Experiential teaching for the Intensive Care Unit

Using the AEBCD approach in practice

Julie Darbyshire
University of Oxford

What has already been tried?

NIHR Research for Patient Benefit

- ▶ Two and a half year feasibility study
- ▶ Reliable measure of delirium
- ▶ Reliable measure of sleep
- ▶ Proof of concept intervention to reduce noise levels

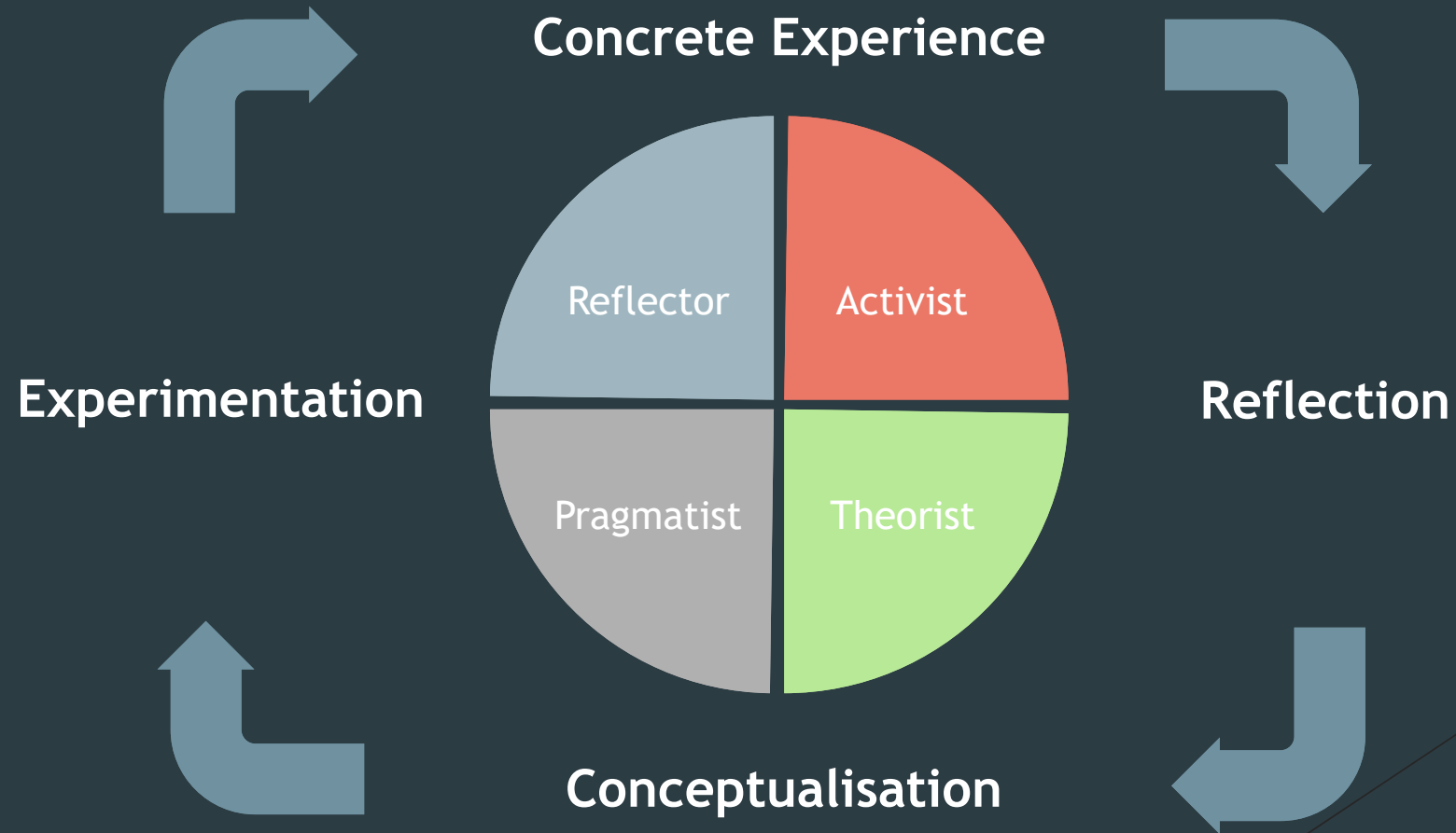# Accelerated Experience-Based Co-Design[1] to reduce noise levels in the ICU

