Music Therapy in the NICU and PICU:

A Program Proposal for WakeMed Children's Hospital

By

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MUSIC THERAPY IN THE NICU AND PICU:

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Summary Statement

This proposal is for a music therapy program for the neonatal intensive care unit (NICU) and pediatric intensive care unit (PICU) at WakeMed Children's Hospital, located at the WakeMed Raleigh Campus in Raleigh, North Carolina. The children's hospital treats a variety of medical issues including critical illnesses, injuries, automobile accident injuries, life-threatening childhood diseases, and respiratory and heart conditions. Music therapy is an evidence-based therapy that can not only effectively address treatment goals, but can offer comfort, joy, and a means of self-expression for patients and their families. A full-time music therapist can work with patients in individual and/or group settings using various methods and techniques to meet each patient's individual goals and needs. Establishing a music therapy program at WakeMed Children's Hospital would be beneficial for the care of infants, children, families, and their caretakers.

Statement of Need

WakeMed Children's Hospital has 25 inpatient rooms and 12 observation rooms, 10 PICU beds, and 48 patient beds in the NICU (E. Phillips, Child Life Supervisor at WakeMed Children's Hospital, personal communication, January 15, 2020). The units that would most benefit from music therapy services are the day surgery unit, pediatric intensive care unit, and the neonatal intensive care unit. WakeMed's mission statement is "committed to improving the health and well-being of our community by providing outstanding and compassionate care to all" (WakeMed, 2020b, para. 1). In addition, WakeMed also states "it all starts with putting patients and family at the forefront" (WakeMed, 2020c, para. 2). Music therapists are able to provide services alone, or can work in tandem with the other specialties. These include: child life

specialist, nursing, physical therapy, occupational therapy, and/or speech pathology (Ghetti & Hannan, 2008; Hanson-Abromeit et al., 2008; Palmer, Lane, & Mayo, 2016).

What is Music Therapy?

Music therapy is defined as "a reflexive process wherein the therapist helps the client to optimize the client's health, using various facets of music experience and the relationships formed through them as the impetus for change" (Bruscia, 2014, p. 36). Music therapists design music experiences to assist patients in identifying and reaching their goals that they set for themselves or are set by the treatment team. The therapeutic relationship that develops between the music therapist, the patient, and music allows for change to occur. Through this relationship, the music therapist guides the patient to accomplish their individual goals and incorporate what they have learned into their lives outside of the hospital.

There are four methods of music engagement that are used in music therapy: improvisation, re-creative, composition, and receptive (Bruscia, 2014). Improvisation refers to the extemporaneous creation of music by the patient and/or the music therapist (Bruscia, 2014). Music can be improvised with the voice, body sounds, environmental sounds, and/or instruments. Re-creative experiences include the use of precomposed music by music therapists and/or the patients (Bruscia, 2014). This includes experiences such as the patient learning to either sing and/or play an instrument. This can be used for either their own expression or at times in preparation for some type of performance. Compositional experiences involve patients writing and creating music/songs/lyrics with the music therapist's support at varying levels (Bruscia, 2014). This may entail creating an original song, or other experiences such as replacing composed lyrics with lyrics the patient created. Receptive exercises use different ways of presenting music (live/recorded, precomposed/improvised) and a variety of genres with the

patients (Bruscia, 2014). Experiences may include listening to music prepared by the therapist, the use of recorded music chosen by the patients, discussions about the music/lyrics and relating it to the patients through their interpretations. Each method can be designed to address a variety of treatment goals, and may be engaged based on patient needs and interests.

Why Music Therapy?

Music therapy is used in many settings with different populations using various music therapy experiences and/or interventions. Dileo (2015) explained that medical music therapy is used when the patient's main issues are medical and the music therapist builds a relationship through the therapeutic process. In a hospital setting, a music therapist should have the ability to assist pediatric patients with various diagnoses, work with their families and be flexible with potential changes. Music therapy within a neonatal intensive care unit (NICU) and a pediatric intensive care unit (PICU) is a beneficial addition to the hospital in a variety of ways for the patients, their families, staff, and the hospital as a whole. A music therapy fact sheet can be found in Appendix A that can be shared with patients and families to offer more information.

Neonatal Intensive Care Unit

The neonatal intensive care unit (NICU) focuses on the care of infants who were born prematurely, they may require surgery, have critical illnesses, are at risk for developmental delays, and additional medical complications (Hanson-Abromeit et al., 2008). The incorporation of music therapy services in this unit would benefit the environment, the patients, their families, and the staff.

Within the environment of the NICU there are a variety of noises such as beeps/humming from machines, opening/closing doors, venting systems, hum of fluorescent lights, staff/parents/visitors talking, and other natural/unnatural sounds. Environmental music therapy is

the use of live music by a skilled music therapist to integrate the sounds of the NICU and to mitigate the negative impact of these extraneous sounds (Hanson-Abromeit et al., 2008; Shoemark, 2012; Shoemark & Dearn, 2016; Stewart & Scheider, 2000). In addition, the music therapist can work with members of the treatment team to address goal areas such as parental bonding, self-regulation, self-soothing, feeding/sucking and assist with development (Hillmer, Swedberg, & Standley, 2012; Loewy et al., 2013; Stamou et al., 2020; Standley & Gutierrez, 2020). Music therapy may also be beneficial for the parents of the infant, who may experience anxiety and stress related to their child being in the NICU (Hanson-Abromeit et al., 2008).

Pediatric Intensive Care Unit

The pediatric intensive care unit (PICU) provides care for children that have "life-threatening childhood diseases, automobile accident injuries, respiratory and heart problems, and other critical illness and injuries" (WakeMed, 2020a, para. 1). The patients are constantly monitored, at times having no privacy and feel their needs and wants are not heard. Music therapy can be used develop the child's individual identity by promoting relaxation; decreasing anxiety and stress; increasing normalization; providing opportunities to make choices; and allowing for the identification and expression of emotions (Ghetti, 2012; Ghetti & Hannan, 2008; Millett and Gooding, 2017; Noguchi, 2006; Whipple; 2003; Whitehead-Pleaux et al., 2007). Through the use of music therapy experiences and interventions children can have a humanizing experience while in the PICU (Ghetti, 2012).

Personal Statement

Throughout my education, I have learned and developed my personal philosophy of music therapy that integrates principles of humanism, the developmental approach, the biopsychosocial approach, and family-centered care. I believe that the patient should be involved

with their own treatment plan development with the assistance of the music therapist. I also feel that the patient's goals should include developing skills that can be taken and applied to their life outside of their hospital experience. The WakeMed Children's hospital believes in the importance of family-centered care and personalizing each patient's care to best fit them.

My plan is to further my education in pediatric music therapy by taking a graduate course this summer 2020. Although I do not have extensive experience in a hospital setting, I have worked with a variety of children populations in different settings. These include obtaining a degree in music education and working in a primary school, working in summer camps, and nannying. As a fieldwork student in music therapy, I worked with students with autism spectrum disorder in a school setting. I believe that music therapy has the potential to empower patients in an environment where they may feel helpless. My current resume can be found in Appendix B.

Theoretical Orientation

In the music therapy field there are different theoretical orientations and approaches that influence practice (Wheeler, 2015). For my personal practice, I have developed an integrated theoretical orientation and approach. This way of treating patients will assist me in being the most prepared to be supportive, understanding, and reflexive. As noted above, the approaches I have integrated into my practice are humanism, developmental theory, biopsychosocial, and patient/family-centered care. All of these center on embracing treatment of the person as a whole, rather than focusing solely on their medical needs.

The humanistic approach allows the music therapist to treat the patient as a whole, and encourages collaboration to create and reach clinical goals (Abrams, 2015). Through this process the patient is a part of their treatment process with the music therapist. Particularly when working with children, the music therapist should be aware of their patients' developmental

levels and how they are impacted by their medical needs (Briggs, 2015; Loewy, 2015a). By knowing and understanding the developmental level of the child, the music therapist can develop a treatment plan that best suits the child in a medical setting (Loewy, 2015a). The biopsychosocial approach supports treating the patients' mind, body, and spirit, rather than focus solely on their physical illnesses (Dileo, 1997). Keeping all of these approaches in mind, family-centered care is imperative when working with children in medical settings. This entails involving the patient and their families creating a partnership through the patients' treatment process (Institute for Patient- and Family-Center Care, 2019). The interaction of these various theoretical orientations and approaches matches the mission, vision and values of the WakeMed medical system.

Review of Literature

This review of literature summarizes research and clinical reports describing the use of music therapy in the NICU and PICU for both patients and families. It will begin with a definition and review of music therapy and family centered care, how music therapy is used with infants and their families, how music therapy is used with children and adolescents, and then how music therapy can be used for procedural support. An annotated bibliography is located in Appendix C.

Music Therapy in Patient- and Family-Centered Care

A family-centered approach to care is important in a NICU and PICU setting to provide support for patients and their families. The Institute for Patient- and Family-Center Care (2019) defines patient/family-centered care as a partnership between the patients, their families and their medical staff. The core concepts of creating a hospital using a patient/family-centered care

approach are dignity and respect, information sharing, participation, and collaboration (Institute for Patient- and Family-Center Care, 2019).

