

Full-Length Article

Music Therapy in Neonatal Care: A Framework for German-speaking Countries and SwitzerlandFriederike Barbara Haslbeck^{1,2,3}, Monika Nöcker-Ribaupierre², Marie-Luise Zimmer⁴, Leslie Schrage-Leitner^{5,6,7}, Verena Lodde⁸¹Department of Neonatology, University Hospital Zurich, Zurich, Switzerland²Freies Musikzentrum München, Munich, Germany³Department of Pediatrics, University Hospital Vienna, Vienna, Austria⁴Private Practice, Bremen, Germany⁵Medical University Vienna, Department of Pediatrics, Division of Neonatology, Vienna, Austria⁶Zentrum fuer Entwicklungsfoerderung, Vienna, Austria⁷Universities of Music and Performing Arts Vienna and Graz, Austria⁸University Hospital Münster, Münster, Germany⁴**Abstract**

Music therapy in neonatal care reflects a growing area of interdisciplinary interest. But how exactly is best practice in neonatal music therapy characterized? Initial guidelines already exist, but the question regarding relevance they have for the German-speaking region remains, in light of possible specific cultural issues and clinical experiences. The Fachkreis Musiktherapie Neonatologie (FMtN), a professional circle of German speaking neonatal music therapists, has aimed to address these questions by developing an overall framework from the three approaches typical of this region: (1) recorded maternal voice, (2) live vocal and (3) live instrumental music therapy. The group has synthesized its members' practical clinical expertise with the best available evidence, guidelines in neonatal music therapy and German guidelines for individualized developmental neonatal care. The paper presents a framework including overall objectives, (contra-) indications and methods independent of the specific approach used. It supplements existing guidelines with culturally sensitive requirements such as minimizing the music stimulation by mainly humming, in infant applications. This framework may serve as a model for music therapists to offer culturally relevant best practice interventions and to better position themselves among various related disciplines.

Keywords: *Music therapy, neonatal care, framework, guidelines, evidence-based practice*

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Introduction

Music therapy in the neonatal intensive care unit (NICU) reflects a growing area of multi- and interdisciplinary interest in practice and research [1, 2]. However, the literature suggests a high level of heterogeneity regarding which methods and approaches are used, with which type, duration, and frequency of music (e.g., live versus recorded; instrumental versus vocal, Mozart versus lullabies, mothers voice versus other voices). What exactly characterizes best

practice in music therapy in neonatal care? Initial guidelines exist [3–5] but what applicability do they have for the German-speaking regions? The paper seeks to address these questions by presenting a cultural-, evidence- and experience-based framework for music therapy in neonatal care for the German-speaking regions. It aims to allow music therapists to offer culturally adapted best practice therapy interventions. It may also serve as a guide for those implementing and enhancing the use of music in neonatal care.

In the United States and Australia music therapy services were-initially implemented in the nineteen-nineties [3–6]. In Germany at that time Nöcker-Ribaupierre and Zimmer pioneered Auditory Stimulation with the recorded mothers voice (ASM) [7] while Bissegger developed anthroposophical-oriented neonatal music therapy [8]. Later Haslbeck developed Creative Music Therapy for preterm infants and their families [9–11]. More than 400 professional music therapists have since obtained specialized training in music therapy in the NICU worldwide, with 32 neonatal units in the

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German speaking region offering music therapy services [12]. In 2009, a professional organization of German-speaking neonatal music therapists was founded and is steadily growing: the Fachkreis Musiktherapie Neonatologie (FMtN)[13]. This expanding interest was also evident at an International Summit [14] and at the last two Music Therapy World Congresses. Several papers, roundtables discussions and pre-conference trainings by Joanne Loewy and colleagues were presented on the topic [15]. Public media has reflected this increasing interest by reporting the benefits of music therapy for premature infants and their parents [16] –in an article and subsequent video that highlighted an evidence-based clinical trial undertaken in 11 NICUs.

