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Commentary

A supportive harmony: Music therapy for complex painful dressing changes

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Introduction

Music therapy plays an important role in a multimodal pain management approach to distressful and invasive procedures through the facilitation of musical alternate engagement (MAE; Fratianne et al., 2001; Prensner et al., 2001). MAE has been compared to what is traditionally known as distraction, which involves either actively or passively shifting a child's attention away from a stimulus (Kuttner, 2010; Ghetti, 2012). MAE emphasizes the active engagement between the child, the music therapist, and the musical activity (e.g. instrument, voice) in order to redirect focus away from a negative stimulus (Ghetti, 2012). For the purpose of introducing music therapy as an intervention to children and families, it may be more practical and simple to use the term *distraction*.

The American Music Therapy Association (AMTA) defines music therapy as "the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program" (AMTA, 2011). A music therapist enters a relationship with a child to address the child's physical and emotional needs. Through the child's musical involvement within the therapeutic context, the child's coping abilities are strengthened (AMTA, 2011). Publications sometimes use the term *music therapy* in a broad context which may diminish the therapeutic value of the patient's relationship with the music therapist and the importance of the trained music therapist's role in guiding the interventions. For example, Klassen et al. (2008) in a systematic review of music for pain and anxiety differentiate between active and passive music therapy as one requiring the involvement of a music therapist (active) and the other referring to patients choosing music for listening without the guidance of a music therapist (passive). The definition of music therapy in the systematic review provided by Klassen et al. (2008) not only differs from the one provided by the AMTA but also involves studies that eliminate the beneficial presence of a music therapist who is qualified to actively respond to patients' changing needs. Although there is a time and place to use recorded music for the purpose of patient listening, its usefulness should not be confused with the strong impact that may be gained by direct interaction and intervention with a music therapist.

Children undergo complex painful dressing changes outside of the operating room, in acute, critical care and procedural sedation settings. Examples of these include, but are not limited to (a) fasciotomy wounds (b) abdominal wounds following solid organ transplantation, (c) wounds with complications such as evisceration and necrosis, (d) surgical or pressure-related wounds that require vacuum-assisted closure, (e) burns, (f) burn-like conditions that involve a large body surface area (e.g. Graft-versus-host disease, Stevens Johnson Syndrome, Epidermolysis Bullosa), and (g) thoracic dressings for patients with an artificial heart as a bridge to transplantation. This article will

focus on several specific music therapy interventions that have proven to be effective in aiding with pain management for the aforementioned procedures.

Assessment

Child life specialists, music therapists and nurses possess unique knowledge and develop close relationships with children and families. These clinical disciplines comprise an ideal trio to orchestrate the process of music therapy interventions, especially helpful since dressing changes frequently force rapid assessments and quick treatment. Hospital schedule changes and unanticipated procedures often force music therapists to make spontaneous evaluations, with child life specialists and nurses providing valuable information for efficient and thorough patient assessments. An example of the assessment process is a music therapist meeting with a school-aged child who verbalizes a preference to use imagery and go to a favorite place for a dressing change. Using information supplied by the child life specialist and nursing team (see Table 1), and through discussion with the child, the music therapist obtains details of the child's escape place (sights, sounds, and smells), making it possible for the music therapist to improvise, singing the description of the favorite place back to the child and modeling deep, peaceful breathing. Documentation of the music therapist's assessment and interventions in the medical record is important for continuity of care for future dressing changes (see Table 2).

Table 1
Domains incorporated in a music therapy assessment

- Chronologic age
- Developmental or cognitive level (e.g. pre-verbal, appropriateness of distraction vs. engagement)
- Nature of the dressing change (e.g. clinical condition, meaning to the child)
- Previous experience with dressing changes (e.g. unsuccessful pain control)
- Time constraints associated with preparing the child for the dressing change
- Pharmacotherapy for anxiety and pain
- Medical history
- Family support
- Music preferences (e.g. genre, the child likes to sing, the adolescent plays drums)
- Experience with music therapy with prior medical procedures
- Imagery preferences (e.g. details of a favorite place - beach, grandma's house, meadow)
- Recovery or return to baseline data with music therapy persisting after the dressing change (e.g. respiratory pattern, heart rate, child's comments, family response)

Intervention

Music therapy helps diminish anxiety and fear associated with anticipation of painful procedures through the process of *entrainment*, a term which refers to two rhythmic processes that interact in such a way that they adjust towards and eventually lock in to a common phase or periodicity (Clayton et al., 2005; Bradt, 2010). Simple examples of entrainment include tapping one's foot or swaying to the rhythm of music. When considering entrainment with regards to music therapy, the process of the patient's internal rhythm (e.g. heart rate, respiratory rate) synchronizes with the second rhythmic process of the music stimuli provided by the therapist. Entrainment may be active or passive. Active entrainment is a form of MAE in which the patient's coping mechanisms are supported by expressing pain through rhythmic improvisation in order to increase the perception of controlling the level of pain. Passive entrainment uses the music properties of rhythm and tempo to reduce the heart and respiratory rates, leading to the reduction of