Music therapy experiences can be designed within the approach of family-centered care, and have been found effective within this approach. Shoemark and Dearn (2008) worked with hospitalized infants and their families, and explored the impact of these experiences with patients and families and made several conclusions about the nature of this work. They concluded that music therapy can facilitate the family's experience of "a whole life," referring to the time the parents get to spend with their critically ill infant, and how to create joyful moments (Shoemark & Dearn, 2008). Music therapy acknowledges the "whole" developing child, thus creating a sense of normalization with their infant and treating them as a "whole" child (Shoemark & Dearn, 2008). Music therapy may be effective in helping parents manage the long journey of medical care, and develop or endurance through the emotional turmoil of the NICU experience (Shoemark & Dearn, 2008). The contingent relationship between parent and child may be diminished in the face of illness, and can be recovered with the assistance of the music therapist by creating opportunities for parents to create bonds with their infants within the NICU (Shoemark & Dearn, 2008). Finally, there is a triadic relationship between the infant, parent, and music therapist through an intimate time of a parent/infant relationship (Shoemark & Dearn, 2008). Each of these findings express how music therapy and the music therapist can provide benefit for both infants and their parents through their hospitalization experience.

Hillmer, Swedberg, and Standley (2012) developed a family-centered approach using music therapy techniques to promote infant development and increase parent-infant bonding. They used receptive music therapy experiences and trained the parents to use music with their infants (Hillmer, Swedberg, & Standley, 2012). The parents expressed that through these

sessions, they felt more bonded with their infant and attuned to their responses. The case studies demonstrate the benefits of family-centered care for the patient and the families (Hillmer, Swedberg, & Standley, 2012).

Music Therapy with Hospitalized Infants

Music therapy used in the NICU can assist with parent-infant bonding, physiological, and developmentally for infants that are premature (Haslbeck & Stegemann, 2018; Loewy et al., 2013; Stamou et al., 2020; Standley & Gutierrez, 2020) or full-term (Cevasco, 2008; Malloch et al., 2012; Marley, 1984). It is important for the music therapist to be knowledgeable of the development of a premature infant and how music therapy can be used safely (Nöcker-Ribaupierre, 2012). Nöcker-Ribaupierre (2012) explains that premature infants have a slower reaction time when being exposed to sensory stimulation compared to full-term infants, and thus it is possible to overstimulate with music, particularly for extremely premature infants. It is recommended that music therapy experiences begin to be employed at 25-28 weeks gestational age, with minimal sounds like humming either from the therapist or the mother to begin the bonding process (Nöcker-Ribaupierre, 2012). Over time the music therapist can assist with the development growth of the infant throughout their time in the NICU.

Infants who are born at full-term but have medical needs can also be cared for in the NICU. Shoemark (2012) explained that every week of an infants' life they are developing their neurological maturity, emergence of social ability, and physiological stability. During this time the music therapist should be aware of the infant's development to determine the most appropriate treatment.

Music Therapy and Parent-Infant Bonding

The bonding between parents/guardians and their infants can be affected in the NICU. Music therapy can be used to promote interaction and bonding between the hospitalized infant and their parent/guardian. Edwards (2011) discussed the use of music therapy experiences to promote a stable and healthy bonding and interactions between the parent/guardian and infant. The author stressed the importance of the music therapist's ability to be aware of the musicality of the infant and their parents/guardians, and how to provide opportunities for bonding and interaction. Edwards (2014) explains how a music therapist can help attachment between the parent/guardian and infant "through promoting the development of synchronized, attuned, and sensitive inter-relating" (p. 39). The distributed relationship is vastly improved by having a qualified music therapist to facilitate these opportunities for bonding and attachment (Edwards, 2014).

Ettenberger and Ardila (2018) researched the benefit of music therapy songwriting with mothers who had difficulty bonding with their hospitalized infants. The authors worked with 15 mother-infant dyads that received four to six music therapy sessions. The music therapist facilitated songwriting with the mothers and whomever they wanted to invite to the sessions. The Mother-to-Infant Bonding Scale, Short Warwick-Edinburgh Mental Well-being Scale, and the Hospital Anxiety and Depression Scale were used to collect quantitative data. The results the authors found were: the Mother-to-Infant Bonding Scale, where a higher score implies an impairment in the mother-infant bonding, decreased about 50% from the pre- to post-intervention; the Short Warwick-Edinburgh Mental Well-being Scale suggested there was a slight improvement with the mothers' mental wellbeing through the music therapy process; and the Hospital Anxiety and Depression Scale results showed a positive effect on the mothers'

anxiety and depression levels (Ettenberger & Ardil, 2018). Qualitative interviews were conducted after the last music therapy session. Ettenberger and Ardila (2018) found through the interviews that the common themes were “bonding,”, “maternal wellbeing,” and “empowerment” (p.46), and the songwriting was able to provide communication and a form of bonding between the mothers’ and infants.

Music Therapy and Physiological Functions

In the NICU the infants’ physiological signs are constantly monitored, their heart rate, respiratory status, and oxygen saturation (Shoemark & Hanson-Abromeit, 2015). It is important for the infants in the NICU to develop skills of self-regulation and self-awareness. Loewy et al. (2013) studied the importance of live music in the NICU with premature infants. The music therapists in the study used ocean disc to simulate the sounds of a womb, a gato box for rhythmic entrainment to a heartbeat, and using parent preferred lullabies (Loewy et al, 2013). The research found significant improvement in the infants' sucking behavior, caloric intake, sleeping patterns, and heart rate (Loewy et al., 2013).

Malloch et al. (2012) used music interventions with late pre-term and full-term infants in the NICU. There were three groups: the first group in the NICU received music therapy sessions, the second group in the NICU did not receive music therapy sessions, and the third was a group of healthy infants who were not hospitalized that did not receive music therapy sessions. Using the Neurobehavioral Assessment of the Preterm Infant and the Alarm Distress Baby Scale, the researchers found that the infants in the NICU who received music therapy displayed less crying and irritability, and responded less negatively to adult interactions (Malloch et al., 2012).

Yurkovich et al. (2018) examined the effects of music therapy entrainment on the physiologic responses and heart rates of infants in the cardiac intensive care unit that were

suffering from congenital heart disease. This pilot study found that the infants displayed evidence of a stable heart beat through music therapy entrainment (Yurkovich et al., 2018).

A study in Greece studied how live singing can improve weight gain, biophysiological functions, body length, and head circumference (Stamou et al., 2020). The researchers had three groups: one control group with 14 premature infants; one group with 13 premature infants in which mothers' sang to them; 14 premature infants in which a music therapist sang to them. The results for the premature infants that were sung to by the mothers' and music therapists' showed improvement in their heart rate and blood oxygen, compared to the control group (Stamou et al., 2020). Music therapy can assist the infants during their time in the NICU in both their social-emotional and physiological needs.

Music Therapy with Children and Adolescents

A trip to the hospital for the first time or tenth time can be a scary experience as a child, especially if the child is injured or critically ill (Ghetti, 2012; Ghetti & Hannan, 2008). During this time of uncertainty, confusion, and frustration a sense of normalcy can be welcome, and music therapy can provide that for children who are in the PICU. The music therapist can work with the patient and/or their family in an individual session or the patient can attend a music therapy group session if able (Ghetti, 2012; Ghetti & Hannan, 2008).

The connection between an adolescent and their music is an important bond and plays a great role in their lives (McFerran, 2010). By definition an adolescent is between the ages of 13 and 19, during this time puberty arises and hormones are in flux. McFerran (2010) explained that there are four key elements that develop a healthy adolescent: identity formation; resilience; competence; and connectedness. A bridge between each of these elements can be music and how an adolescent engages with music.

Music Therapy Experiences with Children and Adolescents

There are many music therapy experiences that can be used in the PICU with children and adolescents. Bower and Shoemark (2009) presented a case study of a 10 year-old boy who suffered from encephalitis and a seizure disorder that led to an acquired brain injury. As a result the patients had difficulties interacting, engaging, and verbally communicating with others. The patient's ability to interact musically and engage improved over the course of many music therapy sessions. The music therapist structured the sessions to begin with a "Hello" song, engage in rhythmic activities, re-create familiar songs, then cue the end of the session with a similar "Goodbye" song. To increase the patient's process of interpersonal interacting and engaging in therapy the music therapist began to collaborate with a speech pathologist. When testing to be discharged ,the patient was able to recall 40% of the information that was verbally presented to him. However, when the information was presented to him through an improvised melody the patient recalled the information 100% of the time (Bower & Shoemark, 2009). Through the musical interaction and engagement the patient was able to reach their goals.

Robb et al. (1995) researched the effect of music assisted relaxation (MAR) on anxiety scores through the State-Trait Anxiety Inventory for Children, and from responses from the staff and patient. There were 20 pediatric burn patients, ranging in age from 8 to 20 years old, and were randomly placed into groups. The treatment group received MAR experiences such as imagery, progressive relaxation, music listening, and deep breathing before their surgery. The control group received standard preoperative interventions. The results showed no significance in the physiological measures. However, the treatment group had a significant decrease in anxiety, as illustrated by the measurement tool and by verbal responses of the patients.

