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## Music Room Soundproofing to Reduce Hospital Noise



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One of the most common patient complaints about hospitals is the noise with multiple monitors, paging systems, wheelchairs, gurneys and squeaking carts all making a good night's sleep impossible.

University of Michigan Health System (UMHS) consisting of hospitals and clinics in south east Michigan and the University of Michigan Medical School, is making the hospital quieter. UMHS has just announced details about tests on sound panels similar to those used in music rooms, designed to dial down noise.

During a pilot study, strategically placed sound acoustic panels helped diffuse sound in the hallways around patient rooms. The drop of three to four decibels could be registered by the human ear and could be compared to the fall in noise generated by a car slowing down from 80 mph to 60 mph.

"In hospital environments where noise levels are often double what they should be according to the World Health Organisation's standard decibel guidelines for patient rooms, the difference is significant," says Majtaba Navvab, Ph.D., associate professor of architecture and design at the Taubman College of Architecture and Urban Planning at the University of Michigan (U-M).

Navvab is partnering with U-M Architecture, Engineering and Construction, which plans spaces across three U-M campuses, on room acoustic research, and collaborated with physicians Peter M. Farrehi, M.D., and Brahmajee K. Nallamothu, M.D., on the noise reduction study.

Four custom panels, covered in cones and made with sound-absorbing material, were installed for three days in the walls and ceilings of a cardiovascular care unit.

Sound levels were 60 decibels during the daytime, according to the study findings published in BMJ Quality and Safety, but on hallways with the sound panels, the hospital was a bit quieter at 57 decibels. However, BMJ Quality and Safety, highlights that average hospital noise levels continue to exceed recommended levels of 35 decibels.

A noisy hospital environment is not only aggravating for patients, it can also trigger spikes in blood pressure and interfere with wound healing and pain management. It also impacts on those who work around patients with studies showing link between sound decibel levels in work environments and employee blood pressure levels and heart rates.

To reduce hospital noise, U-M Hospitals and Health Centres are using several strategies intended to enhance the patient care experience and also improve working conditions for employees.

The campaign promotes a culture of quiet on behalf of patients, families and employees by:

- Providing complimentary ear buds, headphones and earplugs for patients and their families;
- Keeping hallway conversation to a minimum, especially at night;
- Establishing quiet hours in all in-patient areas;
- Encouraging patients and staff to respect others by turning down the volume on cell phones, televisions, radios, pagers and other devices;
- Minimising cell phone conversations in hospital hallways and waiting rooms and encouraging others to do the same;
- Setting pagers to vibrate when medically appropriate;
- Dimming lights in patient rooms and unit hallways;
- Coordinating care in order to reduce unnecessary entry into patient rooms during quiet hours;
- Reminding staff to use quiet voices and behaviour in the patient care setting;
- Closing doors quietly;
- Providing a "white noise" TV channel in all patient rooms;
- Wearing soft sole shoes to minimise hallway noise outside patient rooms;
- Placing work orders through a dedicated system to have noisy carts, doors and other items repaired;
- Scheduling floor cleaning times that do not conflict with night-time resting hours;
- Testing metres that indicate sound levels in some patient rooms.

Hospital noise is ranked low on the national Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) and those scores can impact hospital reimbursement. Patients who are dissatisfied with the noise in their rooms are often significantly less satisfied with their overall hospital experience.

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