Such recognition is a rich opportunity for developing practice and research in neonatal music therapy, although it also carries risks. On the one hand, it becomes easier to offer and implement NICU music therapy services, given that enhanced exposure may improve interdisciplinary acceptance and open avenues for funding from third parties because the media reflected that this study was evidence-based and involved doctors, nurses and certified music therapists. This is of value, since, as in programs in other countries, many German regional music therapists still need to apply for financial support to provide their services in the NICU. On the other hand, the increasing interest may make it easier for unproven music stimulation modalities that have potential for placing neonates at risk to find their way into the NICU –should the results be misinterpreted by public media. The use of music trend, by non-music therapists is concerning since premature infants and their parents are highly vulnerable. The use of music not supervised by a trained music therapist can lead to over and/or unproductive stimulation. Extreme care must be taken to not over-stimulate the infant's an underdeveloped nervous system [17]. As shown in a narrative review [18] the overwhelming auditory neonatal intensive care environment has adverse short-term effects on the cardiovascular and respiratory systems in preterm infants. Both overexposure and inadequate auditory stimuli may further disrupt the functional organization of auditory cortical circuits [19], as well as increase parental psychological distress [20].

This Situation calls for “Evidence-based Practice” (EBP) to guarantee optimal services in health care. EBP is a problem-solving process for daily decision making and encompasses three crucial elements: (1) the evaluation of the best available research evidence, (2) practical clinical expertise and (3) the individual needs and values of the patient [21, 22]. According to Kern [23], EBP is an essential tool for the music therapy profession to ensure the highest quality of care for patients and their families.

Several systematic reviews present evidence that music therapy in neonatal care yields positive outcomes for the premature infant's state (i.e., behavior, sleep quality,

physiological outcomes) and parental well-being and stress [1, 24, 25]. A recent meta-analysis by Bieleninik et al. [2] has shown significant positive effects of music therapy on infant respiratory rate and reducing maternal anxiety. These reviews, as well as guidelines for neonatal music therapy [3,26], call for services to be provided exclusively by professionally trained music therapists. The findings additionally provide evidence that live music appears to be more beneficial for premature infants than recorded music. Arnon et al.[27] and Garunkstiene et al. [28] report that live music may have greater efficacy and a more sustainable outcome on premature infants' heart rate and quality of sleep than recorded music. Additionally, qualitative studies give insight into the therapeutic process of interactive music therapy - how and which music should be offered [11, 29, 30]. Including parents in the therapeutic process to empower them and to facilitate parent-child bonding is warranted. (3) Responsiveness, entrainment and constant adaptation to the individual needs, rhythms and affects of premature infants and their parents are identified as key factors for neonatal music therapy.

Developing a framework for music therapy in neonatal care for the German-speaking area

In spite of these study findings the question remains as to what precisely constitutes best practical expertise within the context of specific case-by-case indications, objectives, methods, and contra-indications for neonatal music therapy. Initial guidelines for music therapy in the neonatal intensive care unit as developed in America and Australia [3–5, 31] still have to be adapted to cultural issues and specific music therapy approaches in German-speaking countries, e.g., by integrating and adjusting typical German music therapy approaches such as ASM and anthroposophical-oriented music therapy. Bringing together the expertise of local music therapists can provide valuable guidelines, especially for novice professionals who have not yet gained practical experience. This framework can be considered supplementary to existing guidelines.

Since 2013 the Fachkreis Musiktherapie Neonatologie sought to address these issues by developing a framework for neonatal music therapy for the German-speaking countries and Switzerland. The group has synthesized the members' practical clinical expertise with the best available evidence, existing guidelines in neonatal music therapy [5, 32, 33] and the German NICU guidelines developed by an interdisciplinary expert group of the national association “Das Frühgeborene Kind e.V” [34]. The national NICU recommendations mandate for individualized developmental neonatal care and contain guidelines such as “respecting the autonomy of parents and the parent-child unit” and

“supporting intuitive parent-child interaction” has already been integrated into discipline [35, 36].