Duda (2013), a child life specialist, worked with a board-certified music therapist to develop a program in which music therapy methods were used to address pain management with pediatric palliative care patients. Songwriting was used with patients, siblings, and parents while preparing for procedures, and live music and imagery was utilized to promote feelings of comfort and relaxation (Duda, 2013).

Music Therapy and Procedural Support

As stated previously, the hospital can be an overwhelming place and can become more overwhelming with diagnostic tests, medical procedures, hourly monitoring, and surgery (Mondanaro, 2012). Music therapy can help all ages in the NICU and PICU during these stressful times.

Ages 0-5 Years

Loewy et al. (2005) researched the difference between using chloral hydrate versus music therapy experiences to increase the sleep/sedated effects on pediatric patients (infants and toddlers) while undergoing an electroencephalogram (EEG) test. The researchers found that "97.1% of the children subjected exclusively to music therapy in the study completed the EEG recording successfully compared with 50% of the children subjected exclusively to chloral hydrate" (Loewy el at., 2005, p. 352).

Millett and Gooding (2017) studied the effects of passive (music-assisted relaxation) and active (music alternate engagement) music therapy interventions on pediatric patients' anxiety levels before surgical procedures. The passive method used preferred music and encouraged the patient and family to sing along to ensure the patient was in a relaxed state with the assistance of music. The active method also used preferred music, and the music therapist would encourage the patient and family to engage with playing along instruments or involving a musical game.

Both methods were found to reduce anxiety according to scores on the Modified Yale Preoperative Anxiety Scale (child observation) and the State-Trait anxiety inventory Y-6 Item (parent or primary caregiver) (Millett & Gooding, 2017).

Noguchi (2006) researched music as a distraction for pediatric patients receiving immunizations, from one to six shots. The pediatric patients that received four to six shots communicated that the music reduced the pain they were experiencing at the time of the injections (Noguchi, 2006).

Ages 6-13 Years

Barry et al. (2010) created music therapy compact discs (MTDC) to improve coping skills with pediatric patients undergoing radiation therapy treatment. Barry et al. (2010) found that:

> The MTCDs often provided distraction from the physical discomfort children experienced during the initial radiation therapy procedure, which stemmed from immobilization devices including individually molded masks placed over the pediatric patients' heads and attached to the treatment bed. (pp. 251-253)

This in turn lowered the pediatric patients' stress level (Barry et al., 2010).

Whitehead-Pleaux et al. (2007) researched the effect of music therapy on the anxiety and pain of pediatric patients during surgical procedures. The researchers used music therapy experiences with pediatric burn patients using preferred music during surgical procedures. Interviews with the patients revealed that the music therapy experiences reduced the experience of their pain. The results of qualitative interviews revealed that the patients, parents/guardians, and nurses identified that music therapy did reduce anxiety and increase relaxation, mood, and compliance (Whitehead-Pleaux et al., 2007).

Whipple (2003) developed a program that uses live music therapy interventions to assist in minor procedures called “Surgery Buddies.” This program has been successfully utilized to decrease anxiety and behavioral stress.

Adolescents

Nelson, Adamek, and Kleiber (2017) researched the effect of training participants from the ages 10-19 receiving spinal fusion surgery, in music-assisted relaxation and controlled breathing. A total of 45 participants were randomly organized into a control group or a treatment group. The treatment group watched a 12-minute video about music therapy and music-assisted relaxation and controlled breathing, then self-reported their pain and anxiety using a numeric rating scale (1 to 10) before the surgery. Both groups received 30 minute music therapy sessions two days after the surgery, and were asked to self-report their pain and anxiety using a numeric rating scale (1 to 10) after the music therapy session. The results presented a significant decrease in pain and anxiety between the pre-therapy and the post-therapy.

Proposed Music Therapy Program

There are many ways a music therapy program can benefit the NICU and PICU at WakeMed Children’s Hospital. The music therapist’s time would be split equally between the two units spending two and a half days in each unit. Of course, this schedule can be adjusted as patient needs arise and dictate for each unit. Half days on Mondays could be utilized to create a weekly plan for the patients that are there long-term. The proposed music therapist schedule is included in Appendix D. Appendix E includes a sample music therapy referral form for NICU patients, and Appendix F includes a sample music therapy referral form for PICU patients.

There are many different music therapy experiences/interventions that can be used in the NICU and PICU units. As explained previously, there are four different methods of music

therapy experiences that can be used: re-creative, receptive, improvisational, and compositional. Table 1 includes a list of the music therapy experiences/interventions that will be used, with whom, and in which formats. Descriptions of each follow.

Table 1

Experiences/Interventions and Populations

Experience/ Intervention	**NICU**	**PICU**	**Individual**	**Group**
Projective Listening		X	X	X
Singing/ Instrumental Improvisation		X	X	X
Songwriting	X (With Parents/ Guardians)	X	X	X
Song Re-creation		X	X	X
Imaginal Listening		X	X	X
Music Relaxation	X	X	X	X
Song Communication		X	X	X
Song Discussion		X	X	X
Song of Kin	X		X	

Projective Listening

Population: Children, and Adolescents (Individual or Group)

Location: Individual - patient's room; Group - unit playroom.

Duration: 15-30 minutes (possibly longer) for individuals, or 45 minutes - 1 hour for a group.

Description: This experience can be facilitated with recorded or live music, depending on patient needs. There are various ways to experience projective listening, through drawing, free association, storytelling, and movement. Once the therapist identifies which method would work best for the patient(s), the therapist will assist the patient(s) into a relaxed state and will then play a live or recorded song. The therapist will then guide the patient(s) to draw/write/move.

Materials: Guitar, iPad Pro, Bluetooth speaker, pastels/coloring pencils, pencils, sketch paper

Goals:

1. Increase sensory stimulation
2. Improve cognitive skills
3. Promote self-expression

Expected Outcomes:

1. Patient(s) will respond to prompts given through the music
2. Patient(s) will write or vocally identify feelings and/or emotions

Singing/Instrumental Improvisation

Population: Children and Adolescents (Individual or Group)

Location: Individual - patient's room; Group - unit playroom.

Duration: 15-30 minutes (possibly longer) for individuals or 45 minutes - 1 hour for a group.

Description: This experience provides the opportunity for the patient(s) and therapist, and sometimes family members, choose an instrument and play what and/or how they are feeling. The therapist can start with a simple guitar progression while the patient(s) play a rhythm or sing over the progression.

Materials: Guitar, hand drums, djembes, rhythm sticks, maracas, shakers, tambourines, tone blocks

Goals:

1. Provide safe environment to self-express
2. Decrease pain perception
3. Decrease depression
4. Decrease anxiety and stress
5. Increase family support
6. Provide decision-making opportunities

Expected Outcomes:

1. Patient(s) and family member interact musically
2. Patient(s) will choose instrument to play
3. Patient(s) will verbally express decrease of pain perception
4. Patient(s) will verbally express increase in mood
5. Patient(s) will verbally identify and express feelings

Songwriting

Population: Children, and Adolescents (Individual or Group)

Location: Individual - patient's room; Group - unit playroom.

Duration: 45 minutes - 1 hour for an individual and group.

Description: Compositional experiences can vary depending on the ability of the patient(s) and/or willingness of the parents. The music therapist can support the patient(s) with a full songwriting session or a song transformation. In individual and group sessions, the therapist can help the patient write a song about their experience in the hospital, their family, or how they

are feeling. These songs can be recorded for the patients to keep as reminders, memories, or support in the future.

Materials: Guitar, iPad Pro, Recording equipment (Microphone, Mic stand, Headphones), Paper, Pencils

Goals:

1. Increase self-esteem
2. Create feelings of success and accomplishment
3. Provide emotional support
4. Develop coping skills
5. Provide opportunities for self-expression
6. Provide opportunities for decision-making

Expected Outcomes:

1. Patient(s) will making choices with the lyrics and music they create
2. Patient(s) will identify and verbalize feeling and/or emotions
3. Patient(s) will write a song individually or a collective song with group members
4. Patient(s) will record song for themselves or as a "gift" to family, staff, or other

Song Re-creation

Population: Children, and Adolescents (Individual or Group)

Location: Individual - patient's room; Group - unit playroom.

Duration: 15-30 minutes (possibly longer) for individuals or 45 minutes - 1 hour for a group.

Description: Song re-creation can be an experience with a group, one patient, or patient's families.

Materials: Guitar, hand drums, djembes, rhythm sticks, maracas, shakers, tambourines, tone blocks

Goals:

1. Create a community
2. Create a normal experience within the hospital
3. Promote social interaction
4. Decrease depression
5. Decrease anxiety and/or stress
6. Provide self-expression
7. Provide opportunity for decision-making

Expected Outcomes:

1. Patient(s) will engage with music therapist, peers and/or family members
2. Patient(s) will chose instrument to play
3. Patient(s) will express feeling and/or emotions

Imaginal Listening

Population: Adolescents (Individual or Group)

Location: Individual - patient's room; Group - unit playroom.

