

PROVIDING NURSES WITH A HIGHER AWARENESS OF THE HEALTH STATE OF PATIENTS IN THE ICU, THE ZEN-SE VEST ENABLES A DIRECT PERCEPTION OF INFORMATION FROM MEDICAL EQUIPMENT THROUGH VIBRATIONAL PATTERNS APPLIED ON THE LOWER BACK. FOR A SIGNIFICANTLY IMPROVED SOUND ENVIRONMENT WITHOUT COMPROMISING MEDICAL ABILITIES.

The auditory organs that allow us to experience the world through sound start to develop when we are fetuses, at the very early age of 3 weeks. It's also said that hearing is the last sense to leave us when we die. This means that through out our entire lives we are constantly listening, consciously or unconsciously, without the possibility to ever turn it off. Most of the time sound makes us dance in euphoria or triggers precious memories. But other times, sound or noise can be stressful, annoying or physically harmful. The capacity and vulnerability of our aural perception is often overlooked due to the visual nature of our society.

The purpose of an intensive care unit is to care for patients with severe failure of any life supporting organs such as breathing, circulation or consciousness and give them the best possible chance of survival after a severe surgery, illness or injury. Because of this, the ICU is one of the most well equipped units with high tech medical apparatuses that allows for the staff to monitor and treat the state of health of the patients 24/7. All equipment use sound as a way to alert and create attention when a vital is abnormal, when something is not working correctly or when medication is running out. Since the patients often can't talk themselves about how they feel or what they need, the machines becomes the link between the nurse and the patient.

The thesis shows that the main issues of the sound environment that's created by these alarm signals are the constant exposure of noise and the patients' lack of control or understanding for what the sounds

communicate or to whom. It contributes to sleep disruption, impaired wound healing and a greater risk of being re-hospitalized. What's needed is to provide the nurses with detailed information without causing stress among the patients. The aim has been to notify nurses that something needs attention when he or she is not present in the patient room or for any other reason don't have visual overview of the patient.

Zen-se is a near body vest, worn by ICU nurses, with the purpose of replacing the sound based alarm signals by adding another sensory input. It provides a higher awareness of the health state of the patients, allows for earlier intervention and enables the nurse to alert other members of the staff immediately. Information from the medical equipment is en-coded into series of vibrational patterns applied on the lower back of the user, utilizing the tactile sense to enable a direct perception of the information. This not only contributes to the nurses being notified and better prepared of potential life threatening situations of the patients faster and more detailed, but also contributes to a significantly improved sound environment without compromising medical abilities.