The NICU guidelines are grounded in specific concepts such as basal stimulation, kinesthetic infant handling, and minimal handling [37–39]. Basal stimulation is a method developed in the 1970’s in Germany. It focuses upon the use of touch (“initial touch”) while remaining sensitive to the emotional meaning inherent in the child’s body movement, recognizing the (newborn) child’s individual personality and autonomy [39]. Most professionals in German NICUs are trained to touch the infant with an “initial touch” before providing any intervention. For this reason, German music therapists integrated “initial touch” and “therapeutic touch” into music therapy in the NICU with very preterm infants [9, 39] already in the early 21st century, whereas, due to infection control risks, some colleagues in other countries were advised *not* to touch very preterm infants (personal communication, Joanne Loewy, November 23, 2001). The required national concepts of minimal handling, basal stimulation, and developmental care aim to protect the infant against sensory overload and require reduced sound and light levels in neonatal intensive care units (NICUs). Given these national objectives, of most NICUs –the advise to music therapists to reduce their music to a minimum to adapt to these guidelines requires practice sensitivity. The neonatal intensive care unit in many NICUs internationally have benefited from the institution of “environmental music therapy.” Environmental Music Therapy (EMT) is a term developed by Joanne Loewy and music therapist Steve Schneider (MT–BC, USA). It is a specific track of the First Sounds: Rhythm, Breath and Lullaby music therapy approach (3) in which the music therapist plays with the intention of lowering the amount of noise and stress that is perceived in the ICU environment. It is for infants, staff and personal and professional caregivers. (This is not accomplished by merely playing a particular kind of music at a specific tempo. The pitches of the machine beeps, the mood and favorite music of the staff, and the rhythm of the chaos is assessed prior to initiating EMT and is evaluated throughout the intervention).

The EMT approach is not yet utilized in most NICUs in German speaking countries [38], where the efforts instrumentally are primarily the use of voice via humming and vibro-acoustic and or therapeutic instruments generally known to Germans for relaxing effects (monochord, lyre, cantele). The use of these instruments also reflects the European music therapy heritage of Orff Music Therapy, the “Wiener Schule der Musiktherapie”, anthroposophical music therapy and vibro-acoustic music therapy methods [41–43]. In contrast to other regions (e.g. Asia, Colombia, Europe, Scandinavia, USA) music therapists limit the use of instruments such as the guitar [44] to only rarely and /or only with more mature preterm infants.

A three-step approach was used to systematically construct the framework (Figure 1). As a first step, three small groups developed their recommendations independently, with each group focusing on one of three areas that represented their principal–clinical expertise in neonatal care — (1) auditory stimulation with maternal voice (2) instrumental music therapy and (3) vocalized music therapy. Next, they merged the individual recommendations into a general framework, desperate from the particular model used, and compared it and adapted it to the best available evidence, existing guidelines for neonatal music therapy and the German NICU guidelines. The authors repeatedly revised the framework according to the standards for practical clinical guidelines development by the Institute of Medicine [43] and the Scottish Intercollegiate Guidelines Network [44]. Lastly, input from a panel of interdisciplinary neonatal experts from the fields of medicine, nursing, psychology and physical therapy suggested refinements to the framework (listed in the acknowledgments). In addition to the clinicians, representatives from the German Parent Association “Bundesverband Das Frühgeborene Kind e.V.” [34] (Figure 1), and other parents (listed in the acknowledgments) reviewed the document. Since the perspective of patients and their relatives differ from that of healthcare professionals, it was considered crucial to emphasize patient participation to ensure that the needs and values of patients and families were equally represented [47, 48].

