Improving local anaesthetic toxicity awareness in maternity care

Sahil Deepak[1], Gemma Bowsher[1], Amy Edwards[1], Mohamed Ali[2]

[1] GKT School of Medical Education, King's College London, London, UK
[2] Anaesthetics, East Kent Hospitals University NHS Foundation Trust, Canterbury, UK

Background

Local anaesthetic systemic toxicity (LAST):

- The most serious preventable risk of local anaesthetics (LA)
- Occurs in approximately 1/1000 peripheral blocks[1]
- Toxicity requires lipid emulsion antidote (IntraLipid©) administration
- Signs and symptoms of toxicity are generally non-specific, so all professionals require a high index of suspicion to ensure timely management
- Risks of LA must be well communicated and understood by all groups
- Poor worldwide awareness of LAST in various specialties

LAST awareness in maternity care has never assessed or addressed

Queen Elizabeth the Queen Mother Hospital (QEQM):

- District General Hospital in Margate, East Kent Hospitals University NHS Foundation Trust, UK
- Midwifery and obstetrician-led services
- Approximately 2,800 birth/year
- High risk antenatal population
- Endorses national guidelines published by the Association of Anaesthetists of Great Britain and Ireland (AAGBI) for the recognition and management of LAST[2]

Many staff were unaware of LAST guidelines and regarded toxicity to be the sole responsibility of the prescribing practitioner and beyond their professional remit

Aim

To prevent LAST occurrence at QEQM maternity care unit by improving staff awareness by 50% through the implementation of a tailored educational programme aimed at all healthcare professionals.

Methods

Participants

- Maternity care assistants (MCAs), midwives, theatre staff, junior doctors, consultants in Obstetrics and Gynaecology and Anaesthetics
- Total target population difficult to quantify due to shift working patterns and agency staff, approximately 60 participants assessed overall

Questionnaire

- A standardised 14-point questionnaire was used to evaluate LAST awareness at baseline and after each intervention Maximum score /14
- 4 domains assessed:
    1) LA maximum safe doses
    2) Signs and symptoms of LAST
    3) Immediate management of LAST
    4) Knowledge of the lipid emulsion antidote

Educational (Plan Do Study Act) tools

- ❑ Online video presentation (PDSA1)
- ❑ Posters displays (PDSA2) *(figure.1)*
- ❑ Lanyard cards (PDSA3) *(figure 2)*

