Measuring and influencing noise on an intensive care unit using a visual warning system.

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Introduction: Intensive insulin therapy (IIT) for critically ill patients is now considered necessary. For it to be feasible this therapy should be enacted by the ICU nursing staff. This nurse driven therapy is a new way of working for nurses in most hospitals. The challenge is then: how to introduce this nurse driven protocol on a 30 bed ICU of a tertiary teaching hospital. What proof can be presented about the effectiveness of the introduction: the accuracy of it’s use and acceptability to the nursing staff?

Results: The mean sound level before the introduction of the traffic light was 54.6 dB, after the introduction it was reduced to 53.9 dB (t-test, p <0.001). The Topf’s Disturbance of Hospital noise scale had an internal consistency (Cronbach’s alpha) of 0.883. All 120 intensive care nurses were approached to complete the questionnaire, 83% of the questionnaires were returned. The 4 most disturbing noises beside alarm signals were all noises which are dependent upon the behaviour of the persons present: loud conversations in the corridors at night, mobile phone usage, conversations among nurses in the rooms and slamming of doors. The 5 least disturbing noises were all noises which are not dependent upon the behaviour of persons present: traffic noise, flushing of toilets, washing of hands, sounds created by cutlery or serving trays, airconditioning or heating.

Method: In a prospective study, sound levels were measured for 3 weeks in a 4 person intensive care room of a class 3 intensive care. Subsequently a visual noise warning system was fixed to the wall on a highly visible place. Thereafter the sound levels were again measured for 4 weeks. The measurements were done using a BG-5 class 2 sound level meter. The visual noise warning system looked like a traffic light and displayed an amber light at 45 to 55 dB and a red light above 55 dB. The perception of the nurses of unnecessary noise factors was investigated using the Topf’s Disturbance of Hospital noise scale. (Topf, 2000) It exists of a list of 29 items each describing a particular sound. The respondent has to indicate to what degree a particular sound disturbed him or her during work.

Aim: What noise reduction could be reached when the persons present in the hospital room were notified of the (too high) sound level. Additionally what did the nurses consider unnecessary noise.

Conclusion: In this study, the influence of a visual noise warning system was limited. Noise which was generated unnecessarily disturbed the nurses most. Therefore a visual noise warning system seems to contribute to noise reduction but additional interventions are necessary to effectuate a change in behaviour towards noise. The nurses are well aware of which behaviours need to change.