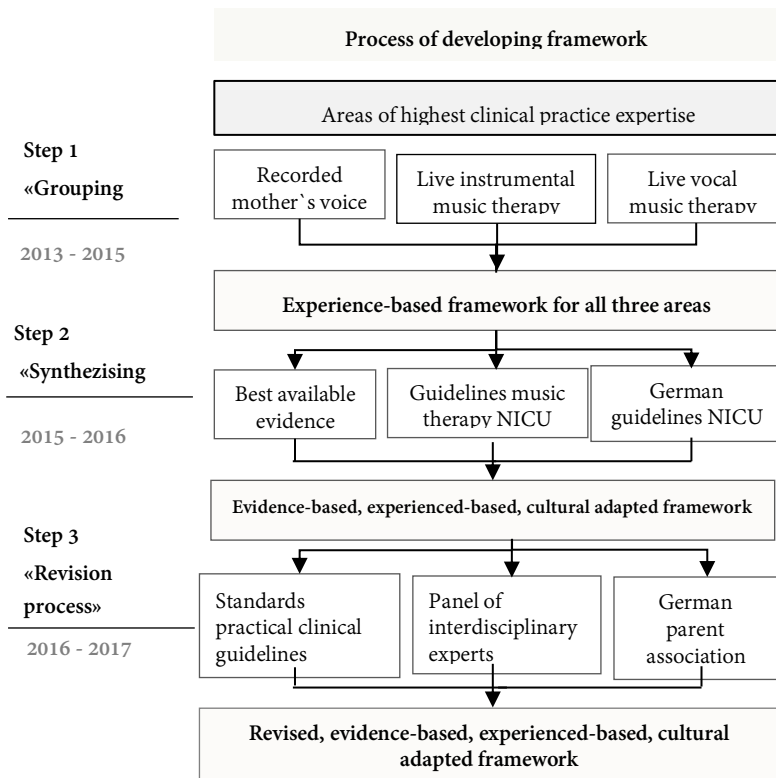


Figure 1: Process of developing framework

A framework for music therapy in neonatal care in German-speaking countries and Switzerland

The following table summarizes key requirements, indications, contra indications, goals and methods recommended for the application of any music therapy service in neonatal care in the German-speaking region.

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Table 1: A Framework for music therapy with premature and newborn infants and their parents in German-speaking countries and Switzerland

Prerequisites	<ul style="list-style-type: none"> • Training certification by an accredited music therapy professional organization • Interest and willingness of the neonatal unit to incorporate music therapy • Interdisciplinary cooperation • Readiness to assume responsibility for patient treatment and monitoring • Provision of information to parents and their willingness to participate in the program 										
General Requirements	<ul style="list-style-type: none"> • Establishment of a trusting and quiet atmosphere • Regular and consistent scheduling of therapy session times • Integration into neonatal care • Compliance with hygiene guidelines • Documentation of music therapy process • Exchange of information within the interdisciplinary team 										
	<table border="1"> <thead> <tr> <th>Infant</th> <th>Parents</th> </tr> </thead> <tbody> <tr> <td> Indications <ul style="list-style-type: none"> • Signs of stress or being unsettled • Physiological instability • Threatened isolation or sensory deprivation • Dysregulation • Prognosis of disability • Pain and suffering • Substance withdrawal • Traumatization <p>Parent-Child Triad: Attachment and bonding difficulties</p> </td> <td> <ul style="list-style-type: none"> • Traumatization:(fear, uncertainty, stress, and feeling overwhelmed, feeling helpless and powerless, feelings of guilt or grief • Depressive symptoms • Rejection of the child • Familial stress • Substance abuse </td> </tr> <tr> <td> Contraindications <ul style="list-style-type: none"> • Severe or life-threatening instability • Danger of overstimulation • During painful procedures (unless music therapy is provided on a continuum before and after the painful experience) </td> <td> <ul style="list-style-type: none"> • Firm resistance to music therapy intervention • Intrusion into private spheres • Protests of “therapeutic overload” • Acute emotional or physical instability </td> </tr> <tr> <td> Therapeutic Objectives <ul style="list-style-type: none"> • Relaxation and calmness • Stabilization of physiological parameters • Promotion of sensorimotor development • Reduction of pain and suffering <p>Promotion of the parent-child relationship and bonding</p> </td> <td> <ul style="list-style-type: none"> • Emotional support and stabilization • Initiation of emotional processing strategies (coping, coaching) • Building confidence in the parents’ intuitive abilities and use of voice </td> </tr> <tr> <td> Methods <ul style="list-style-type: none"> • Individualized contact and closing rituals • Adapt therapy duration and intensity to individual perceptive and processing capacity • Auditory criteria: <ul style="list-style-type: none"> ○ quiet (50-60dB) ○ individually adapted musical parameters ○ simple structure, repetitions and pauses, consistency, predictability ○ adaptation to cultural heritage, musical preferences and experiences </td> <td> <ul style="list-style-type: none"> • Introductory meeting • Supportive encouragement to engage in active vocalization (speech, singing, humming) • Ongoing therapeutic support throughout stay with discharge consultation • Crisis intervention, trauma therapy, emotional stabilization, coping and identification of available resources • Musical aftercare consultation • Professional confidentiality • Sibling inclusion: if present and willing, to include them in appropriate musical activities, e.g., singing songs together </td> </tr> </tbody> </table>	Infant	Parents	Indications <ul style="list-style-type: none"> • Signs of stress or being unsettled • Physiological instability • Threatened isolation or sensory deprivation • Dysregulation • Prognosis of disability • Pain and suffering • Substance withdrawal • Traumatization <p>Parent-Child Triad: Attachment and 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1 Additionally, it should be noted that—music therapy may be 10
 2 offered as palliative care, especially when it has been requested 11
 3 by the parents and or the neonatal team. 12
 4 During the development of the overall framework several 13
 5 aspects emerged that are considered to be exclusively relevant 14
 6 to a certain music therapy method. These particular 15
 7 characteristics are listed in the following supplement to the 16
 8 overall framework. 17