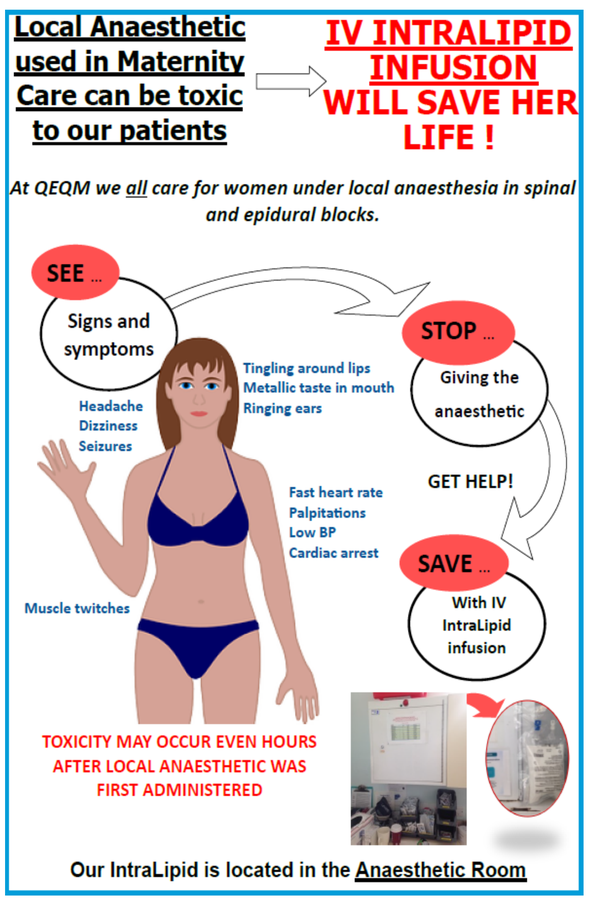
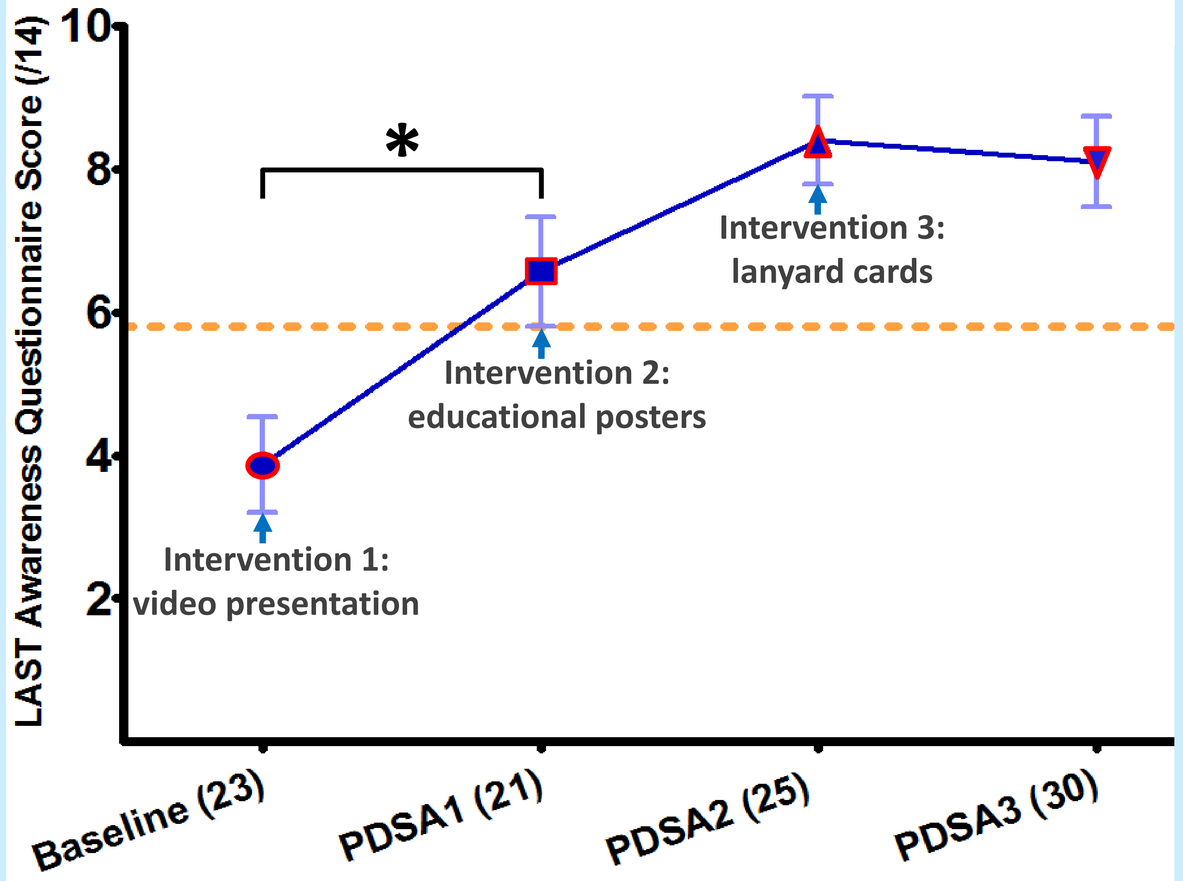


Figure 1. (left) PDSA2, educational posters, displayed in key clinical areas in the maternity unit.

Figure 2. (below) PDSA3, lanyard cards, distributed to all staff to carry on their person.

Results (i)

