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RESEARCH INSIGHT

Using patient narratives to design an intervention to reduce noise in the intensive care unit

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SUMMARY

- Patient narratives can be used effectively to guide improvement in the National Health Service the health service.
- The accelerated experience-based co-design (AEBCD) mixed methods approach is feasible and effective.
- The Healthtalk.org archive includes a wide variety of health topics that can be used to create resources for quality improvement projects.
- Including patients and staff in the design team kept the focus meaningful and ensured that the intervention was both acceptable and deliverable.
- Clear opportunities for individual professional development may be effective incentives to encourage local staff to engage fully with the AEBCD process.

Key Words
Patient narratives; co-design; mixed methods; patient involvement; adult education

INTRODUCTION

Including patients and the public in research design is widely referred to as PPI (patient and public involvement). There has been growing acceptance that listening to patients is central to formulating health policy and research projects are encouraged to embrace significant "PPI", although there is little consensus for exactly how this should be achieved. PPI therefore can take many forms, have varying levels of involvement, and generate mixed opinions of success.

PPI is often misunderstood to mean that patients value the broad topic of a research project. This is an unnecessarily narrow definition of a valuable resource. Patient involvement at the design stage ensures interventions are both meaningful and acceptable to those who will experience them. Patients also bring fresh insights and a perspective on healthcare that clinicians seldom share.[1]

For the National Institute for Health Research (NIHR) Research for Patient Benefit funded SILENCE project (PB-PG-0613-31034) we used the NIHR patient and public involvement advisory group INVOLVE's broad and inclusive definition: "research being carried out with or by members of the public, rather than to, about or for them".[2]

SILENCE is a feasibility study designed to identify appropriate patient-oriented outcome measures and a proof of concept intervention for a future study to reduce noise levels in the intensive care unit (ICU). We took a mixed methods approach. This included secondary analysis of patient narratives, ethnographic observations of the ICU, focus group discussions to explore staff perceptions, and continuous sound pressure level (SPL) monitoring. We ran the project as a local quality improvement initiative.

SUMMARY

Following principles of accelerated experience-based co-design (AEBCD),[3] we re-analysed interviews with former ICU patients from an archive of patient interviews and identified significant "touchpoints" (specific areas with potential for quality improvement) from their experiences of noise, which were created into a trigger film. We presented this film to the co-design group that included staff from the ICU, patients and family members, and researchers. Trigger films are an effective mechanism through which discussion of often difficult topics can be approached. The interviews were originally recorded for a national study of patient and relatives' experiences of intensive care. This original study

received ethical approval from the Eastern MREC (ref: 03/5/016). Results were published in 2006 and a representative sample is available on the Healthtalk.org website. Healthtalk.org interviews are copyrighted and archived at the University of Oxford. For this project, access was granted by the archive custodians, the Health Experiences Research Group.

In undertaking local improvement initiatives, it might be expected that views from local patients would resonate more highly with staff. However, recent work confirmed that national patient narratives resonated as powerfully as when local patients were interviewed.[3] Using the archive allowed us to create resources more quickly than recruiting new people to share their experiences. This approach has clear economic benefits for public-funded research.

We supplemented the patient narratives with new insights collected in parallel with the secondary analysis. Discussion with local staff and ethnographic observations from the ICU confirmed the key sources of noise and disturbance identified in the narratives were still current. SPL values allowed us to quantify the problem of noise in the ICU. Although World Health Organisation guidelines recommend a 24hr average of 35dBA for patient areas, levels were found to be much higher, similar to those found in a busy restaurant with peaks >85dBA occurring up to 16 times per hour overnight.[4]

Although the patient interviews were recorded across the UK, the co-design group recognised that problems of noise and disturbance had wide resonance and also affected their local unit. The experiences were therefore demonstrably generalisable. Noone in the trigger film was known to the co-design group. This ensured neutrality to the touchpoints raised for discussion. The group were therefore free to discuss topics without bias.

