

# Music Intervention

## Nonpharmacologic method to reduce pain and anxiety in adult patients undergoing bone marrow procedures

Laura C. Schandert, DNP, AGPCNP-BC, OCN®, Mary Lou Affronti, DNP, RN, MHSc, ANP, FAAN, Mariah S. Prince, DNP, FNP-BC, and Susan M. Schneider, PhD, RN, AOCN®, FAAN

**BACKGROUND:** Bone marrow procedures cause anxiety and pain in adult patients with cancer. Music is a safe, inexpensive, noninvasive intervention that is easy to implement and is well received by patients and providers.

**OBJECTIVES:** The purpose of this quality improvement project was to develop, implement, evaluate, and sustain a music protocol during bone marrow biopsy and aspiration procedures for adult patients with hematologic malignancies. In addition, this project sought to decrease pain, anxiety, heart rate, and blood pressure in patients undergoing bone marrow procedures.

**METHODS:** The project coordinator collected baseline data regarding toleration of bone marrow procedures and then implemented a music protocol during the procedures during a six-month intervention phase. Comparison variables included pain, anxiety, heart rate, blood pressure, and subjective impressions.

**FINDINGS:** The music protocol resulted in improved patient anxiety, decreased procedure time, and decreased medication use during bone marrow procedures. All patients who used the music intervention indicated they would use it again.

### KEYWORDS

music; bone marrow procedures; adult; oncology; pain; anxiety; nonpharmacologic

### DIGITAL OBJECT IDENTIFIER

10.1188/21.CJON.314-320

**A CANCER DIAGNOSIS CAUSES NUMEROUS ADVERSE EFFECTS**, including anxiety and pain (Doro et al., 2016). Many cancers, such as leukemia, lymphoma, and myeloma, are diagnosed and monitored with bone marrow biopsy and aspiration procedures (Gramaglia et al., 2019; Shabanloei et al., 2010). For bone marrow procedures, a clinician inserts a needle into the bone (usually the iliac crest) to aspirate a sample of bone marrow that is analyzed for diagnostic and treatment purposes (Shabanloei et al., 2010). These procedures can worsen baseline pain and anxiety because of their use of large needles, the depth of insertion, and fear of negative disease results, leading to poor patient outcomes (McMonagle, 2018; Shabanloei et al., 2010). Bone marrow procedures are often one of the first steps in a patient's cancer course, setting a baseline for future treatment (Rosetti et al., 2016). Suffering produces negative pain memories, heightening anxiety and stress, and potentially worsening future procedures (Nguyen et al., 2010; Özdemir et al., 2017).

Physical pain can intensify already high anxiety levels, and anxiety can physiologically increase pain (Bradt et al., 2016; Özdemir et al., 2017). Pharmacologic therapy is often used for both cancer and procedural pain and anxiety (Kwekkeboom et al., 2020; McMonagle, 2018). However, medications require increased monitoring and can cause adverse side effects such as dizziness, nausea, and blurry vision, and, more seriously, allergic reactions, hypotension, and respiratory depression (McMonagle, 2018). Additional interventions are needed for pain and anxiety during bone marrow biopsy and aspiration procedures.

### Background

Music is a nonpharmacologic intervention that can be used alone or in conjunction with pharmacologic therapies to address the clinical problem of pain and anxiety during bone marrow biopsy and aspiration procedures. Although cancer has negative physical and emotional effects, music has positive ones (Shabanloei et al., 2010). Individuals of all ages and types of cancer can benefit from music, including those undergoing procedures (Shabanloei et al., 2010; Zengin et al., 2013). Music can also lessen the amount of medications needed, decreasing potential adverse effects (Bradt et al., 2016). Music decreases physiologic parameters, such as heart rate and blood pressure, reduces symptoms, and improves mood and quality of life; this is beneficial in procedures that are often repeated (Bradt et al., 2016; Rosetti et al., 2016; Zengin et al., 2013). Music has also been found to benefit multiple symptoms