

## Noise pollution in hospitals a growing problem



Noise levels in hospitals regularly exceed international recommendations, and the problem is getting worse, according to an editorial in the *BMJ* by a research team from King's College London and the University of the Arts London (UAL).

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Excessive noise can impact patients' ability to rest, heal and recover, and has been linked to the development of ICU psychosis, hospitalisation-induced stress, increased pain sensitivity, high blood pressure and poor mental health.

In an email to *ICU Management & Practice*, lead author, Dr. Andreas Xyrichis, senior lecturer, Florence Nightingale Faculty of Nursing, Midwifery, and Palliative Care, King's College London, UK, explained the background: "We are concerned with the harmful effects of noise in hospitals and the lack of progress in this area despite half a decade of research. Rather than improvement in this field, evidence points to the contrary: hospital noise levels are increasing; policies about acceptable sound levels are unrealistic and unachievable; noise is implicated in an increasing number of negative outcomes, for staff, patients as well as hospital visitors; and interventions appear to be having limited and short-lived effects.

However, neither the problem nor the solutions are as simple as they might seem. The researchers identify three challenges to improving noise levels:

- Noise is often incorrectly associated with high sound pressure levels (SPLs). For example, a dripping tap may have a low SPL but still seem noisy. Focusing on sound pressure levels will not ensure a reduction in noise perception. The research team argue that a new approach that views the hospital soundscape as a positive and malleable component of the environment is needed.
- Noise is difficult to measure reliably and validated measurement instruments are lacking.
- There are many sources of noise in hospitals, including alarms, televisions, rattling trolleys and ringing phones, as well as staff, visitor and patient conversations. However, some noises are not perceived as such by patients - for example, the tea trolley may be associated with receiving a warm drink. Research has shown that some ICU patients welcome ringing telephones as a sign that they are not alone. Ways to measure patients' perceptions of noise are limited, and more research is needed. Dr. Xyrichis added: "Contrary to widely held views, silence in hospitals is unnatural with some patients finding conversations among staff more reassuring than annoying."

The research team recommend that patients and families receive clear information about likely noise levels during admission to hospital, so that they can come prepared, for example with headphones and their own audio choices. They add that staff education will encourage a culture that considers noise reduction an integral part of safe high quality healthcare.

The multi-component nature of many noise reduction interventions make it difficult to isolate the effectiveness of a single initiative. However, to date patients have been seen as passive recipients of hospital noise rather than active participants in its creation. It is essential that future solutions have greater patient participation as a key feature say the researchers, moving from a focus on quantitative reductions in sound pressure levels to broader qualitative improvements in hospital soundscapes.

They note that sound masking--the addition of background, broadband sound optimised for particular environments to reduce noise-induced disturbance--has recently shown promise for improving sleep in hospitals.

### Hospital Project on Noise, Sound & Sleep (HPNoSS)

The researchers have drawn on emerging evidence from the interdisciplinary [Hospital Project on Noise, Sound & Sleep \(HPNoSS\)](#). The project seeks to provide a holistic understanding of sound in the hospital environment and the intimate relationship of noise to sleep, rest, treatment and recovery. Bringing together nurses, doctors, artists, engineers and social scientists and working with the sound cancellation and sound masking industries the project takes an approach that allows sound and the hospital soundscape to be viewed as a positive and malleable component of the healthcare environment.

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