



Dr. Joseph Schlesinger
Distinguished Lecture Series

**The Bromance of Morton and Mendelssohn – Music and Medicine Research to Improve Patient Care
and Safety**

Thursday, May 26, 2022
11:00 – 12:00 P.M.
Engineering East – EE-303

ABSTRACT

Clinicians depend on pulse oximetry and auditory medical alarms to monitor patients and improve patient safety. However, alarms can be fatiguing, uninformative, and nonactionable. Music perception and cognition research can inform alarm development to ameliorate alarm fatigue and improve patient monitoring in a cognitively demanding environment.

Alarms in the ICU and operating room (OR) sound frequently and 85-99% of cases do not require clinical intervention. As alarm frequency increases, clinicians develop 'alarm fatigue' resulting in desensitization, missed alarms, and delayed responses. This is dangerous for the patient when an alarm-provoking event requires clinical intervention but is inadvertently missed. Alarm fatigue can also cause clinicians to set alarm parameters outside effective ranges to decrease alarm occurrence, decrease alarm volumes to an inaudible level, silence frequently insignificant alarms, and be unable to distinguish alarm urgency. Since false alarm and clinically insignificant alarm rates reach 80-99%, practitioners distrust alarms, lose confidence in their significance, and manifest alarm fatigue. Yet, failure to respond to the infrequent clinically significant alarm may lead to poor patient outcomes.

Given the poor positive predictive value of alarms, patients often have a poor perception of care based on clinician response to alerts and alarms. Ongoing research shows the benefit of multisensory (haptic/auditory) integration to improve alarm perception, extracting the acoustic signal of the alarm from the patient environment, the sonification of physiologic data so the clinician can respond in a proactive manner, and the multidisciplinary role of engineering, psychology, music perception & cognition, and hearing & speech sciences in device development to improve patient safety.

BIOGRAPHICAL SKETCH

Dr. Joseph 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. He has been funded by the province of Quebec and the Department of Defense. 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, WIRED, NPR (The Pulse – WHY), and the New York Times