

# Music therapy reduces anxiety, use of sedatives for patients receiving ventilator support

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New research suggests that for some hospitalized ICU patients on mechanical ventilators, using headphones to listen to their favorite types of music could lower anxiety and reduce their need for sedative medications.

In a clinical trial, the option to listen to music lowered anxiety, on average, by 36.5 percent, and reduced the number of sedative doses by 38 percent and the intensity of sedation by 36 percent compared to ventilated intensive care unit patients who did not receive the music intervention. These effects were seen, on average, five days into the study.

The research is published online in the *Journal of the American Medical Association*.

Researchers first assessed the patients' musical preferences and kept a continuous loop of music running on bedside CD players. When patients wished to listen to music, they were able to put on headphones that were equipped with a system that time- and date-stamped and recorded each use.

Professional guidelines recommend that pain, agitation and delirium be carefully managed in the ICU, with the goal of keeping mechanically ventilated patients comfortable and awake. However, the researchers

acknowledged that over-sedation is common in these patients, which can lead to both physiological problems linked to prolonged immobility and psychological issues that include fear and frustration over not being able to communicate, and even post-traumatic stress disorder.

"We're trying to address the problem of over-sedation from a very different perspective, by empowering patients. Some patients do not want control, but many patients want to know what is going on with their care," said Linda Chlan, distinguished professor of symptom management research in The Ohio State University's College of Nursing and lead author of the study.

"But I'm not talking about using music in place of the medical plan of care. These findings do not suggest that clinicians should place headphones on just any ICU patient. For the intervention to have the most impact and to have the desired effect of reducing anxiety, the music has to be familiar and comforting to the patient – which is why tailoring the music collection for the patient to listen to was key to the success of this study."

Chlan also presented the research Monday (5/20) at the American Thoracic Society International Conference in Philadelphia.

Chlan and colleagues conducted the study with 373 patients in 12 ICUs at five hospitals in the Minneapolis-St. Paul area. Of those, 126 patients were randomized to receive the patient-directed music intervention, 125 received usual care and 122 were in an active control group and could self-initiate the use of noise-canceling headphones. All patients had to be alert enough to give their own consent to participate.

A music therapist assessed each patient in the music group to develop a collection that met the patient's preferences. This was no easy task, as the patients are not able to speak when they are on a ventilator. The

research team developed a screening method specifically for this part of the study. Researchers purchased downloadable files and placed up to 1,000 selections on each patient's mp3-compatible CD player.

Researchers instructed patients to use the intervention if they were feeling anxious, wanted to relax or needed quiet time. Nurses were asked to prompt patients twice during each shift about their interest in listening to music. In weaker patients, nurses helped with placement of the headphones.

In all patients, researchers performed daily assessments of anxiety and two measures of sedative exposure to any of eight commonly used medications: intensity of the medication and frequency of doses. Anxiety was measured with a visual analog scale that asked patients to describe their anxiety by pointing to a chart anchored by the statements "not anxious at all" and "most anxious ever." Patients remained in the study as long as they were on ventilators, up to a maximum of 30 days.

Study patients were hospitalized for a variety of conditions that primarily included lung problems or infections. The main reasons for ventilation were respiratory failure or respiratory distress. The study showed that patients in the music group listened to music, on average, for almost 80 minutes per day, and patients with noise-canceling headphones used them for an average of 34 minutes per day. No relationship was found between time spent using the device and anxiety, but researchers did note that more patients listening to music were liberated from the mechanical ventilator than were patients from either other group at the end of the study.

A complex statistical analysis of the data showed that significant reductions in anxiety and sedation could be seen in patients in the music intervention within five days when they were compared to patients who received usual care. Patients using noise-canceling headphones showed

some improvements in anxiety and lower sedation intensity, but the effects were not as strong as those seen in the music group.

"There is something there with noise-canceling headphones, but the music is so much more powerful. With the music, we were able to show a simultaneous reduction in anxiety and in sedation," Chlan said. "When we listen to music, our entire brain lights up. We want to capitalize on the pleasant, comforting memories associated with music because it occupies brain channels that otherwise would be occupied by an anxiety-producing stimulus. That's why music is so much more than just something nice to listen to."

A former medical intensive care unit nurse, Chlan now leads a research program that emphasizes testing treatment strategies that complement traditional medical approaches to ICU care.

"I think about tackling the modifiable risk factors. And sedation is directly modifiable because it is controlled by the clinician. Nonpharmacological, integrative interventions like music bring in a piece that does not induce adverse side effects and does not contribute to ICU-acquired problems," she said.

She and colleagues now are working on making the highly controlled research protocol more friendly to standard hospital practices. "If this is going to have wide clinical impact, that really has to be done," she said.

The most important outcome, Chlan said, would be measurable reduction in ventilated patients' anxiety.

"I think anxiety gets lost in the mix when we are assessing patients. We have federal guidelines about assessing pain. I would like us to have some guidelines about assessing anxiety because that is one of the most frequently occurring symptoms that patients report about being in an

intensive care unit," she said.

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