Supplementary parameters for auditory stimulation with the mother’s voice (ASM)

The following supplemental characteristics (see Table 2) refer to the method of Auditory Stimulation with the Mother’s Voice (ASM) developed and evaluated by Nöcker-Ribaupierre [7, 33, 49–52] and expanded upon by Zimmer [53].

Table 2: Supplementary Parameters for Auditory Stimulation with the Mother’s Voice

Prerequisites	High-quality technical equipment (recording equipment, player, and speakers) Editing program to regulate volume, remove background noise Quiet room for recording Written instructions/ training for nurses regarding manual use of equipment/ appropriate duration and frequency of playback (i.e., not during nursing care)	
Contra-indications	Unavailability of the mother due to severe postpartum depression Rooming in or extensive parental presence ¹	
	Practical implementation	Therapeutic implementation
Methods	Introductory meeting and preparation of mother for recording Recording mother’s voice: humming, singing, talking, reading First playback at the incubator under observation, preferably in mother’s presence Positioning of speaker approximately 20-30 cm from infant’s head, at mid-line Volume adjustment with use of decibel monitor (50-60dB) only within the isolette/ in the open field adapted and regulated by the responsible, special trained music therapist while observing the baby Consultation regarding duration, times and frequency of ASM (to be used only when mother is not present)	Use of ASM as a “bridge” to encourage and facilitate live singing

¹ Rooming in or extensive parental presence dispensing with ASM (parents should use their live voice instead of their recorded voice when they are present)

1 The ASM Method is based on the theory that the already 10
 2 experienced intrauterine bond between mother and fetus 11
 3 defines the mother as the primary caregiver [49, 54, 55]. 12
 4 According to this theory, the mother’s voice is seen as the 13
 5 essential foundation for bonding and future relationships. It 14
 6 has become evident that societal changes — especially the 15
 7 emerging role of fathers in education and infant care — 16
 8 require a more family-centered approach. Thus, as family 17
 9 culture permits, the definition of ASM can be expanded to 18

include the father’s voice and potentially the voices of the siblings.

Supplementary Parameters for Vocal and Instrumental Live Music Therapy

The following parameters for instrumental and vocal music therapy are based primarily on the approaches developed by Shoemark [30], Loewy [44], Bissegger [8] and Haslbeck [11].