Duration: 15-30 minutes (possibly longer) for individuals or 45 minutes - 1 hour for a group.

Description: Experiences that might be used in this method include directed music imaging or unguided music imagining. The music therapist will assist the patient into a relaxed state. For unguided music imaging the music therapist will give a short introduction and then play pre-recorded music, allowing the patient to imagine freely. Following the music, the music

therapist and patient will discuss the experience. For directed music imaging, the music therapist will guide the patients through an imagery experience that can be general or personalized.

Materials: iPad Pro, Bluetooth Speaker

Goals:

1. Provide a positive refocus of attention
2. Decrease pain perception
3. Regulate breathing
4. Decrease stress and/or anxiety

Expected Outcomes:

1. Patient(s) will verbalize a decrease in pain perception
2. Patient(s) will display regulated breathing throughout and after experience
3. Patient(s) will identify positive imagery
4. Patient(s) will verbalize image experience
5. Patient(s) will make connections between musical images and personal life
6. Patient(s) will increase physical relaxation

Music Relaxation

Population: Infants, Children, and Adolescents (Individual or Group)

Location: Individual - patient's room; Group - unit playroom.

Duration: 15-30 minutes (possibly longer) for individuals or 45 minutes - 1 hour for a group.

Description: The music therapist will assist the patient(s) into a relaxed altered state and will then play live or pre-recorded music, depending on what the patient(s) needs. For the

infants, the music therapist will use the ocean disc and improvise live music to entrain with the infants' breathing or heart rate.

Materials: Guitar, Ocean drum, Ocean disc, iPad, Bluetooth speaker

Goals:

1. Reduce anxiety and stress
2. Decrease physical tension
3. Increase relaxation

Expected Outcomes:

1. Patient(s) will exhibit relaxed body
2. Patient(s) will actively or passively listen to the music

Song Communication

Population: Children, and Adolescents (Individual or Group)

Location: Individual - patient's room; Group - unit playroom.

Duration: 15-30 minutes (possibly longer) for individuals or 45 minutes - 1 hour for a group.

Description: The patient/group members will present a song for the music therapist and/or group. The music therapist/group will listen to the song together. The patient will then lead a group discussion or explain to the therapist why they chose this song, what it means to them, and how it relates to their current life.

Materials: iPad Pro, Bluetooth Speaker

Goals:

1. Promote self-expression
2. Create opportunity for decision-making

3. Increase social interaction
4. Promote normal hospital experiences

Expected Outcomes:

1. Patient(s) will verbalize musical preferences and reasoning
2. Patient(s) will engage with peers about music chosen
3. Patient(s) will create and verbalize connections between music and personal life

Song Discussion

Population: Children, and Adolescents (Individual or Group)

Location: Individual - patient's room; Group - unit playroom.

Duration: 15-30 minutes (possibly longer) for individuals or 45 minutes - 1 hour for a group.

Description: The therapist brings a piece of music to the patient/group to initiate a discussion about different topics (e.g., being in the hospital, missing friends/family, not feeling heard). The therapist will play the pre-recorded song for the patient/group. Afterward, the therapist will ask the patient/group about the lyrics and how they can compare it to their life.

Materials: iPad Pro, Bluetooth speaker

Goals:

1. Promote safe environment for self-expression
2. Increase ability to identify feelings and/or emotions
3. Increase ability to verbalize feelings and/or emotions
4. Increase cognitive skills

Expected Outcomes:

1. Patient(s) will makes connection between song and personal life

2. Patient(s) will express feelings and/or emotions in health manner
3. Patient(s) will engage and interact with music therapist and/or peers

Song of Kin

Population: Parents/Guardians of Infants, Infants (Individual)

Location: Patient's room

Duration: 30 minutes - 1 hours with the parents/guardians and infant

Description: Loewy (2015) explains song of kin as using parents'/guardians' preferred music to bring in family heritage to the infant and personalize the treatment. Also, the therapist can take songs that the parents/guardians prefer and transform them into lullabies to sing and possibly record for their infant.

Materials: Ocean disc, Gato Box, Classical Guitar, iPad Pro, Recording equipment (Microphone, Mic stand, Headphones), Paper, Pencils

Goals:

1. Decrease anxiety (both infant and parents/guardians)
2. Provide support for the parents/guardians
3. Decrease stress (both infant and parents/guardians)
4. Increase Parent-Infant Bonding
5. Promote self-regulation

Expected Outcomes:

1. Patient will exhibit increase relaxation and decreased anxiety
2. Parents/guardians will exhibit and verbalize decreased anxiety, stress, and increased relaxation
3. Parents/Guardians will sing to patient to increase Parent-Infant Bonding

Financial Justification

Budget

There will be start-up costs for the music therapy program. Table 2 lists the technology and instruments, justification, and price of each item. Yearly costs include funds to maintain technology, and instruments, licensing for the use of music, and software. Personal costs include yearly salary, benefits, and funds for continuing education. A list is provided on Table 3.

Table 2

Required Initial Expenses

Instruments/Supplies	**Justification**	**Links**	**Cost**
iPad Pro (11-inch, 2nd. Gen., Wi-fi)	• Can be used as a computer • Portable and easy to store • Search for songs, music, chords, lyrics, and research • Used for documentation and notes	iPad Pro	$799.00
Magic Keyboard for iPad Pro 11-inch (2nd Gen.)	• To be used with the iPad pro to type up documentation or notes	iPad Keyboard	$299.00
USB-C Digital AV Multiport Adapter	• Provide a USB port to use flash drives, connect to other devices, and connect recording equipment • Provides a HDMI port to display on other screens	iPad Adapter	$69.00
Bluetooth speaker (Bose SoundLink Mini II)	• To project music from iPad Pro for individual and group sessions • Small in size for easy storage but projects loudly	Bluetooth Speaker	$144.95

(continued)

Table 2. Required Initial Expenses (continued)

Instruments/Supplies	**Justification**	**Links**	**Cost**
Remo DP-FSRK-00 First Sounds Rhythm, Breath, Lullaby Kit: Gato Box, Ocean Disc & Backpack	• Used in the NICU with the infants • Gato box can assist with feeding, stabilizing heart rate, and breathing • Ocean disc can create womb-like environment	First Sounds Rhythm, Breath, Lullaby Kit	$246.90
Focusrite Scarlett Solo Studio 3rd Gen Recording Bundle (USB 2.0 Audio Interface, 2-in/2-out, 24-bit/192kHz, with 1 Mic Preamp, Switchable Air Mode, 1 Instrument Input, and USB Bus Power; Condenser Mic, Headphones, 3-meter Mic Cable, and Bundled Software)	• Recording equipment can be used to record individual and/or group projects/songs/music that is created, processed and can be given back to the patients	Recording Bundle	$219.99
Yamaha GigMaker C40 Classical Pack - Natural (Guitar Package with Nylon-string Guitar, Instructional DVD, and Gig Bag)	• Classical guitar has a softer and soothing quality to be use in a NICU or with relaxation sessions • Provides a guitar bag for easy travel	Classical Guitar	$169.99
D'Addario Pro-Arte Classical Guitar Strings - Normal Tension	• Extra strings for breakage or regular replacement	Classical Guitar Strings	$9.99 (Each pack)
Yamaha GigMaker Standard Acoustic Pack - Natural (Acoustic Guitar Starter Package with 6-string Acoustic Guitar, Gig Bag, Tuner, Lessons DVD, Strap, Extra Strings, and Guitar Picks)	• Acoustic guitar to be used in individual or group session • Provides a guitar bag for easy travel • Provides a tuner that can be used for the acoustic and classical guitars	Acoustic Guitar	$179.99
D'Addario EJ16 Phosphor Bronze Light Acoustic Strings	• Extra strings in case of breakage or regular replacement	Acoustic Guitar Strings	$6.99 (Per Pack)

(continued)

Table 2. Required Initial Expenses (continued)

Fender 351 Shape Premium Celluloid Picks - Medium White Moto 12-pack	• Pack of guitar picks for the acoustic guitar • Having multiple pick encase some get lost or wear out	Guitar Picks	$3.89 (Pack of 12)
Dunlop 87N Trigger Electric Capo - Nickel	• Guitar capo that can be used to on the acoustic or the classical guitars • Can assist with change a key of a song easily to best fit the patients vocal range	Guitar Capo	$10.75
Remo Travel Percussion Drum Pack (Drum pack with Travel Bag, Buffalo Drum, 3 Frame Drums, Sound Shape Circle, FX Shaker, Ginga Shaker, Didgeharp Shaker, Tone Block, Tambourine, and 10 Egg Shakers)	• Handheld drums and a mallet that can be used by children and different ages • Different shakers and drum sizes and tones to provide opportunity for decision making • Travel bag provided for easy transport • Easy to clean with disinfectant • Can be used with individual or group sessions	Remo Percussion Drum Pack	$329.59
Trophy Deluxe Rhythm 35-Player Band Set (2 - 8" tambourines, 2 - 6" Snare Boys with mallets, 2 - 5" x 5" tom toms with mallets, 2 sand block pairs, 4 tap taps, 7" cymbal pair with handles, 2 handle castanets, 3 - 3-bell cluster bells, 4 - 4-bell wrist bells, 5" cymbal with mallet, Maracas, Round tone block with mallet, Guiro tone block, 3 - 5" triangles with strikers, 3 jingle taps, 4 rhythm stick pairs)	• Handheld percussion that are smaller for young children to use during sessions • A different variety to provide an opportunity for decision making • Easy to clean with disinfectant • Can be used for individual or group sessions	Handheld Percussion	$154.99

