health care contexts as well, where it might yield similar results.

Limitations of this study include the use of a small, homogenous convenience sample of nurses at a single site in the southwestern United States. A larger, more diverse participant sample, across multiple, culturally diverse sites would yield more broadly applicable results. It is possible that a similar intervention with a sample of health professionals with less education or less exposure to people with SUDs would also yield less favorable results. Although significant interest for the inservice was developed among potential nurse participants through marketing efforts and incentives like paid educational leave and free CEUs, approximately half the nurses who initially registered for each inservice cancelled before it started, resulting in a smaller group of participants than anticipated. An additional limitation was caused by the way in which each survey was coded in REDCap. Because individual pretest and posttest scores were not linked in REDCap, possibilities for statistical analyses were limited. It was thus not possible to conduct paired *t*-tests and regression analyses as planned.

Validity of two of the outcome measures and potential bias with survey responses are additional limitations that should be considered when interpreting the results of this project. While validity of the PSAS is well-established, the validity of the FAN survey, adapted from outcome measures published in the FAN literature, and the SUD knowledge test, which was created by this author, has not been established. Response bias in survey responses is also a

possible factor in the results, because the PSAS and FAN surveys relied upon self-report responses.

### **Conclusion**

Evidence from the literature and a gap analysis conducted at an academic medical center in the southwestern United States demonstrated significant training needs for neonatal nurses related to negative attitudes toward, and subtherapeutic interactions with, parents struggling with substance use disorders. Drawing upon evidence from a comprehensive literature review, an educational inservice was designed to meet these needs at the medical center's NICU. The goal of the inservice was to improve the therapeutic alliance between neonatal nurses and parents with SUDs by offering training in therapeutic FAN processes and mindfulness, reducing stigma by learning about the experiences of a former NICU mother in recovery, and enhancing understanding about the development and treatment of SUDs from a trauma-informed care perspective in the neonatal context. Outcomes on attitudinal change, knowledge acquisition, and comfort with FAN processes were measured before and after the inservice. Results showed statistically and clinically significant increases in understanding about SUDs, improved comfort with FAN therapeutic processes, and reduced stigma toward people with SUDs. The outcome suggests that this novel, brief intervention improved the therapeutic alliance between nurses and families with SUDs in the neonatal context. It is hoped that this educational intervention will inspire further efforts, at the national and international level, to enhance the therapeutic alliance between health professionals and people with substance use disorders.



### References

- Agency for Healthcare Research and Quality. (2017, February). *Gap analysis facilitator's guide*.  
<https://www.ahrq.gov/patient-safety/capacity/candor/modules/facguide3.html>
- American Association of Neurological Surgeons. (2020). *Shaken baby syndrome*.  
<https://www.aans.org/en/Patients/Neurosurgical-Conditions-and-Treatments/Shaken-Baby-Syndrome>
- American Nurse Today Editors. (2015, November 10). *How to evaluate qualitative research*.  
<https://www.americannursetoday.com/evaluate-qualitative-research/>
- Bell, B. A. (2019, April). *Conflicts of interest (RCR-Basic)*. Citi Program.  
<https://www.citiprogram.org/members/index.cfm?pageID=665&ce=1#view>
- Borenstein, J. (2019, April). *Research involving human subjects (RCR-Basic)*. CITI Program.  
<https://www.citiprogram.org/members/index.cfm?pageID=665&ce=1#view>
- Brannock, C. L., White, J., & Baker, J. A. (2020). Reducing opioid bias is necessary (ROBIN): An educational program to reduce addiction stigma. *Journal of Addictions Nursing*, 31(1), 2-8. <https://doi.org/10.1097/JAN.0000000000000319>
- Brouwers, M., Kho, M. E., Browman, G. P., Cluzeau, F., Feder, G., Fervers, B., Hanna, S., & Makarski, J. (2010, December). AGREE II: Advancing guideline development, reporting and evaluation in healthcare. *Canadian Medical Association Journal*, 182, 839-842.  
<https://doi.org/10.1503/cmaj.090449>
- Centre for Evidence Based Medicine. (2020). *Critical appraisal tools*.  
<https://www.cebm.net/2014/06/critical-appraisal/>