- Local patient forum members

- Staff from ICU

- Members of the research team

- Created 'trigger film' from patient interviews & staff focus group

- Additional information
  - sleep investigations
  - sound level measures
  - observations

1: Locock et al, 2014, J. Health Serv Res & Pol, 19, 200-207

The patient experience

Lighting

People

Alarms

Feeling overwhelmed

Equipment

healthtalk.org

Learning theories

Concrete Experience

Reflector | Activist

Experimentation

Pragmatist | Theorist
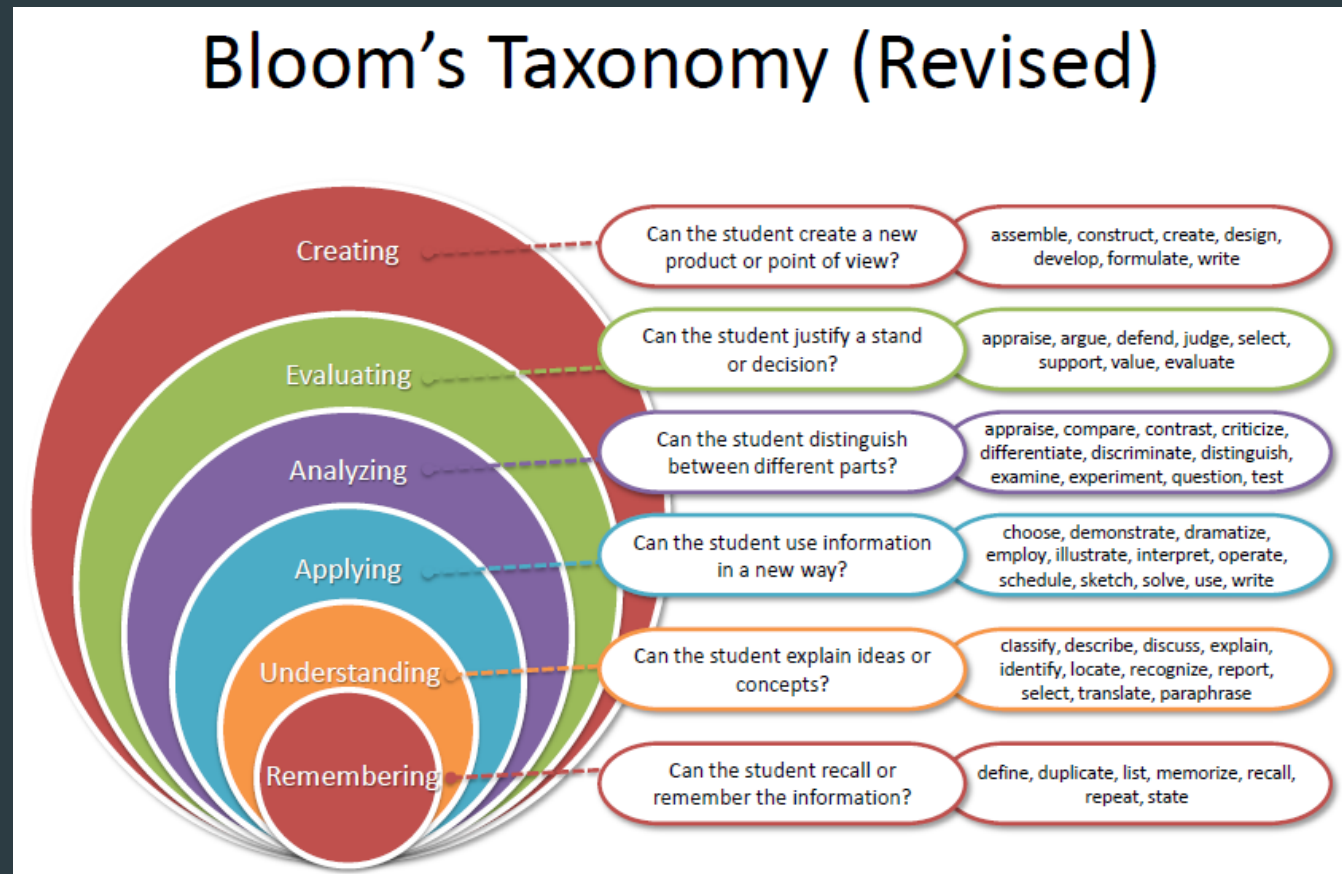
Reflection

Conceptualisation

1: Kolb et al in Theories of Group Process, Wiley, 1975
2: Honey & Mumford et al, Using your learning styles, Honey, 1986

