



Positive Vibrations

Strategies for rethinking sound to benefit healthcare spaces

BY HOWARD ROSE

Health systems spend lavishly on the way their designed spaces look, but pay far less attention to how these spaces sound. While “do no harm” is the medical watchword, inattention to the acoustic environment in a healthcare space extracts a daily toll on

the wellbeing of patients and the mental health of health workers. It does not need to be this way.

Moving beyond the mindset of harm reduction and noise abatement, attention to the sound design of clinical spaces opens an opportunity to enliven public areas and treatment rooms, and even apply audio as a therapeutic tool. New digital audio and sensor platforms offer designers the means to program and finely control adaptive environments that actualize this potential at scale in appropriate ways for these challenging environments.

When designing music and sound for medical spaces, we can be intentional and get a better outcome if we understand a

bit about the mechanisms of how music affects the brain and the body. To state this simply, music affects us by one of two pathways: either directly through exposure to specific vibrations and frequencies, or indirectly through the pathway of our emotions.

Incorporating intelligent sound systems

The emotional pathway derives its strength from the direct link between hearing and our brain’s centers for positive memories, language and subconscious response to cues from the environment. Following the emotional pathway leads to design approaches that incorporate

reminiscent therapy or positive motivation to boost and sustain patients through long days in a hospital bed.

Particularly in longer-term contexts, relying on canned music or a rotating playlist quickly adds to the background cacophony and becomes another annoyance to ignore. A more effective alternative is to use an intelligent sound system that responds to or anticipates evolving needs through the use of streaming sensor data to gauge room occupancy levels or mood, time-of-day and sessional changes and demographic preferences.

Care for caregivers: the wellness room

Health systems are focused on the need to reduce the abundant anxiety and stress of patients and health staff. One response has been a growing trend to create wellness rooms for frontline health workers.

Clinical examples show that wellness rooms centrally located and designed to heighten the feeling of a total emotional oasis away can significantly decrease stress and improve job satisfaction.

Inspired by nature

Research studies show the health benefits of increased nature experiences through biophilic soundscapes. Adding ambient ocean waves or a virtual forest to lobbies, waiting rooms or a nurse station, might be barely perceptible but can have a profound effect on the emotional temperature.

Sustaining success of this biophilic approach depends on delivering an authentic sense of immersion in the natural space and varying that experience over time to avoid the annoyance of a repeated nature soundtrack.

A growing body of evidence from brain research illuminates the physiological benefits of beat frequency entrainment to induce states of relaxation. Recent research even suggests that prolonged exposure to specifically 40hz pulses of light and sound may reduce cognitive decline into Alzheimer’s¹.



From left: Spatial Inc.’s immersive audio technology is used in wellness rooms at 16 Wellstar Health System hospitals. The above image is of the shared area of the wellness room installation at Wellstar Kennestone Hospital in Marietta, Georgia, installed by Applied Global Technologies. > Private wellness rooms provide hospital employees with soothing AI-driven, non-looping environmental soundscapes to choose from via a touchscreen interface. These soundscapes help hospital staff escape, relax and destress.

colleagues and patients.

New audio technologies offer greater capabilities to finely control immersive music and soundscapes via speakers, enabling patients and medical professionals to enjoy the benefits of a healthier sound environment, while maintaining human connection.

People know intuitively that music is powerful and important in our daily lives. But the power of sound is often overlooked as a pathway to improve health and wellness. Becoming more familiar with the potential, the research and available sound-based therapies will give designers an edge. The result will be healthcare spaces that are alive with dynamic soundscapes engineered to make everyone in those spaces happier and healthier.

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¹ [frontiersin.org/articles/10.3389/fnins.2022.854992/full](https://www.frontiersin.org/articles/10.3389/fnins.2022.854992/full)

Incorporating entrainment into immersive soundscapes for wellness rooms or health workspaces can increase daily access to these health benefits and dramatically reduce the annoyance of repetitious low-frequency pulses.

Tips for sound delivery

Headphones have become the default for delivering personal audio experiences. The flipside of headphones — the isolating effect makes them impractical for many healthcare contexts, which require connection and communication between