(continued)

Table 2. Required Initial Expenses (continued)

One-Time Expenses			**$2,645.07**

Table 3

Yearly Expenses

Salary for 1 Music Therapist - Yearly	$51,000 per year
Estimated Fringe Benefits: Medical, Retirement, Paid sick/personal/vacation/personal/holiday/conference time, Professional liability insurance - Yearly	$16,000 per year
AMTA Membership - Yearly	$250 per year
Continuing Education - Yearly	$2,000 per year
Instrument/equipment/software maintenance and updates	$1,000 per year
Totally Yearly Expenses	**$70,250 per year**

Cost-effectiveness

There is some research that suggests the addition of a music therapy program in a hospital may be cost effective (Loewy et al., 2005; Palmer, Lane, & Mayo, 2016; Walworth, 2005). Palmer, Lane, and Mayo (2016) found that music therapists collaborating with perioperative nurses can be beneficial for the patient and staff, and is cost-effective. Music therapy was used to help decrease patients anxiety levels in order for them to fully understand pre- and post-operative directions and instruction to ensure a quick recovery and thus discharge (Palmer, Lane, & Mayo, 2016). This can lower the risk of patients having to be readmitted to the hospital. Walworth (2005) found that music therapy was effective in sedation of pediatric patients before undergoing procedures, with a decrease in procedural time and personnel required. Loewy et al. (2005) concluded that music therapy can be used as a non-pharmacological replacement to sedate and alleviate the stress pediatric patients experience

during EEG procedures. This could decrease the cost spent on medication and improve recovery time, thus resulting in earlier discharge.

Larger Facility Context

Implementing a music therapy program in the NICU and PICU of a children's hospital can be beneficial in the overall treatment of the patients, and can be a vital part of the treatment team. The music therapist would attend treatment meetings for patients on the unit to support the patients and fellow team members. Through these meetings the music therapist can assist other therapies and departments with developing and reaching goals that are set for the patients.

The music therapist can work with the Child Life Department in providing patients and their families' opportunities to spend time together within the hospital (Duda, 2013). Collaboration with the Child Life staff can increase the number of patients that can receive beneficial services and treatments. The music therapist can also collaborate with medical staff to ensure the pediatric patient is safe and relaxed when undergoing a procedure (Loewy et al., 2005; Walworth, 2005; Palmer, Lane, & Mayo, 2016). Creating and developing treatment plans with other team members will be beneficial to the treatment of the patient and their family but also alleviate stress from staff members.

Outcomes and Assessment

Music therapy is used to assist the patients reach their goals and create normalcy within the hospital experience. The various experiences are for the patients benefit, yet can also be beneficial for the people caring for the patient, including family, friends, and other care staff. Music therapists are trained in assessment and evaluation, and will observe the patient and their responses and engagement with the music and in interpersonal interactions. With these

observations the music therapist will determine the best goals, treatment and methods that would best benefit the patient.

Music therapy will be accessed for patients by referral. See Appendix E for a sample NICU Music Therapy Referral Form and Appendix F for a sample PICU Music Therapy Referral Form. Once the referral is received, the music therapist performs an assessment. See Appendix G for a sample NICU Music Therapy Assessment Form and Appendix H for a sample PICU Music Therapy Assessment Form. The documentation can be shared with other treatment team members to assist with creating a treatment plan for the patient. Through the progress of the patient's treatment, the music therapist will keep session notes and update the treatment team at meetings.

Conclusion

WakeMed Children's Hospital would benefit from the implementation of a music therapy program. The proposed music therapy program possesses a family-centered and patient-centered care, humanistic, and resource-oriented approach that the hospital, staff, patients, and families would benefit greatly. The program offers increased treatment options for patients and families. Music therapy provides a non-pharmacological method of treatment that is cost-effective and beneficial to the patients, families, and the staff. The music therapist will be an asset to the treatment team in the NICU and PICU. Music therapy can be used to assist the pediatric patients reach goals and discover a potential and resources for both healing and ongoing wellness.

References

Abrams, B. (2015). Humanistic approaches. In B.Wheeler (Eds.), *Music therapy handbook* (pp. 148-160). Guilford Publishers.

American Music Therapy Association (2018). 2018 AMTA member survey and workforce analysis: A descriptive, statistical profile of the 2018 AMTA membership and music therapy community. American Music Therapy Association, Inc. Retrieved from https://www.musictherapy.org/assets/1/7/18WorkforceAnalysis.pdf

Barry, P., O'Callaghan, C., Wheeler, G., & Grocke, D. (2010). Music therapy CD creation for initial pediatric radiation therapy: A mixed methods analysis. *Journal of Music Therapy, 47*(3), 233-263.

Bower, J., & Shoemark, H. (2009). Music therapy to promote interpersonal interactions in early pediatric neurorehabilitation. *Australian Journal of Music Therapy, 20*, 59-75.

Briggs, C. A. (2015) Developmental approaches. In B. Wheeler (Eds.), *Music therapy handbook* (pp. 172-182). Guilford Publishers.

Bruscia, K. E. (2014). *Defining music therapy* (3rd ed). Barcelona Publishers.

Cevasco, A. M. (2008). The effects of mothers' singing on full-term and preterm infants and maternal emotional responses. *Journal of Music Therapy*, *45*(3), 273-306.

Dileo, C. (1997). Reflection on medical music therapy: Biopsychosocial perspectives of the treatment process. In J. Loewy (Ed.), *Music therapy and pediatric pain* (pp. 125-143). Jeffrey Books.

Dileo, C. (2015). Introduction: Definition and perspectives on advanced practice in medical music therapy. In C. Dileo (Ed.), *Advanced practice in medical music therapy: Case reports* (pp. 1-19). Jeffrey Books/Music Therapy Resources.

Duda, L. J. (2013). Integrating music therapy into pediatric palliative care. *Progress in Palliative Care, 21*(2), 65-77. doi:10.1179/1743291X13Y.0000000049

Edwards, J. (2011). The use of music therapy to promote attachment between parents and infants. *The Art in Psychotherapy, 38*(3), 190-195. doi:10.1016/j.aip.2011.05.002

Edwards, J. (2014). The role of the music therapist in promoting parent-infant attachment. *Canadian Journal of Music Therapy, 20*(1), 38-48.

Ettenberger, M., & Ardila, Y. M. (2018) Music therapy songwriting with mothers of preterm babies in the neonatal intensive care unit (NICU) - A mixed-methods pilot study. *The Arts in Psychotherapy, 58*, 42-52. doi:10.1016/j.aip.2018.03.001

Gardstrom, S., & Sorel, S. (2015). Music therapy methods. In B. L. Wheeler (Ed.), In *Music therapy handbook* (pp. 116-127). The Guilford Press.

Ghetti, C. M. (2012). Pediatric intensive care. In J. Bradt (Ed.), *Guidelines for music therapy practice in pediatric care* (pp. 152-204). Barcelona Publishers.

Ghetti, C., & Hannan, A. (2008). Pediatric intensive care unit (PICU). In D. Hanson-Abromeit & C. Colwell (Eds.), *Effective clinical practice in music therapy: Medical music therapy for pediatrics in hospital settings* (pp. 71-106). American Music Therapy Association, Inc.

Hanson-Abromeit, D., & Colwell, C. (2008). Effective clinical practice in music therapy: Medical music therapy for pediatrics in hospital settings. American Music Therapy Association, Inc.

Hanson-Abromeit, D., Shoemark, H., & Loewy, V. J. (2008). Newborn intensive care unit (NICU). In D. Hanson-Abromeit & C. Colwell (Eds.), *Effective clinical practice in music therapy: Medical music therapy for pediatrics in hospital settings* (pp. 15-69). American Music Therapy Association, Inc.

Haslbeck, F., & Stegemann, T. (2018). The effect of music therapy on infants born preterm. *Developmental Medicine & Child Neurology*, *60*(3), 217.

Hillmer, M., Swedberg, O., & Standley, J. M. (2012). Medical music therapy with premature infants: Family-centered services. In K. E. Bruscia (Ed.), *Case examples of music therapy for medical conditions* (pp. 78-91). Barcelona Publishers.

Institute for Patient- and Family-Center Care. (2019, May 30). *Patient- and family-centered care: Partnerships for quality and safety* [Video]. Youtube. https://www.youtube.com/watch?v=98fiugUNhZ0&feature=emb_logo

Loewy, J. (2015a). Medical music therapy for children. In B.Wheeler (Eds.), *Music therapy handbook* (pp. 435-440). Guilford Publishers.