- Cleveland, L. M., & Bonugli, R. (2014). Experiences of mothers of infants with neonatal abstinence syndrome in the neonatal intensive care unit. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 43(3), 318-29. <https://doi.org/10.1111/1552-6909.12306>.
- Cleveland, L. M., & Gill, S. L. (2013). "Try not to judge:" Mothers of substance exposed infants. *American Journal of Maternal Child Nursing*, 38(4), 200-205. <https://doi.org/10.1097/NMC.0b013e31827816de>.
- Commission on Collegiate Nursing Education (CCNE). (2020). *CCNE Standards and professional nursing guidelines*. <https://www.aacnnursing.org/CCNE-Accreditation/Resource-Documents/CCNE-Standards-Professional-Nursing-Guidelines>
- Crapanzano, K., Vath, R. J., & Fisher, D. (2014). Reducing stigma towards substance users through an educational intervention: Harder than it looks. *Academic Psychiatry*, 38(4), 420-425. <https://doi.org/10.1007/s40596-014-0067-1>
- Crapanzano, K., & Vath, R. J. (2017). Long-term effect of a stigma-reduction educational intervention for physician assistants. *The Journal of Physician Assistant Education*, 28(2), 92–95 <https://doi.org/10.1097/JPA.000000000000117>.
- Cushman, R. (2019, April). *Data management (RCR-Basic)*. CITI Program. <https://www.citiprogram.org/members/index.cfm?pageID=665&ce=1#view>
- Dang, D., & Dearholt, S. (2017). *Johns Hopkins nursing evidence-based practice: Model and guidelines* (3rd ed.). Sigma Theta Tau International. [https://www.hopkinsmedicine.org/evidence-based-practice/ijhn\\_2017\\_ebp.html](https://www.hopkinsmedicine.org/evidence-based-practice/ijhn_2017_ebp.html)
- EBSCO Industries. (2019). *CINAHL Complete*. <https://www.ebscohost.com/nursing/products/cinahl-databases/cinahl-complete>

Flanagan, E. H., Buck, T., Gamble, A., Hunter, C., Sewell, I., & Davidson, L. (2016, May).

“Recovery speaks”: A photovoice intervention to reduce stigma among primary care providers. *Psychiatric Services*, 67(5), 566-569. <https://www.ps.psychiatryonline.org>

Frazer, Z., McConnell, K., & Jansson, L.M. (2019). Treatment for substance use disorders in pregnant women: Motivators and barriers. *Drug and Alcohol Dependence*, 205(2019), 1-6. <https://doi.org/10.1016/j.drugalcdep.2019.107652>

Garrard, J. (2014). *Health sciences literature review made easy: The matrix method*. Jones & Bartlett Learning.

Gilkerson, L., Gray, L., Barnes, M., Osta, A., Pryce, J., & Justice, R. (2017). *Increasing pediatrician empathy in communication with parents* [Unpublished poster presentation]. Society for Research on Child Development Biennial Meeting, Austin, Texas.

Gilkerson, L., & Norton, K. C. (2020, January-February). Facilitating Attuned Interactions (FAN): A new promising practice for building relationships and reflective practice in Oregon. *Pulse: A Bi-monthly Newsletter From the Association of Maternal and Child Health Programs*.

[http://www.amchp.org/AboutAMCHP/Newsletters/Pulse/Pages/Facilitating-Attuned-Interactions-\(FAN\)-A-New-Promising-Practice-for-Building-Relationships-and-Reflective-Practice-in-Oreg.aspx](http://www.amchp.org/AboutAMCHP/Newsletters/Pulse/Pages/Facilitating-Attuned-Interactions-(FAN)-A-New-Promising-Practice-for-Building-Relationships-and-Reflective-Practice-in-Oreg.aspx)

Grace, P. J. (2018). *Nursing ethics and professional responsibility in advanced practice* (3rd ed.). Jones & Bartlett Learning.