Content areas

▶ Noise levels in the ICU

▶ Patient sleep in the ICU

▶ Effects of poor sleep in the ICU

▶ Sources of noise in the ICU

▶ The patient experience of intensive care

Development of resources

Bloom's Taxonomy (Revised)

Level	Question	Verbs
Creating	Can the student create a new product or point of view?	assemble, construct, create, design, develop, formulate, write
Evaluating	Can the student justify a stand or decision?	appraise, argue, defend, judge, select, support, value, evaluate
Analyzing	Can the student distinguish between different parts?	appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test
Applying	Can the student use information in a new way?	choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write
Understanding	Can the student explain ideas or concepts?	classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase
Remembering	Can the student recall or remember the information?	define, duplicate, list, memorize, recall, repeat, state

1: Krathwohl, A Revision of Bloom's Taxonomy, Theory into Practice; 2002 41(4); 212-18

Experiential learning

- 3 minute experience
  - Simulated sound
  - Simulated poor vision
  - Live activities
    - Blood pressure
    - Drawers/doors
    - Apron rollers
    - Bins
    - Trolleys

E-learning module : examples

- Information
- Self-assessment questions
- Answers provide feedback

Sleep in ICU- fragmented and light

Table 1 normal sleep staging and length for a 60 year old. Data collected from (Altevogt and Colten 2006, Geyer, Talathi et al. 2009, Elliott, McKinley et al. 2011)

			Description	Percentage of sleep time in healthy 60 year old	Changes in ICU patients
↓	Non REM	Stage 1	Very light sleep, easy to disrupt with noise	5%	In ICU these stages predominate more than usual. The patient's sleep is fragmented and they are frequently awoken.
		Stage 2	Slightly deeper sleep, more difficult to disrupt patient. Thought to be important in memory consolidation.	55%	
		Stage 3	The deepest stages of sleep. Most difficult to wake people.	20%	Decreased or absent
		Stage 4			
	REM	Rapid eye movement sleep	Loss of muscle tone and reflexes occur. This stage gets longer as night goes on. Most associated with dreaming (the paralysis is important so dreams are not enacted). Also thought to be important for memory consolidation.	20%	Decreased or absent

7. Compared to a healthy 60 year old man, a patient in the intensive care unit will experience: (select all that are true)

☐ Sleep predominated by Non-REM stages 1 and 2

☐ Sleep predominated by Non-REM stages 3 and 4

☐ Prolonged REM sleep

☐ More fragmented sleep

☐ No change in sleep pattern

Compared to a healthy 60 year old man, a patient in the intensive care unit will experience:

- **TRUE** Intensive care patients' sleep cycles rarely progress beyond stage 2.

- **FALSE** Intensive care patients' sleep cycles do not include much time in Non-REM stages 3 and 4.

- **FALSE** Intensive care patients' sleep cycles have very short REM stages.

- **TRUE** Patients in the intensive care unit will experience highly fragmented sleep with frequent awakenings throughout the night.

- **FALSE** The sleep pattern of a patient in the intensive care unit will be very different from that of a healthy 60 year old man.

Training package

- **Variety of teaching methods[1]**
  - Graphs
  - Video
  - Transcripts
  - Journal paper
  - Experiential session

VARK Learning Styles with Appropriate Media

VISUAL	AUDITORY	READ/WRITE	KINESTHETIC
diagrams	lecture	articles	video
mind maps	discussion	slides	role play
algorithms	audio recordings	handouts	simulations

1: Fleming, VARK: a guide to learning styles, www.vark-learn.com

Assessment

- Assessment tool post training
  - Conducted online
  - MCQ format
  - Designed to test knowledge & attitude

