Human Factors and Ergonomics –
The Integral Aspect of Multisensory Medical Alarms

Abstract: Safety-critical industries require accurate task performance that is often multifaceted and reliant on time-sharing between concurrent tasks. Clinical tasks often involve multiple sensory modalities. Some of these tasks are auditory, such as spoken communication with a team and detecting auditory alarms, and some tasks contain additional visual components, such as ascertaining vital signs. The auditory domain is under considerable pressure in clinical work.

Noise levels in the clinical realm have become a problem in clinical environments, where they have gradually risen over the last few decades. Noise, or competing and unwanted sounds, are a particular challenge in healthcare. The World Health Organization (WHO) recommends nighttime noise levels in hospitals not exceed 30dB, yet the average nighttime level has found to be much higher, typically at 60dB. The overall noise level in hospital settings (alarms and non-alarms), including the OR, can be detrimental to both patient recovery and clinician performance.

Aside from their loudness, the nature of clinical audible alarms is undergoing considerable change since evidence has emerged that the tonal style of alarms, particularly those advocated in the medical device global safety standard, IEC 60601-1-8, are difficult to learn and recognize. In addition to auditory medical alarms, research in the domains of neuroscience, psychology, biomedical engineering, and human factors engineering is striving to develop optimal multisensory (auditory, visual, haptic) alarms to improve patient care and attenuate fatigue.

Biography: Dr. Schlesinger is an Associate Professor in the Department of Anesthesiology and Division of Critical Care Medicine at Vanderbilt University School of Medicine, and Adjunct Professor of Electrical and Computer Engineering at McGill University in Montreal, Quebec, Canada. After earning his Bachelor of Arts in Music with a concentration in Jazz Piano Performance from Loyola University in New Orleans, Dr. Schlesinger earned his Doctor of Medicine degree from the University of Texas Health Science Center at Houston. He completed residency training in Anesthesiology followed by a fellowship in Critical Care Medicine at Vanderbilt University. While in training, Dr. Schlesinger became a B.H. Robbins scholar. Dr. Schlesinger’s research interests include multisensory integration, human factors, aural perception, temporal precision, alarm development, patient monitoring, and medical education. This work led to the prestigious 2014 Education Specialty Award from the Society of Critical Care Medicine. Besides his publication history in high-impact scientific journals, Dr. Schlesinger is a patented inventor and has been featured on the podcast “99 percent invisible,” CNN Health, and the New York Times.

Friday, 4/9/2021
Zoom
12:00 PM