- Haight, S. C., Ko, J. Y., Tong, V. T., Bohm, M. K., & Callaghan, W. M. (2018). Opioid use disorder documented at delivery hospitalization – United States, 1999-2014. *MMWR and Morbidity and Mortality Weekly Report*, *67*(31), 845-849.  
<https://doi.org/10.15585/mmwr.mm6731a1external icon>
- Hall, S. L., Cross, J., Selix, N. W., Patterson, C., Segre, L., Chuffo-Siewert, R., Geller, P. A., & Martin, M. L. (2015). Recommendations for enhancing psychosocial support of NICU parents through staff education and support. *Journal of Perinatology*, *35*(S1), 29-36.  
<https://doi.org/10.1038/jp.2015.147>
- Hall, S., Hynan, M., Phillips, R., Press, J., Kenner, C., & Ryan, D. J. (2015). Development of program standards for psychosocial support of parents of infants admitted to a neonatal intensive care unit: A national interdisciplinary consensus model. *Newborn and Infant Nursing Reviews*, *15*(1), 24–27. <https://doi.org/10.1053/j.nainr.2015.01.007>
- Hall, S. L., Phillips, R., & Hynan, M. T. (2016). Transforming NICU care to provide comprehensive family support. *Newborn and Infant Nursing Reviews*, *16*(2), 69–73.  
<https://doi.org/10.1053/j.nainr.2016.03.008>
- Heffron, M. C., Gilkerson, L., Cosgrove, K., Heller, S. S., Imberger, J., Leviton, A., Mueller, M., Norris-Shortle, C., Phillips, C., Spielman, E., & Wasserman, K. (2016, July). Using the FAN approach to deepen trauma-informed care for infants, toddlers, and families. *Zero to Three*, 27-33.
- Hooks, C. (2019, September). Attitudes toward substance misusing pregnant women following a specialist education programme: An exploratory case study. *Midwifery*, *76*(2019), 45-53.  
<https://doi.org/10.1016/j.midw.2019.05.011>

International Business Machines (IBM) (n.d.). IBM SPSS statistics.

<https://www.ibm.com/products/spss-statistics>

Kaplan, L. (n.d.). *Framework for how to read and critique a research study*.

[https://uma.umassonline.net/bbcswebdav/pid-1239205-dt-content-rid-](https://uma.umassonline.net/bbcswebdav/pid-1239205-dt-content-rid-16603235_1/courses/34994-1197/Framework%20for%20How%20to%20Read%20and%20Critique%20a%20Research%20Study.pdf)

[16603235\\_1/courses/34994-](https://uma.umassonline.net/bbcswebdav/pid-1239205-dt-content-rid-16603235_1/courses/34994-1197/Framework%20for%20How%20to%20Read%20and%20Critique%20a%20Research%20Study.pdf)

[1197/Framework%20for%20How%20to%20Read%20and%20Critique%20a%20Researc](https://uma.umassonline.net/bbcswebdav/pid-1239205-dt-content-rid-16603235_1/courses/34994-1197/Framework%20for%20How%20to%20Read%20and%20Critique%20a%20Research%20Study.pdf)

[h%20Study.pdf](https://uma.umassonline.net/bbcswebdav/pid-1239205-dt-content-rid-16603235_1/courses/34994-1197/Framework%20for%20How%20to%20Read%20and%20Critique%20a%20Research%20Study.pdf)

Kennedy-Hendricks, A., McGinty, E. E., & Barry, C. L. (2016). Effects of competing narratives

on public perceptions of opioid pain reliever addiction during pregnancy. *Journal of*

*Health Politics, Policy & Law*, *41*(5), 873–916. [https://doi.org/10.1215/03616878-](https://doi.org/10.1215/03616878-3632230)

[3632230](https://doi.org/10.1215/03616878-3632230)

Kondili, E., & Duryea, D. G. (2019). The role of the mother-infant bond in neonatal abstinence

syndrome (NAS) management. *Archives of Psychiatric Nursing*, *33*(2019), 267-274.

<https://doi.org/10.1016/j.apnu.2019.02.003>

Latuskie, K. A., Andrews, N. C. Z., Motz, M., Leibson, T., Austin, Z., Ito, S., & Pepler, D. J.

(2019). Reasons for substance use continuation and discontinuation during pregnancy: A qualitative study. *Women & Birth*, *32*(1), e57–e64.

<https://doi.org/10.1016/j.wombi.2018.04.001>

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke,

M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for

reporting systematic reviews and meta-analyses of studies that evaluate health care

interventions: explanation and elaboration. *Journal of Clinical Epidemiology*, *62*(10), e1–