Loewy, J. (2015b). NICU music therapy: Song of kin as critical lullaby in research and practice. *Annals of the New York Academy of Sciences,1337*(1), 178-185. doi:10.1111/nyas.12648

Loewy, J., Hallan, C., Psych, L., Friedman, E., & Martinez, C. (2005). Sleep/sedation in children undergoing EEG testing: A comparison of chloral hydrate and music therapy. *Journal of PeriAnesthesia Nursing, 20*(5), 323-332.

Loewy, J., Stewart, K., Dassler, A.-M., Telsey, A., & Homel, P. (2013). The effects of music therapy on vital signs, feeding, and sleep in premature infants. *Pediatrics*, *131*(5), 902–918.

Malloch, S., Shoemark, H., Črnčec, R., Nowman, C., Paul, C., Prior, M., Coward, S., & Burnham, D. (2012). Music therapy with hospitalized infants: The art of science of communicative musicality. *Infant Mental Health Journal, 33*(4), 386-399. doi: 10.1002/imhj.21346

McFerran, K. (2010). *Adolescents, music and music therapy: Methods and techniques for clinicians, educators and students.* Jessica Kingsley Publishers.

Millett, C. R., & Gooding, L. F. (2017). Comparing active and passive distraction-based music therapy interventions on preoperative anxiety in pediatric patients and their caregivers. *Journal of Music Therapy, 54*(4), 460-478. doi:10.1093/jmt/thx014

Mondanaro, J. F. (2012). Surgical and procedural support for children. In J. Bradt (Ed.), *Guidelines for music therapy practice in pediatric care* (pp. 205-251). Barcelona Publishers.

Nöcker-Ribaupierre, M. (2012). Premature infants. In J. Bradt (Ed.), *Guidelines for music therapy practice in pediatric care* (pp. 66-115). Barcelona Publishers.

Noguchi, L. K. (2006). The effect of music versus nonmusic on behavioral signs of dress and self-report of pain in pediatric injection patients. *Journal of Music Therapy, 44*(1), 16-38.

Palmer, J. B., Lane, D., & Mayo, D. (2016). Collaborating with music therapists to improve patient care. *AORN Journal, 104*(3), 192–197. doi.org/10.1016/j.aorn.2016.06.014

Robb, S. L., Nichols, R. J., Rutan, R. L., Bishop, B. L., & Parker, J. C. (1995). The effects of music assisted relaxation on preoperative anxiety. *Journal of Music Therapy, 32*(1), 2-21.

Shoemark, H. (2012). Full-term hospitalized newborns. In J. Bradt (Ed.), *Guidelines for music therapy practice in pediatric care* (pp. 116-151). Barcelona Publishers.

Shoemark, H., & Dearn, T. (2008). Keeping parents at the centre of family centered music therapy with hospitalized infants. *Australian Journal of Music Therapy, 19,* 3-24.

Shoemark, H., & Dearn, T. (2016). Music therapy in the medical care of infants. In J. Edwards (Ed.), *The Oxford handbook of music therapy* (pp. 24-52). Oxford University Press.

Shoemark, H., & Hanson-Abromeit, D. (2015). Music therapy in the neonatal intensive care unit. In B.Wheeler (Eds.), *Music therapy handbook* (pp. 415-424). Guilford Publishers.

Stamou, L., Evaggelou, F., Stamou, V., Diamanti, E., & Loewy, J. V. (2020). The effects of live singing on the biophysiological functions of preterm infants hospitalized in a neonatal intensive care unit in Greece: A pilot study. *Music & Medicine, 12*(2), 109-121.

Standley, J. M., & Gutierrez, C. (2020). Benefits of a comprehensive evidence-based NICU-MT program: Family-centered, neurodevelopmental music therapy for premature infants. *Pediatric Nursing, 46*(1), 40-46.

Stewart, K., & Scheider, S. (2000). The effect of music therapy on the sound environment in the neonatal intensive care unit: a pilot study. In J. Loewy (Ed.), *Music therapy in the neonatal intensive care unit* (pp. 85-100). Satchnote Press.

WakeMed. (2020a). *Pediatric intensive care.* https://www.wakemed.org/childrens-pediatric-intensive-care-unit

WakeMed. (2020b). *Mission & vision.* https://www.wakemed.org/mission-and-vision

WakeMed. (2020c). *About us.* https://www.wakemed.org/about-wakemed

Walworth, D. D. (2005). Procedural-support music therapy in the healthcare setting: a cost-effectiveness analysis. *Journal of Pediatric Nursing, 20*(4), 276-284.

Wheeler, B. (2015). Orientations and approaches. In B. Wheeler (Ed.), *Music therapy handbook* (pp. 129-132). Guilford Publishers.

Whipple, J. (2003). Surgery buddies: A music therapy program for pediatric surgical patients. *Music Therapy Perspectives, 21*(2), 77-83. https://doi.org/10.1093/mtp/21.2.77

Whitehead-Pleaux, A., M., Zebrowski, N., Baryza, J. M., & Sheridan, R. L. (2007). Exploring the effects of music therapy on pediatric pain: Phase 1. *Journal of Music Therapy, 44*(3), 217-241.

Yurkovich, J., Burns, D. S., & Harison, T. (2018). The effect of music therapy entrainment on physiological measures of infants in the cardiac intensive care unit: single case withdrawal pilot study. *Journal of Music Therapy, 55*(1), 62-82. doi: 10.1093/jmt/thx017

Appendix A

Music Therapy Fact Sheet

What is Music Therapy?

Music therapy is the use of music experiences and/or interventions that assist clients with their goals, in collaboration with a board-certified music therapist.

Benefits of Music Therapy

NICU

- Strengthens Parent/Infant bonding
- Music helps mask ambient noise
- Increases tolerance to NICU
- Increases weight gain & feeding
- Reduces signs of distress
- Improves breathing
- Cost effective - Studies have shown that music therapy can reduce length of stay

PICU

- Decrease pain
- Distract from pain
- Reduce anxiety
- Develop/Increase coping skills
- Improve quality of life
- Promote socialization
- Decrease isolation/loneliness
- Decrease stress
- Promote sense of control
- Allow for choices
- Normalize environment

Music Therapy Interventions/Experiences

NICU

- Low-stimulus humming
- Environmental music therapy
- Live music as entrainment
- Create personalized recordings
- Reflective instrumental support

PICU

- Music listening
- Instrument playing
- Musical improvisation
- Songwriting
- Singing

What is a Music Therapist?

A music therapist is a trained professional who has completed a bachelor's degree or higher in music therapy, and has earned board certification.

For more information, please see www.musictherpy.org or www.cbmt.org.

If you have questions about music therapy, please email Kirstin A. Early at

kearly1990@live.com

Appendix B

Resume

Kirstin A. Early
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(516) 509-5207

Education

- State University of New York New Paltz, New Paltz, NY - Masters of Science in Music Therapy - (May 2021)
- Adelphi University, Garden City, NY - Bachelor of Science in Music Education - (May 2012)

School Internship Experience (Music Therapy)

- Fieldwork Student, Wildwood School Program, Schenectady, NY (Fall 2019)
- Fieldwork Student, Northeast Center for Rehabilitation & Brain Injury, Lake Katrine, NY (Spring 2019)
- Practicum Student, Sapphire Nursing and Rehab at Goshen, Goshen, NY (Fall 2018)

School Internship Experience (Music Education)

- Student Teacher, Carle Place Middle and High School (7-12 grades), Carle Place, NY (Spring 2012)
- Student Teacher, Rushmore Avenue School (3-6 grades), Carle Place, NY (Fall 2011)

Work Experience

- Graduate Assistant, State University of New York New Paltz, New Paltz (Spring 2020)
    - Assist faculty with classroom preparation
        - Making copies of reading/handout
        - Searching for possible resources in library
        - Support adjunct professors as needed
        - Revise .pdf documents so they are ADA compliant
    - Support in scholarly endeavors
        - Help find and/or summarize literature pertaining to scholarship
        - Finding and networking with outside agencies, as directed and approved by the professor
- Music Program Developer, Family Residence and Essential Enterprises, Inc., Old Bethpage and East Setauket, NY (April 2016 - July 2017)
    - Developed music assistive technology program with iPads
    - Trained staff how to use iPads with their individuals
    - Facilitated a bell choir for individuals

Certifications

- Music, Initial Teaching Certification, State of New York (May 2013)

Volunteer

- Graduate Student Representative on the New York State Task Force on Occupational Regulations (January 2020 - Present)

Appendix C

Annotated Bibliography

Barry, P., O'Callaghan, C., Wheeler, G., & Grocke, D. (2010). Music therapy CD creation for initial pediatric radiation therapy: A mixed methods analysis. *Journal of Music Therapy, 47*(3), 233-263.

This study used a mixed methods design on pediatric patients' stress levels coping skills in response to creating a music therapy CD (MTCD). There were 11 participants between the ages of 6 and 11 that were undergoing radiation therapy. The researchers used a testing tool called the Kidcope to collect quantitative data and the patients were interviewed and reviewed for qualitative data. The results revealed that the patients that received the music therapy session did not show signs of social withdrawal that the patients with standard care displayed. Creating the MTCD provided the patients with support that decreased their stress and developed coping skills through their radiation therapy.