Table 2
Documentation of music therapy

- Patient information (chronological age and diagnosis)
- Procedure (e.g. dressing change)
- Additional family members and staff present in room
- Response to music therapy interventions: emotional, behavioral, and physiological changes
- Emotional responses (e.g. crying, smiling, expressing fear)
- Behavioral observation checklist (e.g. agitation, anxiety, ineffective breathing, responsive, seeks support, interactive)
- Physiological response to music therapy (change in vital signs)
- Interventions used (e.g. provided soothing music; interactive instrumental music; music with imagery)
- Plan (recommended listening, contact as needed for support, schedule another music therapy session)

patient hears music of an appropriate tempo specifically chosen by the music therapist to promote deeper inhalations and decrease physiological arousal, the normal results are muscle relaxation and a reduced perception of pain, even if the patient is unaware of the shift in vital signs and bodily response (Ghetti, 2012). Music therapists strive to use familiar and/or patient-preferred music since it is acknowledged to be more engaging and effective. As an example, if a patient requests favorite music that is normally fast and strongly rhythmic (e.g. an adolescent who enjoys rock and roll), the music therapist slows the tempo to create the desired effect of reducing physiological arousal while respecting the child's choice.

While music can reduce pain, anxiety, and stress associated with painful or frightening procedures for children (e.g. dressing changes), it should not be considered a primary pain relief intervention (Cepeda et al., 2006; Wolf & Wolf, 2011). A child's response to analgesic and sedative medications may be optimized through the therapeutic relationship with the music therapist and through distraction or engagement interventions resulting in a synergistic effect (Cepeda et al., 2006). Studies in the pediatric population have shown that patients who listen to music without the presence of a music therapist have reduced pain intensity levels and opioid requirements; however, the clinical significance and scope of the benefits are still unclear (Cepeda et al., 2006). Caregivers have also described feeling calm and relaxed while performing their patients' dressing changes during music therapy sessions (Whitehead-Pleaux et al., 2007).

The following cases illustrate children of different ages experiencing MAE and entrainment during dressing changes for two distinct conditions. When pediatric patients are continuously monitored by medical equipment such as oximeters, the music therapist is able to observe changes in the patient's vital signs in order to gauge the effectiveness of the interventions.

Case Example 1: Favorite lullaby soothes child and caregivers

A 4-year-old female with Graft-versus-host disease required dressing changes to 70% of her body. She was mechanically ventilated in the pediatric intensive care unit (PICU) and was, therefore, unable to verbally communicate. However, despite continuous opioid and anxiolytic infusions as part of her pain management plan, she was alert enough to intermittently make eye contact with her parents. A thorough nursing assessment on admission to the PICU revealed that the child found music soothing for injuries associated with normal play and minor medical pain (e.g. falling outside, immunizations), which led to the nursing staff making a music therapy referral. The music therapist supported and soothed the child during her procedure by playing and improvising on one of the patient's favorite melodies suggested by her mother, "Twinkle, Twinkle, Little Star". The music therapist gauged the effectiveness of the intervention by noting and documenting the patient's attention to

the music and therapist, and a slight decrease in the patient's heart rate and blood pressure after the music began. The medical staff performing the procedure expressed that the music therapy intervention assisted them in staying calm and focused.

Case Example 2: Music therapy empowers young patient to develop coping skills

An 8-year-old boy in the PICU required dressing changes for an abdominal wound following liver and small bowel transplantation. Music therapy was an adjunct to intravenous opioid and anxiolytic medications. Before the procedure, the music therapist asked the patient to describe his favorite place, to which he responded "the ball park". Through discussion with the patient and input from the nurse and child life specialist, the music therapist was able to obtain sensory information about the sights, sounds, and smells of the ball park. The patient, guided by the music therapist, closed his eyes to imagine himself in his favorite place. When the patient became anxious and his attention strayed to the procedure, the music therapist helped him refocus on the imagery of the ball park, once again singing about his descriptions and, at times, asking for additional details to incorporate into the imagery. Throughout the dressing change the music therapist encouraged the patient to breathe deeply and provided positive reinforcement whenever he displayed effective coping skills, such as consciously slowing inhalations and intentionally releasing body tension to become more visibly relaxed. The patient and his parents requested music therapy for all successive dressing changes.

Summary

Music therapy is a beneficial non-pharmacological adjunct for children experiencing complex painful dressing changes. The range of outcomes include: empowerment, decrease of pain and anxiety, increase in coping skills, improvement of vital signs and stress reduction. This article describes the use of two effective music therapy interventions to support patients, families and providers during painful dressing changes. The use of music therapy for procedural support is an area for future study. Pain is subjective, and the variables impacting each individual's pain are often complex, such as previous painful procedural experiences, anxiety level, and availability of additional support figures. Furthermore, there is a wide range of variables that influence the success of music therapy interventions, including but not limited to selection of music and instruments, patient's past experiences with music, therapist's style, and therapist's ability to relate to patient. Future research on the use of music therapy for procedural support may benefit from isolating the aforementioned variables in order to differentiate the most effective interventions. Music therapists may also gain important knowledge from further research of various types of listening or environmental music that could provide patients with more positive experiences during times of limited therapist availability.

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