e34. <https://doi.org/10.1016/j.jclinepi.2009.06.006>

- Livingston, J. D., Milne, T., Fang, M. L., & Amari, E. (2012). The effectiveness of interventions for reducing stigma related to substance use disorders: A systematic review. *Addiction, 107*(1), 39–50. <https://doi.org/10.1111/j.1360-0443.2011.03601.x>
- Luoma, J. B. (n.d.). *To whom it may concern: Feel free to use the Perceived Stigma of Substance Abuse Scale (PSAS) in your research* [Open letter from author giving permission to use PSAS and information about the PSAS]. <https://portlandpsychotherapytraining.com/wp-content/uploads/sites/22/2016/06/PSAS-12-6-16.pdf>
- Luoma, J. B., O’Hair, A. K., Kohlenberg, B. S., Hayes, S. C., & Fletcher, L. (2010). The development and psychometric properties of a new measure of perceived stigma toward substance users. *Substance Use & Misuse, 45*(1/2), 47-57. <https://doi.org/10.3109/10826080902864712>
- MacKinnon, L. (2019). Young adult early childhood home visitors’ perceptions of FAN (Facilitating Attuned Interactions) and its potential protection to burnout (Publication No. 1528) [Doctoral dissertation, University of Massachusetts-Amherst]. *Doctoral Dissertations*. [https://scholarworks.umass.edu/dissertations\\_2/1528](https://scholarworks.umass.edu/dissertations_2/1528)
- Maguire, D., Webb, M., Passmore, D., & Cline, G. (2012). NICU nurses’ lived experience: Caring for infants with Neonatal Abstinence Syndrome. *Advances in Neonatal Care, 12*(15), 281-285. <https://doi.org/10.1097/ANC.0b013e3182677bc1>
- McGinty, E., Pescosolido, B., Kennedy-Hendricks, A., & Barry, C. L. (2018). Communication strategies to counter stigma and improve mental illness and substance use disorder policy. *Psychiatric Services, 69*(2), 136-146. <https://doi.org/10.1176/appi.ps.201700076>
- Melnik, B. M. & Fineout-Overholt, E. (2015). *Evidence-based practice in nursing and healthcare: A guide to best practice* (3rd ed.). Wolters Kluwer Health.

- National Academies of Sciences, Engineering, & Medicine. (2016). *Ending discrimination against people with mental and substance use disorders: The evidence for stigma change*. The National Academies Press. <https://www.ncbi.nlm.nih.gov/books/NBK384915/>
- National Center for Biotechnology Information, U.S. National Library of Medicine. (n.d.). *PubMed*. <https://www.ncbi.nlm.nih.gov/pubmed/>
- Nyblade, L., Stockton, M. A., Giger, K., Bond, V., Ekstrand, M. L., McLean, R., Mitchell, E. M. H., Nelson, L. R. E., Sapag, J. C., Siraprapasiri, T., Turan, J., & Wouters, E. (2019). Stigma in health facilities: Why it matters and how we can change it. *BMC Medicine*, *17*(1), 1-15. <https://doi.org/10.1186/s12916-019-1256-2>
- Office for Human Research Protections. (2020). *Regulations, policy, and posting*. <https://www.hhs.gov/ohrp/regulations-and-policy>
- Polit, D. (2010). *Statistics and data analysis for nursing research*. Pearson Education Inc.
- Polit, D. F., & Beck, C. T. (2017). *Nursing research: Generating and assessing evidence for nursing practice* (10<sup>th</sup> ed.). Wolters Kluwer.
- Romisher, R., Hill, D., & Cong, X. (2018). Neonatal Abstinence Syndrome: Exploring nurses' attitudes, knowledge, and practice. *Advances in Neonatal Care*, *18*(2), 3-11. <https://doi.org/10.1097/ANC.0000000000000462>
- Roussy, V., Thomacos, N., Rudd, A., & Crockett, B. (2015). Enhancing health care workers' understanding and thinking about people living with co-occurring mental health and substance use issues through consumer-led training. *Health Expectations*, *18*(5), 1567-1581. <https://doi.org/10.1111/hex.12146>

