



## KEY POINT SUMMARY

### OBJECTIVES

The four aims of this study included the following: (1) explore whether it is possible to implement a full-scale intervention study in the ICU concerning sound levels and their impact on the development of ICU delirium; (2) discuss methodological challenges and solutions for the forthcoming study; (3) conduct an analysis of the presence of ICU delirium in the study group; and (4) describe the sound pattern in the intervention rooms.

## Evaluation of a sound environment intervention in an ICU: A feasibility study

Johansson, L., Lindahl, B., Knutsson, Ögren, M., Persson Waye, K., Ringdal, M., 2018 | *Australian Critical Care. Volume 31, Issue 2, Pages 59-70*

### Key Concepts/Context

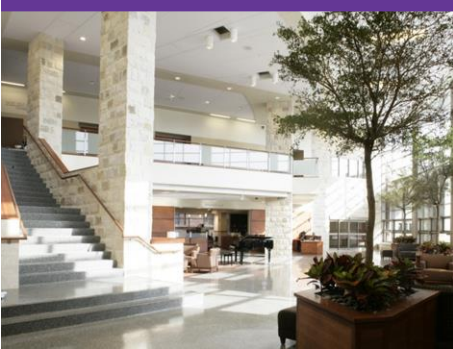
Long-term studies measuring acoustics in ICU environments is lacking. This information is important to understand the effects of sound on seriously ill patients and those suffering from ICU delirium.

### Methods

This study took place in one adult ICU unit where one two-bed patient room was rebuilt and an identical two-bed patient room was not modified. A quasi-randomized design was used. Patient outcomes were not compared between the two rooms but the environments were compared. To record the sound in the rooms, microphones were hung above each bed and recordings were on 24h per day. A protocol for patient placement was requested of the nursing staff.

### Findings

The study participants included 25 from the non-modified room but only six from the modified room. Staffing for the day guided patient placement into rooms more than expected and often did not align with study plans. The most relevant findings from this study are implications for future research. The authors note that studies on acoustics in the ICU require consideration of the following three areas in addition to the acoustic measurement: 1) the technology used, 2) equipment, and 3) data analysis. Future research efforts should track activities in the rooms to avoid confounding variables that impact acoustical recordings.



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## Limitations

Several significant limitations were evident in this study. First, nurses were not included in the intervention phase. Including nurses in designing the intervention might have reduced other issues such as patient placement, confounding activities, use of the CAM-ICU tool, and recruitment issues. Additionally, the fact that identical machinery had different alarm loudness may have skewed the results.

## Design Implications

Future studies regarding similar contexts should note the following recommendation when designing their protocols: (1) a more detailed, continuously updated cost calculation should be conducted; (2) representatives from the hospital and medical staff need to be involved at all stages and in all aspects of the project; and (3) more researchers need to be involved in the data collection procedure to ensure consistent protocol is followed as well as to prevent an extra burden on medical or nursing staff. For example, the nursing staff should not be expected to be responsible for the data collection, such as random assignment or ICU delirium assessment for the purposes of the study, since patient care requires their full attention and should be their only concern.

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