Bower, J., & Shoemark, H. (2009). Music therapy to promote interpersonal interactions in early pediatric neurorehabilitation. *Australian Journal of Music Therapy*, *20*, 59-75.

The authors presented a case study of a 10 year old boy suffering from an acquired brain injury due to encephalitis and a seizure disorder. This caused the patient to struggle to verbally communicate and interact with others. Through the process of many music therapy sessions the patient's ability to engage and interact musically increased. To ensure consistency, the sessions were structured with a "Hello" song at the beginning of the session, re-creating familiar songs, engaging in rhythmic activities, and ending the

session with a "Goodbye" song to cue the end of the session. Over time, the music therapist collaborated with a speech pathologist to increase the patient's process of interpersonal interacting and engaging in therapy. At the time of discharge the patient was able to recall 40% of the information that was presented verbally. However, the patient was able to recall 100% of the information that was presented to him through improvised melody.

Duda, L. J. (2013). Integrating music therapy into pediatric palliative care. *Progress in Palliative Care*, *21*(2), 65-77. doi:10.1179/1743291X13Y.0000000049

This article reviewed the integration of music therapy into a pediatric palliative care program. The author worked with a music therapist to develop a program that uses non-pharmacological music therapy methods to assist with pediatric patients' pain management. The music therapy experiences included songwriting, music and imaging, music relaxation, and music listening. The program also involved the parents and families into the sessions, creating a family-centered approach.

Edwards, J. (2011). The use of music therapy to promote attachment between parents and infants. *The Art in Psychotherapy, 38*, 190-195. doi:10.1016/j.aip.2011.05.002

This article explains the use of music therapy to promote interaction and bonding between an infant and their parent/guardian. The author discussed how music-making between the infant and their parent/guardian within a safe space can promote bonding during a sensitive time. The use of music therapy during bonding develops trust and security between the parent/guardian and infant.

Edwards, J. (2014). The role of the music therapist in promoting parent-infant attachment. *Canadian Journal of Music Therapy, 20*(1), 38-48.

This article explains the importance of and mechanisms by which music therapy can be beneficial during the attachment period between infant and parent/guardian. The author illustrated the use of music in an infants' life and how music therapy can provide an opportunity for the development of attachment between the parent/guardian and infant.

Ettenberger, M., & Ardila, Y. M. (2018) Music therapy songwriting with mothers of preterm babies in the neonatal intensive care unit (NICU) - A mixed-methods pilot study. *The Arts in Psychotherapy 58*, 42-52. doi:10.1016/j.aip.2018.03.001

This pilot case study presented 15 mother-infant dyads that received four to six music therapy sessions. During the sessions the music therapist facilitated songwriting experiences that helped the mothers and family members express how they were feeling or what they wanted to tell the infant. The authors collected quantitative data through the Mother-to-Infant Bonding Scale, Short Warwick-Edinburgh Mental Well-Being Scale, and the Hospital Anxiety and Depression Scale. The authors found: the Mother-to-Infant Bonding Scale, where higher points implies that the mother-infant bond is impaired, decreased about 50% from the pre- to post-intervention; the Short Warwick-Edinburgh Mental Well-being Scale suggested there was a slight improvement with the mothers' mental wellbeing through the music therapy process; and the Hospital Anxiety and Depression Scale results showed a positive effect on the mothers' anxiety and depression levels. The authors collected qualitative data through interviews that were administered after the last music therapy session, finding the common themes were "bonding,"

"maternal wellbeing," and "empowerment". The authors discovered that the songwriting was beneficial for the mothers in creating bonding moments with their infants. In addition, the parents were able to express their emotions in a creative way to decrease the anxieties.

Edwards, J. & Kennelly, J. (2012). Music therapy for children in hospital care: A stress and coping framework for practice. In K. E. Bruscia (Ed.), *Case examples of music therapy for medical conditions* (pp. 56-66). Barcelona Publishers.

This case study presented a framework to assist hospitalized children with stress and develop coping skills with music therapy. The authors used music therapy experiences to build trust with the pediatric patient to then be able to decrease their stress and identify and create coping skills. In this case study, re-creative methods were used the most, involving the family in the musicing process and creating a safe and comforting environment that connected the patient's hospital stay with memories of home. The music therapist was able to create a safe space for the patient and their family to express themselves and find ways to cope with their current situation together in the hospital.

Hillmer, M., Swedberg, O., & Standley, J. M., (2012). Medical music therapy with premature infants: Family-centered services. In K. E. Bruscia (Ed.), *Case examples of music therapy for medical conditions* (pp. 78-91). Barcelona Publishers.

These case studies explained how a family-centered approach can be beneficial for premature infants with the use of music therapy experiences. In the studies, the music therapists work with the parents by training them with music recordings that would benefit their infants. Through this training the parents develop confidence when with

their infants and create a bond and with the music therapists' help develop and grow a support system for the patient.

Loewy, J., Hallan, C., Psych, L., Friedman, E., & Martinez, C. (2005). Sleep/sedation in children undergoing EEG testing: A comparison of chloral hydrate and music therapy. *Journal of PeriAnesthesia Nursing, 20*(5), 323-332.

Music therapists worked with young pediatric patients that were undergoing electroencephalogram (EEG), and examined the difference between using music therapy experiences versus chloral hydrate to initiate sleep/sedation. There were 60 participants in the study between the ages of one month and five years old; they received 30 minutes of music therapy or chloral hydrate before the EEG to initiate sleep/sedation. The results showed that music therapy was able to sedate the patient more successfully than the chloral hydrate with one intervention. This demonstrated that music therapy can be used at times as a non-pharmaceutical and cost-effective option.

Loewy, J., Stewart, K., Dassler, A.-M., Telsey, A., & Homel, P. (2013). The effects of music therapy on vital signs, feeding, and sleep in premature infants. *Pediatrics, 131*(5), 902–918.

The authors of this study explored how live music elements like parent-preferred lullabies, breathe, and rhythm could affect a premature infants' developmental function and physiological function. There were 272 participants across 11 NICUs that there were premature infants. These infants suffered from: clinical sepsis; small for gestational age; and/or respiratory distress syndrome. There were three live interventions that were utilized: lullaby/song of kin, ocean disc, and gato box. The results found improvements

with the caregivers' perception of stress, sucking behavior, caloric intake, sleeping patterns, and heart rate.

Malloch, S., Shoemark, H., Črnčec, R., Nowman, C., Paul, C., Prior, M., Coward, S., & Burnham, D. (2012). Music therapy with hospitalized infants: The art of science of communicative musicality. *Infant Mental Health Journal, 33*(4), 386-399. doi: 10.1002/imhj.21346

This study examined the benefit of music therapy (MT) on the neurological and social development of hospitalized infants. There were 39 patients placed in three separate groups, one a NICU group that received MT, one NICU group that did not receive MT, and one healthy group that did not receive MT. The music therapy interventions that were used were infant-directed singing and rhythmic movements. The two tests researchers used to monitor social engagement were Neurobehavioral Assessment of the Preterm Infant and the Alarm Distress Baby Scale. The results showed the infants that received MT were able to self-regulate during social interactions better than the other groups, with less crying, and were more open to being handled by adults.

Millett, C. R, & Gooding, L. F. (2017). Comparing active and passive distraction-based music therapy interventions on preoperative anxiety in pediatric patients and their caregivers. *Journal of Music Therapy, 54*(4), 460-478. doi:10.1093/jmt/thx014

This study examined the effect of music therapy interventions on the anxiety of pediatric patients undergoing surgical procedures, as well as their caregivers' anxiety. There were 40 participants placed in one of two groups, one group received music-assisted relaxation (passive) and the other received musical alternate engagement (active). The tests that

were administered to measure the caregivers and patients anxieties were the Modified Yale Preoperative Anxiety Scale and the State-Trait Anxiety Inventory Y-6 Item. The results found that both active and passive music therapy interventions reduced the anxieties of the patients and their caregivers.

Nelson, K., Adamek, M., & Kleiber, C. (2017). Relaxation training and postoperative music therapy for adolescents undergoing spinal fusion surgery. *Pain Management Nursing, 18*(1), 16-23.

This study explored how music-assisted relaxation and controlled breathing could affect pain and anxiety before receiving spinal fusion surgery. There were 45 participants whose ages ranged from 10-19, 22 were the control group and 19 were the treatment group randomly. The participants were asked to self-report their pain and anxiety before the surgery and after the music therapy session, on a numeric rating scale (0-10) and what words would describe their anxiety. The treatment group watched a 12-minute video training before the surgery, two days after the surgery. The treatment and control groups received 30 minute music therapy sessions. Results show that pain and anxiety decreased significantly between pre-therapy and post-therapy.

Noguchi, L. K. (2006). The effect of music versus nonmusic on behavioral signs of dress and self-report of pain in pediatric injection patients. *Journal of Music Therapy, 44*(1), 16-38.