- Rizzo, R. A., Neumann, A. M., King, S. O. C., Hoey, R. F., Finnell, D. S., & Blondell, R. D. (2014). Parenting concerns of pregnant women in buprenorphine treatment. *MCN: The American Journal of Maternal/Child Nursing*, 39(5), 319–324.  
<https://journals.lww.com/mcnjournal/pages/default.aspx>
- Schiff, D. M., Zuckerman, B., Hutton, E., Genatossio, C., Michelson, C., & Bair-Merritt, M. (2017). Development and pilot implementation of a trauma-informed care curriculum for pediatric residents. *Academic Pediatrics*, 17(7), 794–796.  
<https://doi.org/10.1016/j.acap.2017.03.011>
- Spielberger, J., Burkhardt, T., Winje, C., Gouvea, M., & Barisik, E. (2016). *Evaluation of the Fussy Baby Network advanced training: Final report*. Chapin Hall at the University of Chicago. [https://www.chapinhall.org/wp-content/uploads/Fussy\\_Baby\\_Network\\_final.pdf](https://www.chapinhall.org/wp-content/uploads/Fussy_Baby_Network_final.pdf)
- Spielberger, J., Gouvêa, M., Winje, C., Burkhardt, T., Gitlow, E., & Pacheco-Applegate, A. (2019). *Evaluation of the Fussy Baby Network condensed FAN training: Final report*. Chapin Hall at the University of Chicago. <https://www.chapinhall.org/wp-content/uploads/Fussy-Baby-Cross-Model-Evaluation.pdf>
- Tobin, K. B. (2018). Changing neonatal nurses' perceptions of caring for infants experiencing Neonatal Abstinence Syndrome and their mothers: An evidenced-based practice opportunity. *Advances in Neonatal Care*, 18(2), 128-135.  
<https://doi.org/10.1097/ANC.0000000000000476>



Tuliao, A. P., & Holyoak, D. (2020). Psychometric properties of the Perceived Stigma Towards Substance Users Scales: Factor structure, internal consistency, and associations with help-seeking variables. *The American Journal of Drug and Alcohol Abuse*, *46*(2), 158-166. <https://doi.org/10.1080/00952990.2019.1658198>

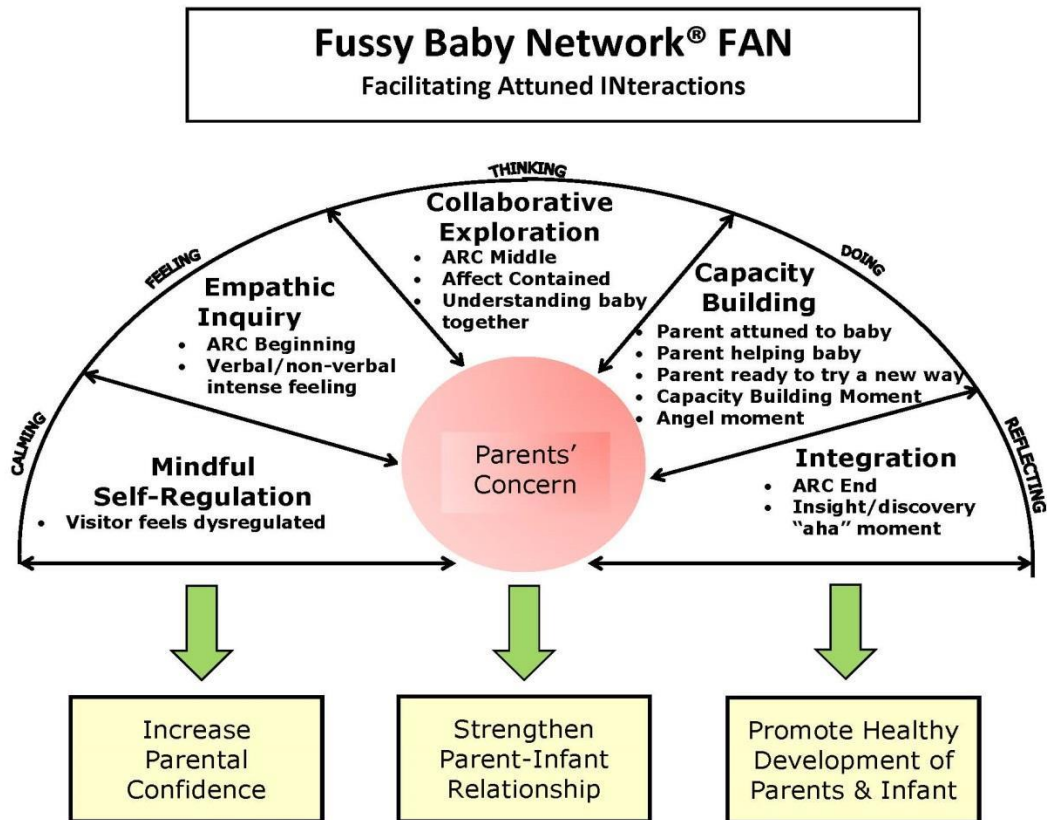
Vanderbilt University. (n.d.) *Research Electronic Data Capture* [Software].  
<https://projectredcap.org>

