

Foreword

Practice does not make perfect – An overture to the special issueJoseph Schlesinger¹ & Priscilla Hirst³¹Vanderbilt University Medical Center, United States of America²Anesthesiology, Division of Critical Care Medicine, United States of America²Montefiore New Rochelle Hospital, New York, United States of America

My piano teacher in college at Loyola University New Orleans told me that, “Practice does not make perfect, perfect practice makes perfect.” What is perfect practice? And, if we had perfectly practiced the research and development resulting in the current alarmscape in the hospital, would we suffer from alarm fatigue, interrupted patient sleep quality, and clinician burnout? Alarm fatigue, while not operationally defined, is colloquially understood as fatigue resulting from the acoustic environment in the clinical space. Alarms have problems including, but not limited to: false alarms, loud alarms, difficult determining what is alarming, and inability to quiet an alarm – creating distractions and impeding patient care. Thinking of the constant battle to improve health, I am reminded of a passage from I Corinthians 14:8 KJV, “For if the trumpet give an uncertain sound, who shall prepare himself to the battle?”

This special issue was conceived from my own background in music and medicine, my formal training as a jazz pianist and current practice as a critical care anesthesiologist. It has been an uphill, yet fruitful, battle to conjoin these passions. But what is music and medicine? While there is much bickering in the fields of nomenclature of music therapy, music medicine and therapeutic music, my perhaps rosy-colored glasses view, is that I want the best for my patients. We all do. That is why, we must break down the barriers of our own egos and science to work together – easier said than done.

As a bit of a background, we must unpack music research. To other fields, it is dismissively viewed as music, what we listen to, and focused on aesthetics. While aesthetics are important, as listening to music is a pleasurable construct, music research is truly about acoustics and human perception and cognition. Roy Patterson and Judy Edworthy[1] understood this during the first iteration of the approach to alarm development in the 1970s. However, the focus of music as an aesthetic melodic construct, instead of acoustic features

of sound, prevailed and the proposed melodic alarms of the International Electrotechnical Commission[2] were developed. We may have been our own worst enemy, we became siloed and narrow sighted, and this approach crashed and burned. Penelope Sanderson’s[3] group showed how difficult these alarms are to learn (amongst other research groups: Cvach[4] et al, Edworthy[5,6] et al).

Poignantly, Frank Block wrote in his editorial[7] in *Anesthesia & Analgesia*, “This author would like to take this opportunity to apologize to the medical community for his role in derailing the Patterson alarm sounds nearly two decades ago. I now believe that the Patterson sounds were genius, and that they should have been adopted 10 or 20 years ago.” If only the academic literature could contain vulnerability like Dr. Block has demonstrated. But sadly, an apology is not enough, we must show superiority of any further development of auditory alarms. We got ourselves into this problem by a group of arguably smart, yet biased researchers that express what the community wanted to hear. As musicians know, melody can be subjectively pleasing, but other aspects of the musical space serve to combat the alarm problems elucidated previously. We should explore harmony, rhythm, sharpness, roughness, attack, decay, amplitude envelope, and pitch center, to name a few. This does not just come from my own bias, but plenty of literature in the neuroscience and music perception and cognition research domains. As a call to action to work together, we must cross-publish in these domains and read the body of work. How many clinicians read music research? How many musicians read the medical literature? At my first International Association of Music and Medicine conference (the 3rd IAMM conference) in Beijing in 2012, I was asked, “Why are you here?” In a room of music therapists, I proved myself, and today I am pleased to be the lead editor of this special issue. It has been wonderful to witness and participate in the growth of our international music and medicine community. The integration of medical practitioners and music therapists has grown through this journal, but we still have more work to do.

In this issue, we go beyond auditory medical alarms. Medicine is a high-consequence industry, akin to nuclear power and transportation, mistakes can lead to death. Unlike aviation, my mistake will not lead to my own death, but everyday I come to work I have a non-zero chance of making an error that leads to a patient’s harm and/or death. This is an awesome responsibility.

PRODUCTION NOTES: Address correspondence to:

Joseph Schlesinger MD, E-mail: joe.schlesinger@gmail.com | COI statement: The author declared that no financial support was given for the writing of this article. The author has no conflict of interest to declare.

When I set out to assemble my team of co-editors, I did not want to invite authors that would just write about my sphere of influence, or authors that would simply agree with my point of view. I want readers of this journal, and other journals, to start to use this research, reviews of the literature, and position pieces as a foundation and benchmark for the direction of the field. I am proud that contributors are experts in: audio branding, music perception and cognition, electronic music composition, sound design, psychology, neuroscience, clinical medicine, music theory and composition, nursing, law, and theology. This truly multidisciplinary approach, inclusive of everyone sitting at the table with a common goal to improve the integration of music research into clinical medicine will be the necessary future direction to advance the field of Music and Medicine.

The first edition features a piece by Daniel Levitin, *Music, Health and Well-Being*, in which he reviews the connection between music and medicine, including music therapy for both physical and psychological health, music for the management of pain, and musical interventions for dementia patients. Next, Charles Spence and Steve Keller discuss the role of the auditory environment in improving patient satisfaction and managing costs in the healthcare setting in his article *On the Costs & Benefits of Music, Soundscapes, & Noise in Healthcare Settings*. Barbara Salas looks into the role of music and the spiritual experience in terminal illness in her article *Crossing the River Styx: the Power of Music, Spirituality and Religion at the End of Life*. Alexander Chern and Iliza Butera discuss multidisciplinary perspectives on music perception and cognition for cochlear implant users, as well as methods to improve the cochlear implant experience in *Multidisciplinary Perspectives on Music Perception and Cognition for Cochlear Implant Users*. Fred Schwartz and Sophia Shirley describe years of experience as an anesthesiologist using music in medical practice, as well as relationships with various professionals in music medicine and music therapy in their article *Music Medicine and Music Therapy and an Anesthesiologist's Journey Along the Way*. Elif Ozcan, Lois Frankel and Jesse Stewart discuss some uncommon settings and roles for music and demonstrate how music can aid in the design and implementation of socially responsible healthcare products in their article *Uncommon Music Making: The Functional Roles of Music in Design for Healthcare*. Lastly, Jessica Klein and Kendall Burdick provide a literary metanalysis that defines interoperability and how it applies to music in medicine in their piece *Music Playing a Role in Medical Interoperability*.

Through the writing herein, it is my pleasure to introduce some of the most passionate researchers I know. We've enjoyed reading their writing, and sincerely hope you do as well. Thanks to our co-Editors of this, the first of two Special Issues: Christy J. Crockett, MD, Michael Schutz, PhD, Judy R. Edworthy, PhD, Kendall J. Burdick, BS, Jessica P. Klein and Barbara Salas, MD.

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Biographical Statements

Joseph J. Schlesinger, M.D. 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.

Priscilla Hirst is a resident physician in Internal Medicine at the Montefiore New Rochelle Hospital in New York. After completing a Bachelor of Science in Neuroscience at McGill University in Montreal, she earned a Master of Science in Experimental Medicine at the Lady David Institute for Medical Research at the Jewish General Hospital in Montreal. She completed her Doctor of Medicine degree at McGill University. Her research interests include cross modal plasticity of the brain, molecular mechanisms of drug resistance, patient monitoring and critical care medicine.