The group proposed a multi-factorial intervention to raise awareness of the effect that high noise levels in the ICU could have on patients. This included simple environmental changes (eg, plastic-lidded soft-close bins, alarm management guidelines, and better night/day differentiation), new teaching materials (including a live-action session during which staff experience the ICU from the patient perspective, and an e-learning module on environmental noise), and a visual display of live sound levels in the ICU. To ensure maximum impact, subsequent development and deployment of the intervention referenced the patient narratives and collaborative co-design nature of the project.

We included patient narratives from the trigger film in the e-learning module. We also drew from these experiences when scripting the immersive educational activities. This gives credibility to the teaching materials, as staff are able to reflect on their own clinical practices in relation to real patients' experiences. Reflection is a key feature of effective adult education and good quality reflection is more likely to lead to sustainable change.[5]

Interim SPL analysis indicated a reduction of approximately 4dB after four months. Ongoing continuous monitoring will enable long-term evaluation of the full intervention as the final phase (visual display of noise) is deployed.

LESSONS LEARNED

Whilst we followed the principles of AEBCD closely, we modified the methods for practical reasons. We chose to present the trigger film in several short segments (eg, Alarms, People, Lighting, etc.), rather than watch the full 15-minute feature without a break. We felt this enabled more focused discussion on each touchpoint.

Supplementary information presented outside of the trigger film complemented the touchpoints in the film. This combination of specific local information and wider broad-spectrum of patient experiences created a balanced overview of the problem of elevated noise levels in the ICU.

We struggled to fully involve anyone outside the main team when deploying the intervention. Although we had strong support from senior clinical staff, the nursing faculty found it difficult to dedicate resources to the project. This issue

of apparent limited support raises challenges to how much engagement there is across the system for this kind of innovation work. Development opportunities for identified individuals with associated protected non-clinical time may have improved practicability, but is difficult to sustain in a resource-limited NHS. We thought we had addressed many barriers to innovation,[6] but ultimately there was insufficient support and enthusiasm to overcome the perceived additional burden.

CLINICIAN INSIGHT

Noise levels in the intensive care units are known to be high, with studies consistently showing levels above World Health Organisation (WHO) guidelines average noise of 35 dBA during the day and 30 dBA at night.[1–2] Staff activities and alarms are primary sources of disturbances in intensive care units,[3] but noises from other patients and infrastructure also contribute. Staff and patients may be in a chronic state of alertness when alarms are constantly sounding. Alarms share characteristics with the human scream and tend to activate areas of the brain that recognise danger. Volunteers exposed to simulated intensive care environments show disturbed sleep and biochemical markers of stress,[4] and patients attribute difficulties with sleep to disturbances around them. A recent meta-analysis confirms the link between patient exposure to high noise and delirium.[5] Between 30 per cent and 75 per cent of patients experience at least one delirious episode while in intensive care. These patients tend to have longer hospital stays and long-term health problems after they have been discharged home.[6] Lowering environmental noise levels may help patients sleep and results in fewer episodes of delirium.

In my experience, changing culture has been one of the hardest barriers to overcome. Staff education without definitive process change is unlikely to produce a sustained improvement in the noise level. AEBCD is useful in highlighting the problem, although instituting change requires strong leadership with both top-down and bottom-up approaches, and with effort concentrated on high-impact interventions, when change is inevitable.

A potential high-impact area, fixing a problem at its root, is a change of monitoring standards accounting for physiological effects of noise. Local process changes may include having a designated “no talking” area around the patient bed at an allocated time to promote sleep with visual display of live sound levels for the purpose of providing immediate visual feedback, promoting compliance and source of audit; and allocating designated new admission bed areas for overnight admission. The reality of clinical care in the critical care environment with its inherent unpredictability is that these changes are difficult, though not impossible, to implement.

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PEER REVIEW

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

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ETHICS COMMITTEE APPROVAL

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