Winkelman, T. N. A., Villapiano, N., Kozhimannil, K. B., Davis, M. M., & Patrick, S. W. (2018). Incidence and costs of neonatal abstinence syndrome among infant with Medicaid: 20014-2014. *Pediatrics*, *141*(4), 1-10.  
<http://pediatrics.aappublications.org/content/early/2018/03/21/peds.2017-3520>

Zoom Video Communications. (2020). *Zoom*. <https://zoom.us>

Appendix A

Facilitating Attuned Interactions (FAN) Model

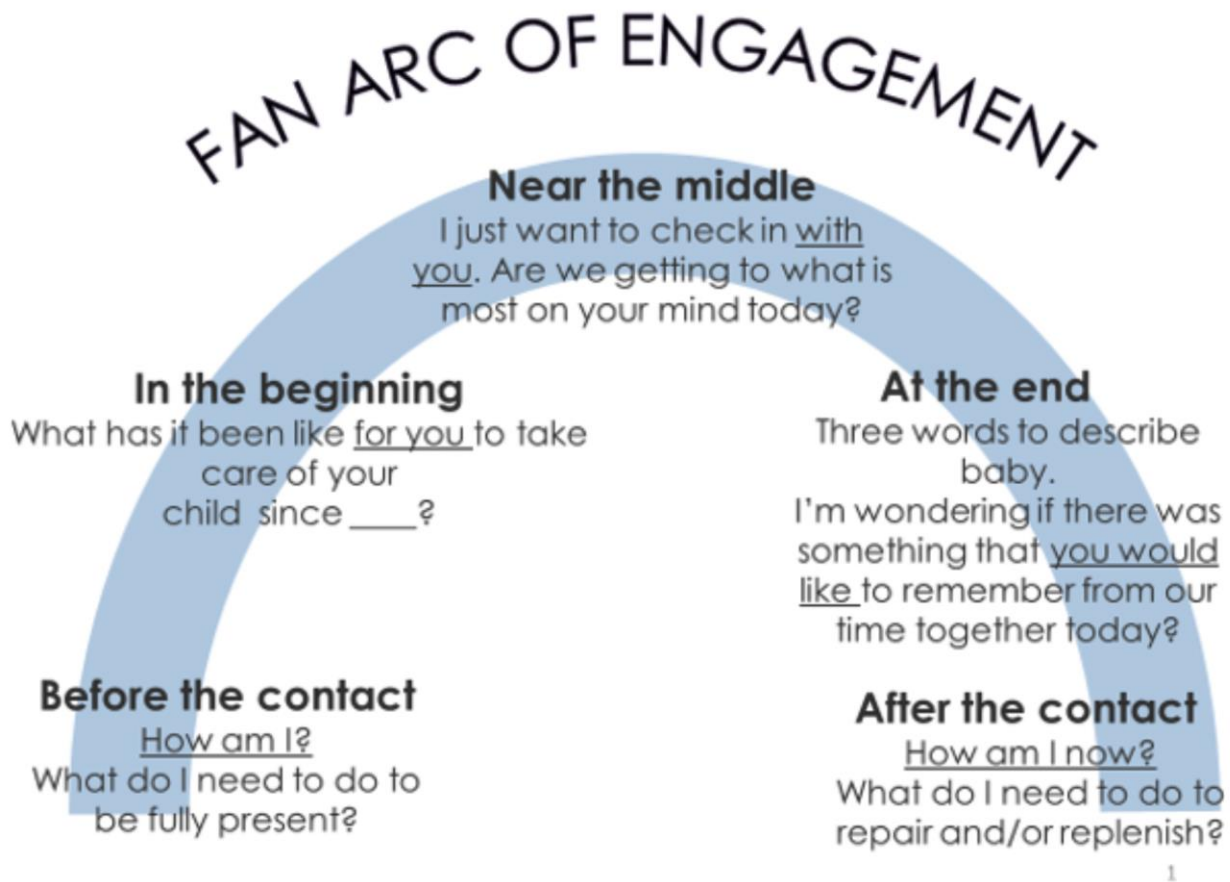


©Gilkerson, 2010, rev 2015  
Erikson Institute Fussy Baby Network

From Spielberger et al. (2016)

**Appendix B**

**FAN Arc of Engagement Diagram**



From Gilkerson and Norton (2020)

**Appendix C****FAN Processes Survey****Table 8**

*FAN Processes Survey Questions with Possible Responses:*

---

**Survey Questions:**

---

Please rate how comfortable you are with mindful self-regulation while interacting with parents

Please rate how comfortable you are with offering an empathic response to parents' feelings

Please rate how comfortable you are with collaborative exploration of parent concerns

Please rate how comfortable you are with capacity building of parents' caregiving skills

Please rate how comfortable you are with reflecting with parents on their new insights about their baby.