This article examined the use of music to decrease perception of pain and stress of pediatric patients' receiving injections. Sixty-four participants from different medical clinics were placed in groups that either received a musical story, spoken story or neither/control during the time of the injection. The tests were used to measure the

patients' distress levels were the Observational Scale of Behavioral Distress and the Faces Pain Scale. The results showed that the patients in the musical story group showed less distress then the patients in the other two groups. However, due to the small sample size there was no statistical significance between the three groups.

Robb, S. L., Nichols, R. J., Rutan, R. L., Bishop, B. L., & Parker, J. C. (1995). The effects of music assisted relaxation on preoperative anxiety. *Journal of Music Therapy, 32*(1), 2-21.

This study looked into the effect of music assisted relaxation (MAR) on 20 pediatric burn patients from the ages of 8 to 20 years old. The control group did not receive MAR, however, the treatment group received MAR experienced imagery, progressive relaxation, music listening, and deep breathing. The researchers compiled and analyzed the responses of the patients and staff's response to the intervention and looked for a decrease in anxiety scores through the State-Trait Anxiety Inventory for Children. The results revealed there was no significance in the physiological measures, however, the treatment group had a significant decrease in anxiety through the test and the perception of the patients.

Stamou, L., Evaggelou, F., Stamou, V., Diamanti, E., & Loewy, J. V. (2020). The effects of live singing on the biophysiological functions of preterm infants hospitalized in a neonatal intensive care unit in Greece: A pilot study. *Music & Medicine*, *12*(2), 109-121.

The purpose of this study was to explore if live singing affects a premature infants' duration of hospitalization, weight gain, biophysiological functions, body length, and head circumference. There were three groups of participants: 14 infants were in a group

in which the mothers sang to them; 13 infants were in a group in which a music therapist sang to them; and 14 infants that were in the control group. The infants in the singing groups were sung to for 15 minutes a day for 14 days in a row. The results found no change the duration of hospitalization, weight, body length, and head circumference. However, there was an improvement in the heart rate and blood oxygen of the infants who were sung that was statistically significant compared to the control group.

Shoemark, H., & Dearn, T. (2008). Keeping parents at the centre of family centered music therapy with hospitalized infants. *Australian Journal of Music Therapy, 19*, 3-24.
This case study presented music therapy in the care of the families of hospitalized infants. Narratives of the experiences were written and categorized into overlapping and repeating themes. The themes were: music therapy is a triadic relationship, parents experience joy during music therapy, the contingent relationship, the necessary character of the music therapist, endurance - the long journey, music therapy acknowledges the "whole" developing child, and a whole life.

Whipple, J. (2003). Surgery Buddies: A music therapy program for pediatric surgical patients. *Music Therapy Perspectives, 21*(2), 77-83. https://doi.org/10.1093/mtp/21.2.77
A music therapy program called "Surgery Buddies" was developed to involve pediatric patients, families, and staff in music therapy experiences before surgery to reduce the patients' anxiety. The article provided case examples to demonstrate the various ways the Surgery Buddy program could be implemented and benefit the patients, families and hospital staff. Some music therapy methods that were used were song re-creation and improvisation, depending on the needs of the patient.

Whitehead-Pleaux, A, M., Zebrowski, N., Baryza, J. M., & Sheridan, R. L. (2007). Exploring the effects of music therapy on pediatric pain: Phase 1. *Journal of Music Therapy*, *44*(3), 217-241.

This article examined the use of music therapy to assist pediatric burn patients with pain and anxiety during medical procedures. Nine participants were randomly selected to participate. The researchers used: the Wong Baker FACES Scale to measure pain; the Nursing Assessment of Pain Index to measure distress; and the Fear Thermometer before, during, and after the procedure to measure anxiety, in addition heart rate and blood oxygenation level were measured. Patients, parents/guardians, nurses, and music therapists were interviewed. The music therapist used preferred music of the patient for active listening, and sang encouraging phrases. The results showed that there relationships between the music therapy and the reduced distress, however, there was no significance between the heart rate and the behavioral distress. The interviews revealed that music therapy decreased the anxiety and pain of the patients, parents/guardians, and staff. In addition, the music therapy experience also increased the patients' relaxation, mood, and compliance levels.

Yurkovich, J., Burns, D. S., & Harison, T. (2018). The effect of music therapy entrainment on physiological measures of infants in the cardiac intensive care unit: single case withdrawal pilot study. *Journal of Music Therapy*, *55*(1), 62-82. doi: 10.1093/jmt/thx017

This study researched the effects of music therapy on the physiological responses of hospitalized infants in the cardiac intensive care unit (CICU) suffering from congenital heart disease (CHD). There were five infant participants between 0 to 12 months old who

received 20 minutes of live music therapy interventions three to five times a week. The infants' heart rate, respiratory rate, oxygenation were measured, and the Society of Thoracic Surgeons-European Association for Cardiothoracic Surgery Congenital Heart Surgery Mortality Score (STS-EACTS) was utilized. The results suggest that music therapy entrainment affects the physiological stability of the hospitalized infants with CHD, particularly decreasing the heart rate to a stable heartbeat.

Appendix D

Proposed Music Therapist Schedule

Time	Monday (PICU/NICU)	Tuesday (PICU)	Wednesday (NICU)	Thursday (PICU)	Friday (NICU)
8:00am - 9:00am	Morning Meeting	Morning Meeting	Morning Meeting	Morning Meeting	Morning Meeting
9:00am-10:00am	Individual Sessions (as needed)	Individual Sessions	Individual Sessions	Individual Sessions	Individual Sessions
10:00am-10:30am	Documentation	Documentation	Documentation	Documentation	Documentation
10:30am-11:00am	Individuals Sessions (as needed)	Children's MT Group	Individual Sessions	Sibling's MT Group	Individual Sessions
11:30am-12:00pm	Documentation	Documentation	Documentation	Documentation	Documentation
12:00pm-1:00pm	Lunch	Lunch	Lunch	Lunch	Lunch
1:00pm-2:00pm	Individual Sessions (as needed)	Individual Sessions	Individual Sessions	Individual Sessions	Individual Sessions
2:30pm-3:00pm	Documentation	Documentation	Documentation	Documentation	Documentation
3:30pm-4:30pm	Individual Sessions (as needed)	Family MT Group (Ages 2-4)	Individual Sessions	Family MT Group (Ages 5-8)	Individual Sessions
4:30pm-5:00pm	Documentation	Documentation	Documentation	Documentation	Documentation

Appendix E

NICU Music Therapy Referral Form

(adapted from Hanson-Abromeit, Shoemark, & Loewy, 2008)

NICU Music Therapy Referral Form

Infant's Name:_____ Room: _____
DOB: _____ Gestational Age: _____

Diagnosis: _____

Reason for Referral (Check the following that apply):

_____ Difficulty Sleeping _____ Feeding/Sucking/Weight Gain

_____ Psychosocial Issues _____ Procedural Support

_____ Respiratory Distress _____ Parent/Infant Bonding

_____ Crying/Irritability _____ Other (Specify): _____

_____

Additional Comments: _____

_____

_____ _____
Person Referring Date

Please return to the music therapist when completed.

Appendix E

PICU Music Therapy Referral Form

(adapted from Ghetti & Hannan, 2008)

PICU Music Therapy Referral Form

Patient's Name: _____ Room: _____

DOB: _____ Age: _____ Grade in School: _____

Diagnosis: _____

Reason for Referral (Check the following that apply):

_____ End-of-Life Care _____Social Support Needed

_____ Family Support Needed _____ Anger Management (Specify):_____

_____ Work on Coping Skills _____ Pain Management (Specify): _____

_____ Non-Pharmaceutical Sedation _____ Procedural Support (Specify): _____

_____ Increase Self-Expression _____ Improve Mood (Specify): _____

_____ Reduce Anxiety/Stress (Circle one) _____ Work on Motor Skills

_____ Work on Cognitive Skills _____ Other (Specify): _____

Additional Comments: _____

_____

Musical Preferences: _____

_____ _____

Person Referring Date

Please return to the music therapist when completed.

Appendix F

NICU Music Therapy Assessment Form

(adapted from Hanson-Abromeit, Shoemark, & Loewy, 2008)

NICU Music Therapy Assessment Form

Patient's Name:_____ DOB:_____ Gestational Age:_____

Diagnosis:_____ Reason for Referral:_____

Physical Domain:_____ Developmental Domain:_____

Family/Psychosocial Domain:_____

Medications:_____

Previous Musical Exposure:_____

Parent/Guardian Preferred Music:_____

Pre-Session Vitals:_____

Post-Session Vitals:_____

Description of session:_____

_____

_____

_____

Music Therapy Goals:_____

_____

Length of Session:_____ Time/Date:_____

Appendix G

PICU Music Therapy Assessment Form

(adapted from Ghetti & Hannan, 2008)

PICU Music Therapy Assessment Form

Patient's Name: _____ Room: _____

DOB: _____ Age: _____ Grade in School: _____

Diagnosis: _____

Medications:_____Date of Hospital Admission:_____

Reason for Referral:_____

Preferred music:_____

Previous Musical Exposure:_____

Description of session:_____

_____

_____

_____

_____

Music Therapy Goals:_____

_____

_____

Length of Session:_____ Time/Date:_____