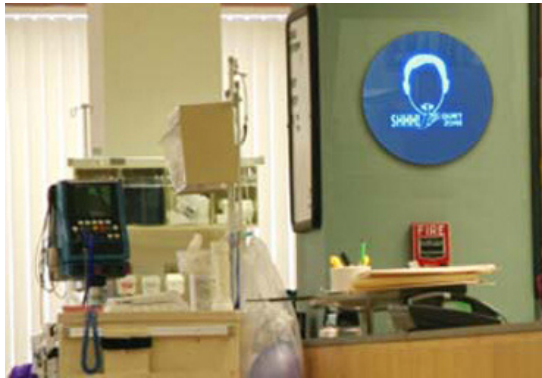


# Hospital Noise

## Solutions for controlling hospital noise

### Noise can be a serious problem in hospitals



*The World Health Organisation guidelines suggest hospital noise levels should average 35dB(A) during the day and 30dB(A) at night. However noise typically exceeds this; 60dB(A) has been recorded during the day with peaks above 100dB(A) and although wards are quieter at night, peaks of 85dB(A) can be recorded.*

Hospital noise can cause problems for both hospital patients trying to get better and for the people who work there. Lack of quality rest and sleep due to hospital noise levels is a rising problem for many patients around the world and there is growing evidence that shorter and poorer quality sleep in hospitals is linked with slower patient recovery and longer hospital stays.

Significant reductions in noise levels are a challenge as hospitals are noisy places with a high level of background noise from staff activities, machinery and medical equipment, alarms, noisy doors, incubators opening and closing and hospital trolleys for example. Add to that all the reflective surfaces and how close beds or incubators can be and you have an acoustically unpleasant environment where noise bounces around and gets amplified.

## The Pulsar SafeEar solution

Pulsar Instruments offers a range of noise measurement and noise warning signs for use in hospitals and neo-natal units. Our **noise-activated warning sign the Pulsar SafeEar** lights up to warn staff and visitors when a pre-set noise level has been reached or exceeded and noise levels need to be reduced.

### FEATURES

- Easy to install
- Highly visible white led noise warning lights
- User adjustable noise trigger level (40dB(A) - 114dB(A) and brightness
- Daisy-chain with Remote Units to cover larger areas.

### APPLICATIONS

- Wall-mount them in hospital wards, corridors, public places or around the nurses' station to give a clear message that noise should be kept to a minimum.
- Use them with a data logger for monitoring noise levels overnight or over a longer period to identify trends or problem times.



*"Pulsar SafeEar - keeping noise levels down 24/7"*

## Case study - West Wales Hospital ICU

**Glangwili General Hospital in Carmarthan, West Wales set up a study to look at whether a quieter hospital environment led to improved sleep and caused less patient stress, and if as a result of this aided overall patient recovery improved.**

**Purpose:** To look at the impact and role of using noise-activated warning signs in critical care in reducing noise levels and delirium in critically ill patients in Intensive Care Units (ITU).

**Background:** Patient delirium leads to prolonged hospital admissions, cognitive deficiency following discharge, increased mortality and morbidity rates rate for critically ill patients[1]. Sleep deprivation is a contributing factor for the onset of delirium. Peak noise levels in hospitals have been observed as above 100dB(A) during the daytime and 85dB(A) at night. This exceeds the WHO recommendations of 35dB(A) and 30dB(A). [2]

**Method:** A single-centre quality improvement project (QIP) was undertaken at Glangwili. A Model for Improvement Framework was used, aiming to reduce noise by 10% between 10pm and 6am for ventilated patients. The improvement introduced decibel monitors to educate staff of the problem.

A Pulsar SafeEar Noise Warning Sign was placed within each individual bed space, initially not activated to light up for a period of 2 weeks so staff were used to seeing them. Baseline noise was monitored with 5 interchangeable data loggers for a five-week period. This baseline data allowed for the quantitative data to be analysed pre- and post-implementation of the warning signs to see if a reduction in noise levels had occurred. Quantitative data was also collected in the form of an audit of episodes of delirium.

**Result:** Following the activation of the warning signs, quiet time noise reduced by 3 dB(A) (**a halving in actual noise levels**), equating to 18.77% reduction in perceived noise, and night time noise reduced by 4 dB(A). This reduction in noise levels also reduced the incidence of delirium by 8.1% from the previous year. These results highlight the importance of these visual prompts to try and remind staff and visitors to reduce noise levels.

[1] Lamond et al (2018); Salluh et al (2015).

## Pulsar SafeEar Specifications & Options

### SPECIFICATION:

- Application Noise-activated warning sign
- Trigger level 40dB(A) to 114 dB(A)
- Class 2 Microphone
- Frequency weighting 'A', Time weighting Slow
- Meets IEC 61672-1:2002
- User selectable brightness level
- Display delay time 0 to 30 seconds.
- Dimensions 30cm diameter, 5cm depth
- Weight 0.6kg
- Mounting 2 x keyhole mounting slots
- External power 2.1mm Power Jack, 12v DC via mains power supply
- Output control for Remote Units via standard 2.1 mm power connector

### Options:

- Optional Remote Units, and warning beacons
- Optional USB data logger with 32,000 samples of LAS (choose: 1 second (9 hours), 10 seconds (3.7 days), 1 minute (22 days) of sampling).
- **NEW** Optional IP65 rated splashproof unit available for use in areas with high cleaning.

The Pulsar SafeEar is available as a Master Unit and as a Remote Unit. A cable connects up to 3 Remote units to a Master so that an area of up to 30 meters can be covered.

