

Unique Audible Alarm Provides the Right Response

Challenge. Phoenix Children's Hospital constructed a new neo-natal intensive care facility (NICU) in the Banner Good Samaritan Hospital High-Risk Labor and Delivery unit. The facility included 60 infant care rooms and six nurse's stations, which are access-restricted, and a family-support area open to the general public. Life support equipment utilized in all patient rooms emits a muted alarm signal of the same frequency as standard fire alarm alerts. Typical horn/strobe notification devices are too harsh for the at-risk infants. The flash rate and intensity of strobes could cause retinal burns and alarms alerts could cause a Vaso-Vagal response leading to seizure. All infants in the NICU are there because of their critical needs and the unit's ability to care for them. As is standard in hospital settings, a "defend in place" strategy needed to be developed for the special circumstances of the unit.

Solution. Rolf Jensen & Associates (RJA), code consulting experts, had to dig deep into the local International Building Code and International Fire Code along with NFPA 72 to research a possible solution. In addressing how to notify unit staff of an emergency situation, consideration was given to the distinction of the sound compared to other signal-producing devices in the area, its dedication to a single purpose, the volume level necessary in a private-setting mode and its duration. RJA proposed the use of classical music as the "distinctive sound" as allowed by code for the alarm signal followed by a pre-recorded voice message given in a soothing female voice. The music selected was from Aaron Copeland's American Opera, "The Tender Land." The full orchestrations provided multiple frequencies of sound, which could be heard by most NICU occupants. Visitors were instructed to "stand by the speakers to hear further instructions" and allow the staff to respond, as trained, to the emergency. While it was believed that this application was code compliant, an appeal was still filed with the Fire Marshal for the City of Phoenix. It was also requested that strobe lights be eliminated in patient care areas only.

Result. The City of Phoenix Fire Marshal allowed the appeal and accepted the design with several stipulations: all equipment must comply with NFPA 72 and be U.L. listed, the sound level of the music must be at least 45 dB and 10 dB above average ambient sound levels, visual alarms must be installed in all public and common use areas, and a written report must be submitted indicating the staff received specialized training for the fire alarm evacuation management system. Senior members from the Fire Marshal Office witnessed the acceptance testing and were truly "wowed" at the effectiveness the music provided. It shows a true dedication of experts and staff to take a pastoral piece, "the promise of living," and orchestrate it into a life safety response.

The NICU at Phoenix Children's Hospital is one of the largest in the nation providing a state-of-the-art facility, exceptional care and now carefully planned life safety management to approximately 1,300 at-risk babies who are admitted there annually.



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