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Describing the sound environment of the neurological intensive care unit and personnel response

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The hospital soundscape is populated with a number of noise sources that may be detrimental to the occupational environment, including medical equipment, alarms, portable carts, activities, paging/communication, and ventilation systems. This paper describes a study in which sound measurements were made over five days and occupant evaluations were conducted in a neurological intensive care unit (ICU). Forty-seven nursing staff members completed questionnaires regarding general reactions to the ICU environment as well as perceived psychological and physiological reactions to the noise. Acoustical characteristics such as level distributions, restorative periods, and spectral content were explored in addition to overall equivalent, minimum, maximum, and peak sound pressure levels. Results showed the mean length of restorative periods (LAeq below 50 dB for more than 5 min) was 9 and 13 minutes for day and night, respectively. Sound measurements near the patients showed LAeq values of 53 - 58 dB, and dosimeters worn by the personnel revealed higher noise levels. Questionnaire results indicated that 91% of those surveyed felt that the noise negatively affected them in their daily work environment. They perceived the noise as contributing to stress symptoms such as irritation, fatigue, tension headaches, and difficulties concentrating. [Work supported by ASA and Swedish FAS].