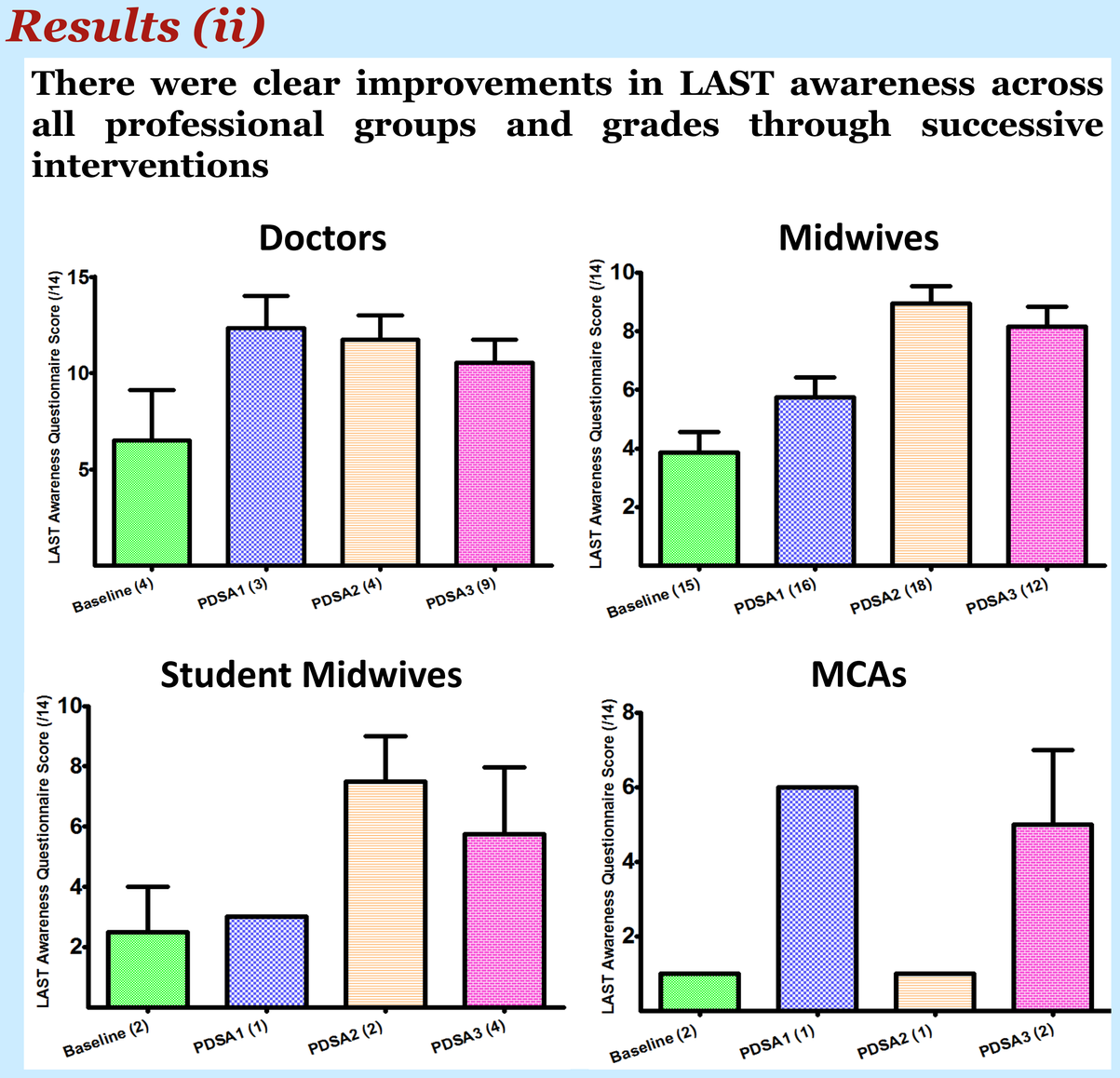
Target improvement in staff LAST awareness was achieved and surpassed after the first intervention and maintained through subsequent cycles



Improvement in LAST staff awareness before intervention (baseline) and following three individual PDSA cycles. A significant improvement compared to baseline was achieved following distribution of the educational video (n=21, p<0.05). Statistical analysis was performed using a one-way ANOVA with a post-HOC Bonferroni test.

Results (ii)

There were clear improvements in LAST awareness across all professional groups and grades through successive interventions



Non significant improvements seen in LAST staff awareness before intervention (baseline) and following three individual PDSA cycles for each professional group sampled.

Conclusions and Future Work

- 3 simple, low-cost educational tools implemented over a short time a produced significant and sustained increase in staff LAST awareness in maternity care at QEQM.
- By involving and responding to staff across disciplines, a new culture of shared responsibility for LA use in the unit has been established
- We provide the first data of LAST awareness in maternity care and the highest powered data for a QI initiative on this topic. Future work will include nomination of a "LAST lead" in the unit and extension into other clinical areas.

References and Acknowledgements

[1]VAN DER NEST, L. Local anaesthetic agent systemic toxicity. Continuing Medical Education, [S.l.], v. 30, n. 6, p. 215-216, jun. 2012.
[2]Association of Anaesthetist of Great Britain and Ireland (AAGBI) Guidelines. Management of Severe Local Anaesthetic Toxicity (2010) https://www.aagbi.org/sites/default/files/la_toxicity_2010_0.pdf
We would like to thank our supervisor Dr Mohamed Ali and all the staff at QEQM Maternity Unit for their cooperation, support and willingness to learn. Special thanks to Head Matron, Peymaneh Hajilou