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Acoustics in the Environment of Care: An Interdisciplinary
Harvard Medical School Research Project

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Noise in hospitals and healthcare facilities is a growing concern. Anticipating the wave of aging baby-boomers, the US healthcare industry is committed to significant construction and renovation over the next decade. New construction guidelines from the American Institute of Architects/Facility Guidelines Institute and the LEED-based "Green Guide for Healthcare" recognize improved acoustical conditions as vital to quality of care quality. To set these specific standards for acoustical performance in healthcare facilities, clinical evidence is needed on the impact of the acoustical environment on patients.

An interdisciplinary team of Harvard Medical School faculty and acoustical engineers, in concert with public policy professionals, have designed and implemented a simulation methodology to test acoustic disruption of sleep in human subjects. This research collaboration uses soundscapes derived from recordings made in real healthcare environments, and then quantifies the human response to them. The methodology also enables virtual design changes with corresponding subject exposure to acoustically improved environments. Studies of the human sleep response using this methodology are providing objective evidence for establishing and validating design and construction standards to integrate improved acoustics with healthcare facility design.