How comfortable are you reading parent's cues during an interaction?

How comfortable are you responding to parents based on their cues?

How comfortable are you responding to parents' concerns?

How comfortable are you recognizing your own reactions while interacting with families?

---

**Possible Responses:**

---

(1) Not at all comfortable

(2) A little comfortable

(3) Somewhat comfortable

(4) Fairly comfortable

(5) Very comfortable

---

*Note:* Created in collaboration with expert FAN trainer and researcher, Peggy Maclean, July 29, 2020

**Appendix D****SUD Content Exam**

1. Which of the following increase a person's risk of developing a substance use disorder?  
Check all that apply.
  - a. **Trauma history**
  - b. **Adverse life experiences**
  - c. **Stress**
  - d. **Comorbid psychiatric disorders**
  - e. **Genetic predisposition**
  - f. Low willpower
  - g. Immorality
  
2. There are significant changes in the neurobiological reward system associated with substance use that make recovery difficult. Which of the following structures are involved in the reward system? Check all that apply:
  - a. **Frontal Cortex**
  - b. Medulla
  - c. **Nucleus Accumbens**
  - d. **Ventral Tegmental Area**
  - e. Occipital Lobe
  - f. Pons
  
3. Heroin use becomes less pleasurable over time. (**True/False**)
  
4. What is the best way to deliver difficult news to a parent who is suffering from a substance use disorder?
  - a. **Be mindful of your personal emotions and reactions**
  - b. Defer to the medical provider to discuss the difficult news with the parent
  - c. Control your feelings and guard yourself against a parent's reaction before speaking to them.
  - d. Request a social worker to confer with the parents
  
5. According to the CDC, how many babies were born to mothers with an opiate use disorder in the United States in 2014?
  - a. 1.5 per 1,000 births
  - b. 3.5 per 1,000 births
  - c. 5.5 per 1,000 births
  - d. **6.5 per 1,000 births**

## Appendix E

### Perceived Stigma of Substance Abuse Scale (PSAS)

**Table 9**

*Perceived Stigma of Substance Abuse Scale (PSAS)*

---

Survey Questions:

---

Most people would willingly accept someone who has been treated for substance use as a close friend.

Most people believe that someone who has been treated for substance use is just as trustworthy as the average citizen.

Most people would accept someone who has been treated for substance use as a teacher of young children in a public school

Most people would hire someone who has been treated for substance use to take care of their children.

Most people think less of a person who has been in treatment for substance use.

Most employers will hire someone who has been treated for substance use if he or she is qualified for the job.

Most employers will pass over the application of someone who has been treated for substance use in favor of another applicant.

Most people would be willing to date someone who has been treated for substance use.

---

Possible Responses:

---

(1) Strongly agree

(2) Agree

(3) Disagree

(4) Strongly disagree

---

*Note.* Adapted from Luoma (n.d.).

**Appendix F****Demographic Questionnaire on Pretest**

What is your current age? \_\_\_\_ years

- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65-74 years old
- 75 years or older

With which gender do you identify?

- Man
- Woman
- Transgender
- Other: \_\_\_\_\_ (please type in)

What is your ethnicity?

- Hispanic or Latino
- Black or African American
- Native American or American Indian
- Asian / Pacific Islander
- White
- Other: \_\_\_\_\_ (please type in)

What is your highest educational level?

- Diploma.
- Associate degree.
- Bachelor's degree.
- Master's degree.
- Post-master's certificate.
- Doctorate

Are you nationally certified in neonatal nursing?

- Yes
- No, not planning to certify
- No, planning to certify

How many years have you worked as a nurse in the NICU?

Please indicate number of years: \_\_\_\_\_.

Have you previously received education about substance use disorders? If so, please check all that apply:

- in my nursing degree program
- in a CEU course
- at a conference
- through independent study
- through professional training programs
- through conversations with colleagues and/or experts
- other (Please describe: \_\_\_\_\_)

Approximately how often do you interact with parents with substance use disorders in the NICU?

