

Acoustic Management In Healthcare

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Creating A Better Sound Environment

Noted authority, Susan E. Maser, states that “When we think of places where we want to rest and recuperate from illness or medical treatment, most of us visualize places that are quiet, peaceful and serene. This is a stark contrast to the typical hospital, where sounds of beepers, alarms, machines, telephones, voices and more are part of the ‘normal’ environment.” She continues by saying, “The epidemic of noise in hospitals - one of the biggest complaints of patients - can no longer be ignored. ”

Audible sound may be defined as transmitted vibrations with frequencies in the range of 20 hz to 20,000 hz, capable of being detected by the human ear. But noise is a sound that is unpleasant, unexpected and undesired.

The sources of noise in healthcare are many. They include equipment such as telephones, pagers, monitors and alarms, paging systems, wheeled equipment, IV poles, TV speakers, pneumatic tube systems, elevators and automatic doors. HVAC systems are the most common source of background noise, the human voice itself is also a major source.

The effects of noise in healthcare settings are diverse, ranging from inpatient’s reporting unsatisfactory hospital experiences according to the Press Ganey exit surveys, through more serious consequences such as causing life threatening medication errors.

The EPA recommended guideline values for background noise in hospitals is 45 decibels (dB) during the day and 35 dB at night. But

these levels are voluntary and not enforced by law or by code, and are rarely met. Published studies have reported noise levels in excess of 95 dB in patient care areas, precisely where the advantages of good acoustic management are most needed. Patients in facilities with good acoustical management have better outcomes, heal more quickly and report a more satisfactory experience according to Press Ganey exit surveys.

CARPET ABSORBS
BETWEEN 15 – 25% OF
AIRBORNE NOISE

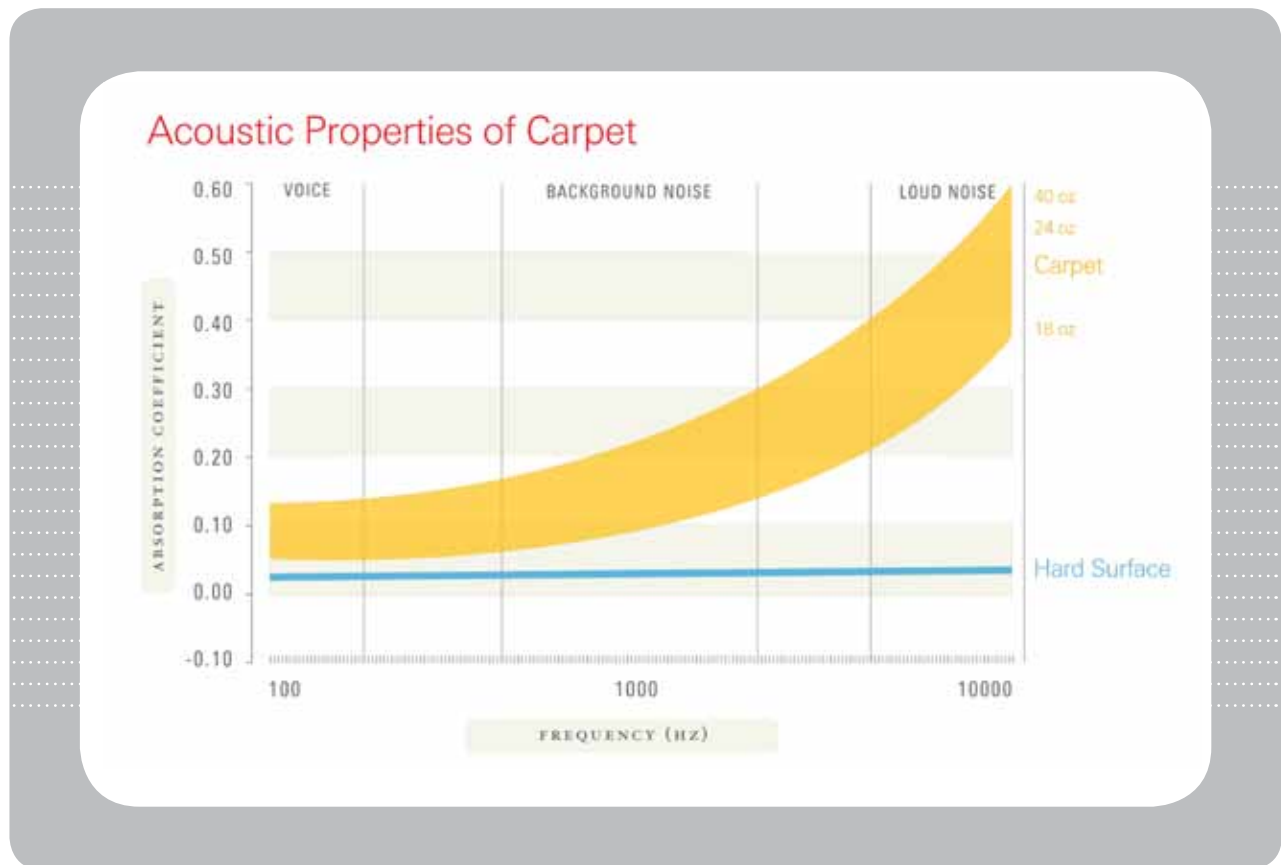
Similarly, caregivers report enhanced performance in quieter environments reflected in fewer distractions, lower mental fatigue and less vocal strain. Investigators further report 20-30% reductions in staff errors, preventing incalculable patient discomfort and saving facilities billions of dollars annually in avoided costs.

So quieter is always better in the indoor healthcare environment, and as the consequences of the noise epidemic in healthcare – physical, emotional and financial – have become more widely understood, so has the role of carpet in creating a better sound environment become more appreciated by hospital administrators, patients, caregivers and the A&D community.

Two tests are most often used to measure the acoustic performance of flooring in healthcare. ASTM C423 reports airborne noise reduction; and Noise Reduction

Coefficients (NRC) of interior surfaces and finishes. ASTM E90 reports the impact insulation classification (IIC) of surfaces, which manage noise transmission through building structures. By either test, carpet is an extraordinarily effective acoustic management tool.

Errors of this type often result in lawsuits, and the average cost of an out-of-court settlement is \$275,000. A similar benefit applies to patient outcomes, in general. More than any other surface, carpet effectively absorbs background noise, loud disturbing sounds such as monitors,



Compared to hard surfaces typically found in healthcare, such as luxury vinyl tile, rubber flooring, engineered flooring and VCT, carpet absorbs between 15 – 25% of airborne noise, compared to only 0-5% for the hard surfaces mentioned. Perhaps more important, carpet is especially effective in absorbing those frequencies common to background noise, which dramatically improves speech recognition. This is important, for example, when transcribing a verbal order from a physician into a written order on a medical chart.

alarms, paging systems and cell phones, and structure-borne noise. All of these are disturbing and undesirable. They interfere with rest, which interferes with recovery. Only carpet provides acoustic management which, combined with good noise reduction programs, creates an environment favorable to good patient outcomes.