Critical audible alarm-sound design for handheld monitoring devices in Neonatal ICU's

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Introduction

The focus of this project is on the sound design of audible alarms in the critical alarm realm for neonatal ICUs at the Erasmus MC- Sophia Children's Hospital in Rotterdam, Netherlands. The current critical alarm system used in the Neonatal Intensive Care Unit (NICU) at Erasmus Medical Center Rotterdam varies and includes ASCOM MYCO3, IQMessenger, Dragger alarms, etc., handled by the MICIS (medical Integrated Communications and Information System) department which integrates all the information streams from various devices into a single platform. Currently, the system is being integrated with an addition of special handheld mobile devices (HMD) which will be used to deliver and send various patient information within the faculty.

Context

The current Neonatal ICU facilities at the Sofia Children's Hospital consist of 4 units with 10 beds each. Each unit has about 6 nurses, a head nurse and a Neonatologist. This unit system of having multiple beds will be shifted to the more modern individual beds for privacy at an expanded capacity and thus will also see a large change in the existing critical alarm infrastructure. Similarly, the existing alarm system will also introduce a mobile device (spectral) which will indicate patient information and related alarms based on the vitals. Nurses will be using this hang-held mobile device more often to check the status of their assigned patients.



Design Goal

The new critical audible alarms on the device must be able to distinguish the individual alarms, identify them for each patient per nurse, and respond to them by reaching the ideal destination of the patient room in a NICU. These responses should be achieved without the assistance of a visual cue.

Design Method



The Audible Alarm approach

Fig 2: Analogy for sound design