- Daily
- Weekly
- Bimonthly
- Monthly
- Every few months
- A few times per year
- About once per year
- Other

Do you know someone who has struggled with a substance use disorder? Check all that apply

- Friend
- Coworker
- Spouse
- Immediate Family Member
- Extended Family Member
- Self
- Acquaintance



## Appendix G

### Project Timeline

Task	August 2020	Sept 2020	Oct 2020	Nov 2020	Jan 2021	Feb 2021	March 2021	April 2021	May 2021
Final Proposal Approval	X								
IRB and CEU application	X								
Recruiting participants	X	X	X						
Conduct 4 Classes			X	X					
Measurement tools before and after class, send out CEUs			X	X					
Statistical Analysis					X	X			
Evaluation and interpretation					X	X			
Analysis of outcomes						X	X		
Results presented to local providers and recommendations for future interventions								X	X

## Appendix H

### Cost-Benefit Analysis and Budget

Evidence-based QI projects in health care must demonstrate that their costs are outweighed by their benefits (Melnik & Fineout-Overholt, 2015). While there were some significant labor costs for this QI project, these costs were outweighed by the potential benefits, as seen in the possible improvements to the quality of care provided to NICU families with SUDs, in addition to the lower stress and burn out levels that neonatal nurses may have experienced following the training.

Costs included direct financial costs for administrative work, marketing/recruitment efforts, and facilitation of the class. All of the costs were covered by individuals volunteering time or by administrative budgets for medical center staff who were participating in the project. Administrative tasks related to the CEU application were covered by the medical center's education staff, for whom this task is part of normal job functions. Marketing took place at no cost, as this author and primary nurse committee members created the digital flyer and advertising video that was emailed to all neonatal nurses at the project site. The QI inservice was facilitated on a voluntary basis by this author and a FAN expert. This author had staff access to Zoom and REDCap at no additional cost (Vanderbilt University, n.d.; Zoom Video Communications, 2020). The former NICU mother in recovery volunteered her time to be interviewed.

Benefits were not monetarily quantifiable, given the limits of data collection for this QI project, but they far exceeded the costs. Benefits included reduced stress and less perceived stigma on the part of NICU families with SUDs, as well as improved outcomes for these families. Potential benefits for nurses included reduced stress and burn out risk, as well as

increased work satisfaction secondary to improved skill sets and knowledge base for working with families challenged by SUDs. Additionally, nurses received paid education leave and professional advancement in the form of CEUs.

Measuring and quantifying parental and infant outcomes in this study was not feasible, due the wide variety of factors influencing outcomes, as well as administrative restrictions at the project site. Nevertheless, even slight improvement in outcomes could result in significant health care costs savings, considering the high cost of care for babies with NAS in the United States. Hospital costs for babies with NAS were approximately five times higher than those for babies without NAS during the period from 2011-2014, with total national costs reaching \$462 million in 2014 for the approximate 75% of NAS babies covered by Medicaid alone (Winkelman et al., 2018). Practices, such as those promoted in the FAN model, that involve (a) improving maternal-infant bonds through psychoeducation in partnership health care professionals, and (b) promoting mothers' sensitivity and reflection in working with their babies, through both direct feedback and capacity building, all while (c) helping mothers to explore their own cognitive and emotional processes, have been shown to improve outcomes for babies with NAS compared to standard pharmacotherapy alone (Kondili & Duryea, 2019). In light of this evidence, promoting the use of FAN among neonatal nurses to improve maternal-infant attachment among families with SUDs likely improved outcomes, thereby reducing costs for care for babies with NAS at the project site. See Table 10.

**Table 10***Project Costs and Benefits*

Costs	Expenses	Benefits	Value
Time spent creating the class and applying for approval to offer CEUs	\$0	Reduced stress and perceived stigma for NICU families with SUDs	unknown
Administrative Costs (absorbed in regular budgets for hospital administrators and staff)	\$0	Improved parent and infant outcomes	unknown
Marketing Costs (digital flyers and video created by this DNP student and volunteers, sent via email)	\$0	Reduced stress and burn out risk for nurses	unknown
Measurement Tools (on free REDCap account)	\$0	Increased knowledge and professional skills for nurses	unknown
Zoom Classroom (on free staff account provided to this DNP student)	\$0	Professional nursing advancement via adjunctive training and earning CEUs	unknown
Computers, Tablets or Smart Phones (available at project site and/or already owned by project participants)	\$0		
Facilitators and Speakers (volunteers)	\$0		
Net Expenses:	\$0	Net benefits:	Unquantifiable