Table 3. Supplementary Parameters for Vocal and Instrumental Live Music Therapy

	Vocal music therapy	Instrumental music therapy
Indications	<p>Infant: Refer to general framework</p> <p>Infant: anomalies in perception, reactions, and interaction</p> <p>Parents: lack of sensitivity or suppressed intuitive parenting ability</p> <p>Parent-Child Triad: stress transfer, connecting and interacting difficulty</p>	<p>Parents: shame or resistance regarding use of own voice</p>
Methods	<p>Responsive, finely tailored and adjusted infant-directed humming and singing with pauses</p> <p>Integrating “initial touch” and “therapeutic touch”</p> <p>Tonal vocal holding</p> <p>“Song of kin”</p>	<p>Vibro-acoustic infant-directed stimulation</p> <p>Frequently utilized instruments:</p> <p>small monochord</p> <p>lyre, cantele, harp</p> <p>kalimba, wind chimes</p> <p>hang, lute</p> <p>ocean disc: gato box</p>
Therapeutic services for mother/father/grandparents/siblings and infant:		
<p>During kangarooing or cradling</p> <p>At incubator / radiant warmer bed / at bedside</p> <p>Possibly during feedings</p> <p>Music for support and relaxation</p> <p>Improvisational music for infant and parents</p> <p>Singing together with parents for the infant</p> <p>Possibly composing songs to express emotional experiences (for the whole family with different perspectives and emotions)</p> <p>Optional instrumental accompaniment (only one soft instrument)</p> <p>→ the less stable or more immature the child, the simpler the music should be</p>		
Objectives of vocal and instrumental music therapy	<p>Infant</p> <p>Attunement and attachment</p> <p>Support interaction and communication</p> <p>Creation of resonance</p> <p>Individualized activation and meaningful stimulation</p> <p>Sucking and swallowing support</p> <p>Experience of self-efficacy</p> <p>Parent-Child Triad: Shared experience of relaxation, intimacy, interaction and attachment</p>	<p>Parents</p> <p>Support of interactive vocalization (speaking, singing, humming)</p> <p>Relaxation and emotional regulation</p> <p>Support of interaction with infant</p> <p>Cultural integration</p> <p>Experience of parental competence</p> <p>Empowerment</p>

19
20
21

It should be noted that particularly in the Creative Music Therapy methods [29] and in the Rhythm, Breath and Lullaby approach [3, 56] entrainment to the infant's breathing rhythm is consciously deployed as a technique to attune to the infant to support or regulate breathing. In Creative Music Therapy the improvised humming is continually adapted and tailored to the infant's needs based on the dynamic rhythms and subtle expressions of the infant. This often occurs in a synchronous manner, e.g., when the infant's eyebrows lift, the music therapist responds by steering the melody pitch and tempo upward. Conversely, when the infant is overly aroused, the therapist may shift the melody downwards, slowing the tempo to soothe the baby with calming musical tones [57]

Additional Supplementary Recommendations for Music Therapy in Neonatal Care

Additionally, the following services are recommended and have proven to be useful:

- Continuing education and workshops on the subject of ambient sound in the intensive care unit, in order to improve the sound quality and to reduce noise in the unit [58]
- Interdisciplinary led parent support groups, in order to encourage parents to share experiences
- Musical activities for the unit, team or parents — Holiday caroling, lullaby evenings, sound massages for the staff with the monochord
- Adjunct music therapy programs, e.g. prenatal music therapy for high-risk pregnancies and post-discharge music therapy follow-up care [59]

Discussion

This paper summarizes a four-year process of adapting, synthesizing, discussing, reviewing and revising recommendations for music therapy in neonatal care by the Fachkreis Musiktherapie Neonatologie. These guidelines ought to facilitate clinical-decision making and inform music therapists, parents and interested parties with the key characteristics of neonatal music therapy warranted for best practice in the German-speaking region. The document is in line with American and Australian guidelines for music therapy in neonatal care [5]. But some aspects have emerged as typical for this region: reducing the music stimulation to a minimum by primarily humming; using only one additional accompanying instrument; using mainly typical therapeutic instruments such as monochord and cantele, using "initial and therapeutic touch" and using auditory stimulation with the mother's voice as a bridge for live vocal interaction. Based on the European Music Therapy heritage of approaches such as anthroposophical music therapy as well as based on warranted general NICU approaches of minimal handling

music therapy in the German speaking region is provided in a more condensed and reduced form than in other regions of the world.