- Course evaluation

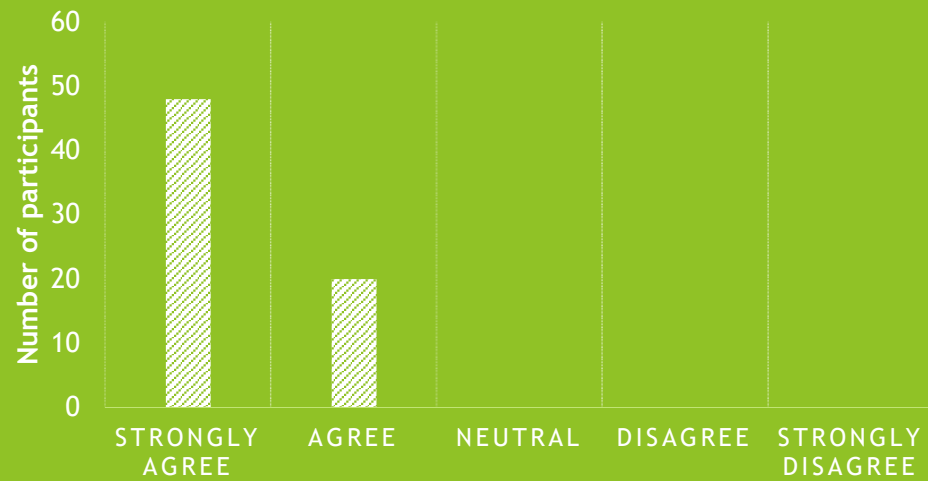- Certificates of completion issued for participant portfolios

Results

- Trained 68 members of staff
  - 57 nurses
  - 6 physiotherapists
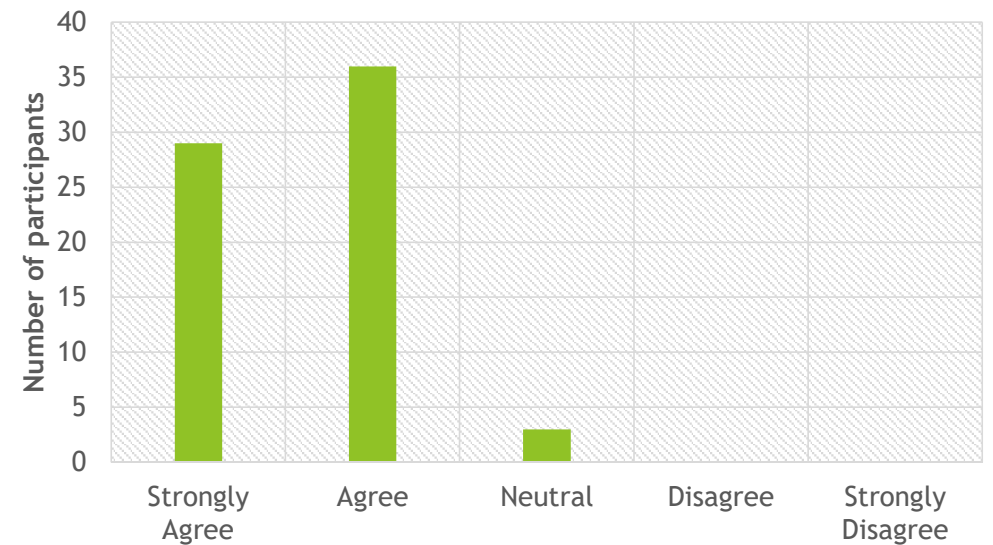 - 5 doctors

Immersive experience: words that resonate

▶ Uncomfortable (n=33)

▶ Watched (n=32)

▶ Alone (n=31)

▶ Frightening (n=30)

▶ Confused (n=28)

▶ Worrying (n=27)

Subjective results

I found the experience useful

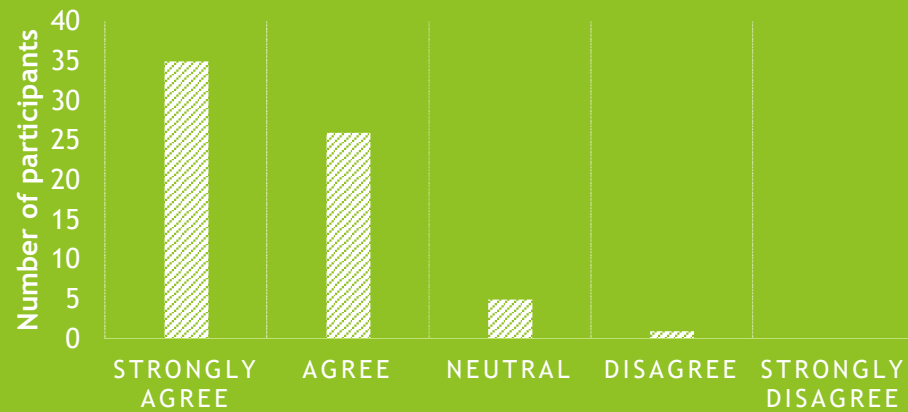(Number of participants)
- Strongly Agree: ~48
- Agree: ~20
- Neutral: 0
- Disagree: 0
- Strongly Disagree: 0

I feel I will change my practice

(Number of participants)
- Strongly Agree: ~29
- Agree: ~36
- Neutral: ~3
- Disagree: 0
- Strongly Disagree: 0

Subjective results

The experience recreated the patient experience well

Number of participants

STRONGLY AGREE | AGREE | NEUTRAL | DISAGREE | STRONGLY DISAGREE

Staff can do more to create a less stressful environment for patients

Number of participants

Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree
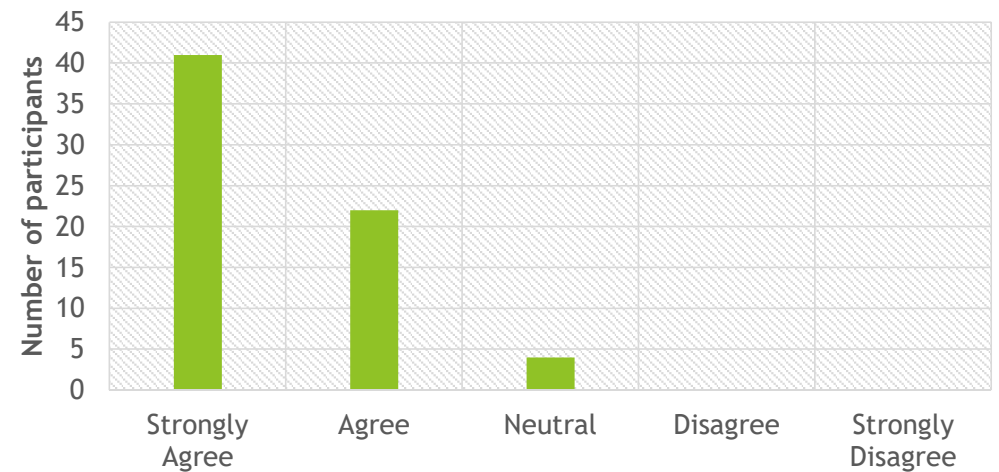
Post practice......

Self-identified practice change

Pie chart: Self-identified practice change
- Patient Reassurance 32%
- Equipment noise 8%
- Verbal volume 9%
- Generic noise reduction 7%
- Alarm volume 3%
- Visual disturbance 2%
- Sleep promotion 4%
- Promoting quieter environments 11%
- self noise level awareness 12%
- unessessary patient interaction 12%
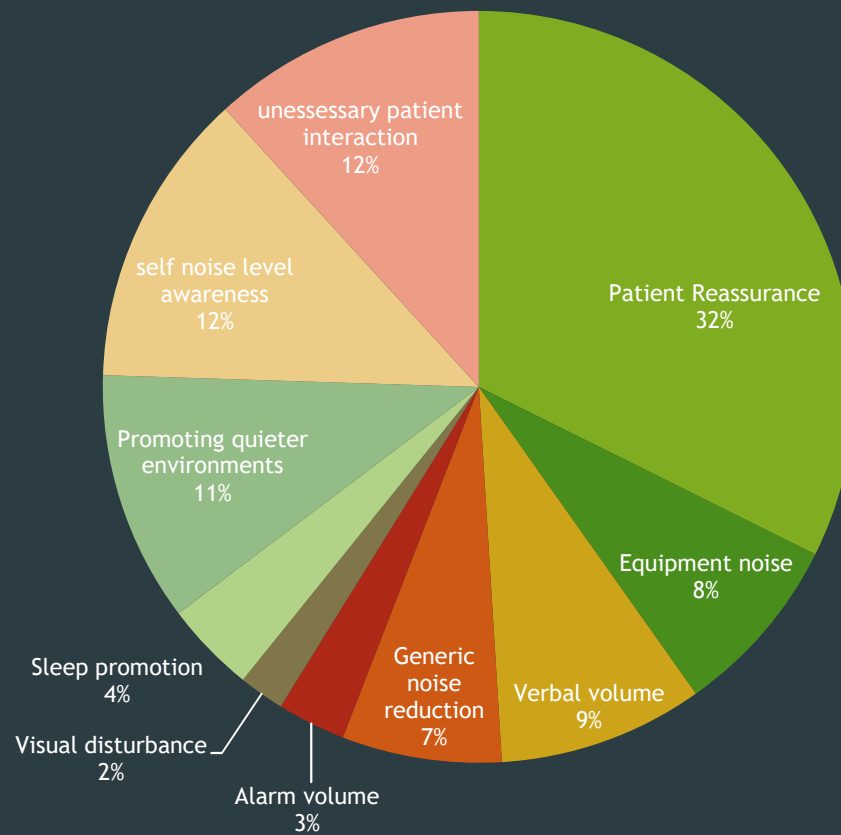
Results: Sound Pressure Levels