During the synthesizing process it became evident that many objectives, indications, and contraindications of neonatal music therapy are very similar despite the various approaches, and that many music therapists already utilize more than one method to better adjust to the individual needs of the infant, parents and family. One key element emerged regardless of the specific approach: the central role of the voice, whether sung live, recorded, with an accompanying instrument, or in combination with touch. The profound significance of the voice has repeatedly been demonstrated in the literature of neonatal music therapy around the world [6, 11, 50, 56, 60]. The other key element emerging was for the overall therapeutic goal to include the family in the therapeutic process, providing family-centered care as recommended by several authors in the field [33, 61–64].

The variety of music therapy approaches discussed in this paper reflect a general paradigm shift in neonatal care away from the isolation of the premature infant and towards parental integration [54], as well as from standardized to individualized relationship-based methods. In the 1980's parents were hardly allowed to visit their infant in German intensive care units and ASM was one of the few possibilities to bridge the gap between mother and infant. Today parents are encouraged and guided to kangaroo and care for their child as early as possible [37] so that individual live music therapy services in interaction within the parent-child triad are possible. The role of the music therapist is shifting from infant-centered methods towards family-centered approaches, with the objective to meet the needs of the whole family. Music therapy can offer a safe and unique space for the entire family, focusing on enhanced bonding and attachment through shared experiences of singing and music making, empowering, coaching and counseling parents to use their voice in an infant-directed nurturing way to bond with their infant. In light of this, ASM should only be used as a tool to bridge the gap to parental live vocal interaction, for example, for parents who are not able to visit their infant at the very beginning of their hospitalization.

Other topics in neonatal music therapy in the German region have also emerged. The following master theses are noteworthy, covering such areas as neonatal substance abuse withdrawal by Schrage-Leitner [65] and Esslinger [66], high risk pregnancies by Nussberger and Kaufmann [59] follow-up care of premature babies by Leitgeb [59] and Herpichboehm [67], and) the evaluation of the interaction between mother and infant in neonatal music therapy by Koppensteiner [68].

In the German speaking region, the general NICU culture aims to provide an individualized, live, observation- and relationship-based approach founded upon the theories and methods of the Newborn Individualized Developmental Care

and Assessment Program (NIDCAP) by Als [69]. The objective is to offer individual human contact and to promote perceptual responses [70, 71]. Although two of the early standardized music therapy approaches such as the Pacifier-Activated-Lullaby system (PAL) and the Multi-Modal Stimulation (MMS) developed by Standley [72, 73] are offered in some of the Anglo-American NICUs, they are rarely used in the German speaking regions. Nevertheless, the development of this systematic framework has benefitted from the research and recommendations as published by Standley for NICU music therapy.

Conclusion

It should be emphasized that these guidelines may be considered as one of several principles that guide everyday clinical decision-making. It is a framework that should be periodically updated and adapted as new insights, research findings, and recommendations for neonatal care and music therapy become available. It may serve well for other regions also, in much as methods and guidelines for neonatal care are very similar [74]. Culturally-sensitive aspects such as the use of vibro-acoustic instruments and the reduction of music to a minimum might be particularly attractive for like-regions, which share a similar cultural background in music therapy and general neonatal care guidelines of minimal handling and NIDCAP approaches [62, 75].

This framework may be utilized as a resource for continued education as well as supplemental information regarding the best available research evidence for treating this fragile population most efficaciously. Professionally trained music therapists are best suited to ensure best practice when they are familiar with medical and psychological background knowledge in neonatal care, existing guidelines and recommendations [76].

Additionally, the third component in the clinical decision making process — consideration of the individual needs and preferences of the patient — should receive particular attention. As repeatedly noted in the literature [11, 77, 78] identical therapeutic interventions may have different outcomes in different situations, depending upon the individual health condition, developmental stage, age and needs of the infant and parents. Precise observation, sensitivity and overall responsiveness to the needs of the infants, parents, and the intensive care unit are warranted for best clinical decision making [64, 79].

Hopefully this framework will serve as a well-founded guide, enabling music therapists to better position, orient and qualify themselves and their profession as an increasing number of reports and opinions circulate regarding the best methods for utilizing music in neonatal care. It offers a way to ensure the best possible care for premature infants and their

families: care which is based upon extensive evidence-based knowledge, a wealth of experience, and the individual needs and preferences of the families they serve.

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