	Baseline	Post-intervention
No of days	86	70
LAeq median (IQR)	57.0 (3.2)	53.2 (5.1)
LAeq min	53.0	44.4
LAeq max	63.3	91.8
LC peak median (IQR)	110.3 (5.8)	78.0 (2.2)
LC peak min	104.6	68.5
LC peak max	124.8	115.3

Independent-Samples Median Test — Grand Median = 53.500

Independent-Samples Median Test — Grand Median = 78.100
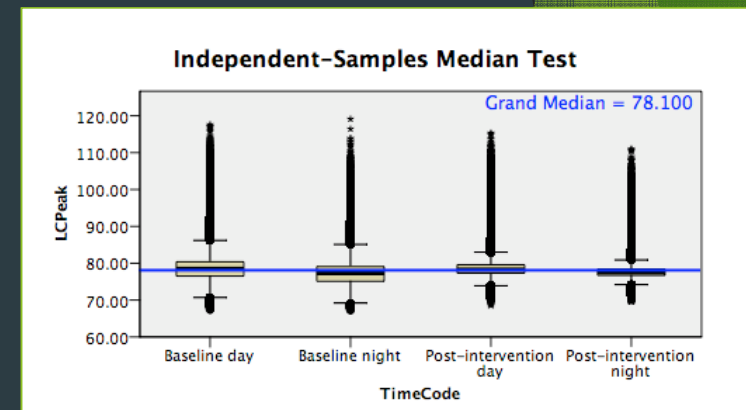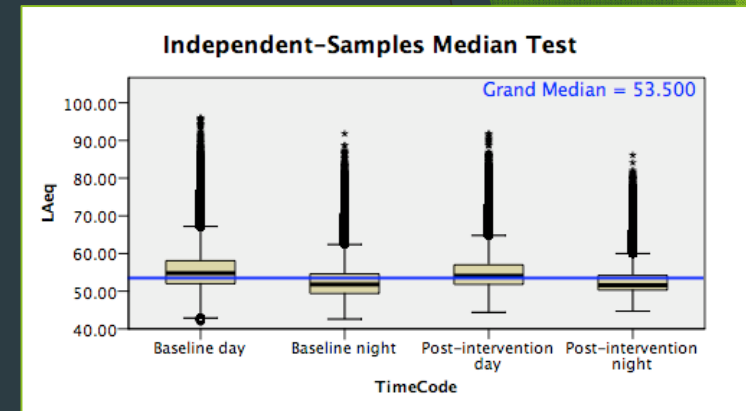
Future work

- Assessment of effectiveness of teaching underway
- User-centred updates to experiential teaching sessions
    - Longer experience
    - More patient interactions
    - 3-D sound recording
- Improved visual display of noise levels

Thank you

Laura Beck, Lyn Bennett, Mark Borthwick, DiPEx team, Peter Edmonds, Lisa Hinton, Clare Hird, Matt Holdaway, Emma Jeffs, Alistair Johnson, Nadeem Khan, Breda Lynch, Vincent Ortet, Dhan Senaratne, Sarah Vollam, Duncan Young, Charlotte Wright, all staff and patients in the Oxford ICUs