

The Use of Cool Sticks to Assess Level of Spinal Anaesthesia

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Background

Ethyl chloride aerosol spray is commonly used to test sensory level for neuraxial blockade as it has a rapidly cooling effect as it vaporises. However it is highly flammable at room temperature and pressure, takes 1 to 2 months to break down, and is acutely toxic to aquatic life, birds, plants and directly on our own health.⁽¹⁾ In addition, manufacturing and disposing of an aerosol can of ethyl chloride increases our carbon footprint. The financial cost of ethyl chloride ranges from £9 - £22 per can.

An alternative way to assess neuraxial blockade is using a Cool Stick. Cool Sticks are plastic rods with metal ends that are stored in the refrigerator (Figure 1). The cooled metal end tests dermatomal sensory levels through temperature perception. They are produced in the UK at a cost of ~ £60 each and can be reused indefinitely.

Aim

This study aims to explore the acceptability of using Cool Sticks as an alternative to ethyl chloride in order to reduce environmental impact and provide savings for the pharmacy budget.



Methods

Cool Sticks were introduced to Operating Theatres at University Hospital Ayr in September 2022 as a method of testing neuraxial blockade. After 3 months of use, a 7-question survey was sent out to anaesthetic doctors. Participation was voluntary. Pharmacy supply of ethyl chloride and costs were collected over this time frame.

Results

17/21 staff members responded to the survey. 100% of staff members who responded to the survey had used the Cool Sticks to test neuraxial blocks.

82.4% (n=14) felt that it had reduced their use of ethyl chloride, with the majority of anaesthetists stating that their perceived reduction in usage would be higher than 75%. The majority of anaesthetists (76.5% of participants) stated that their first method of testing a neuraxial block would now be the Cool Stick.

Pharmacy supply in the six month period before the introduction of cool sticks was 37 bottles of ethyl chloride. This was reduced to 19 bottles in the six months after the introduction of cool sticks. This has resulted in a 51% reduction in the use of ethyl chloride.

Figure 2: By what percentage has the introduction of Cool Sticks reduced your use of ethyl chloride?

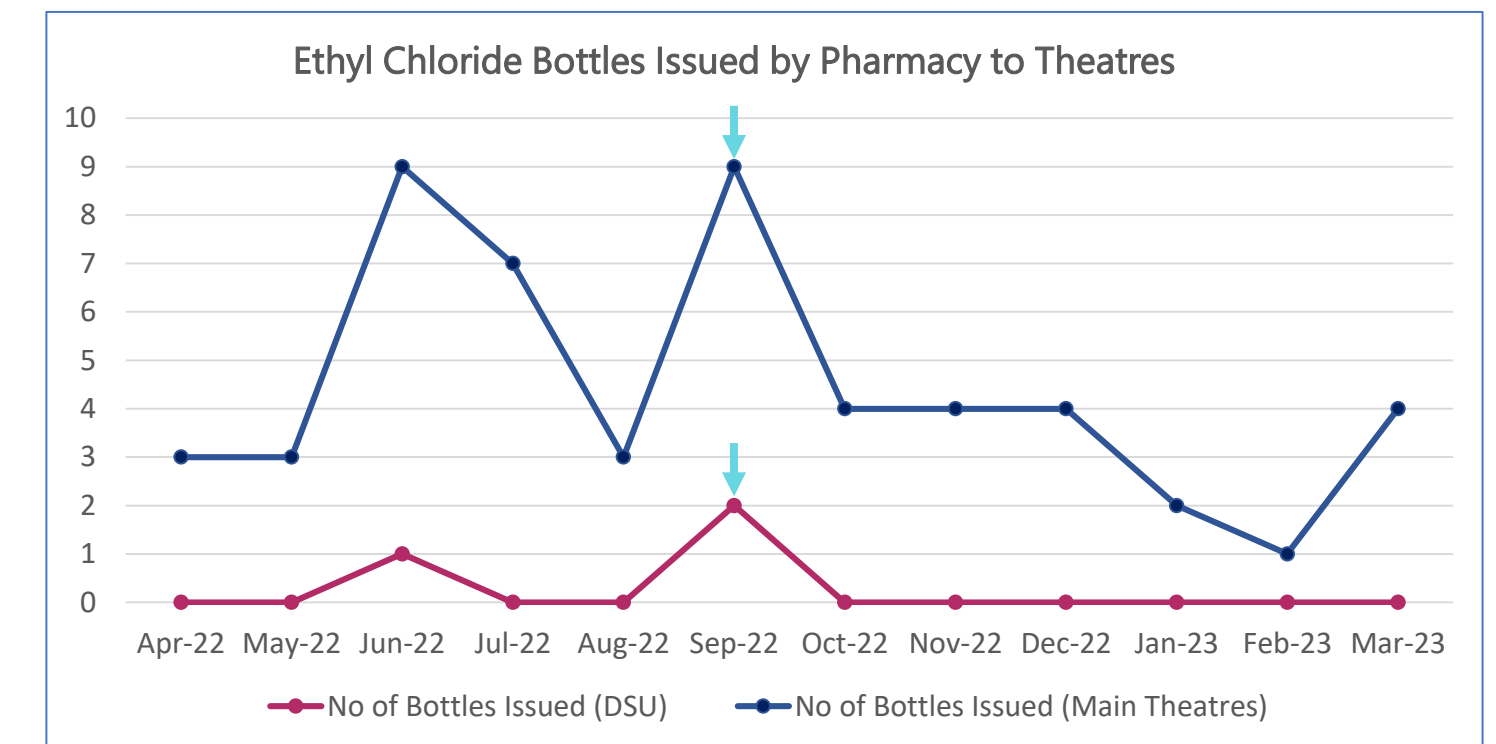
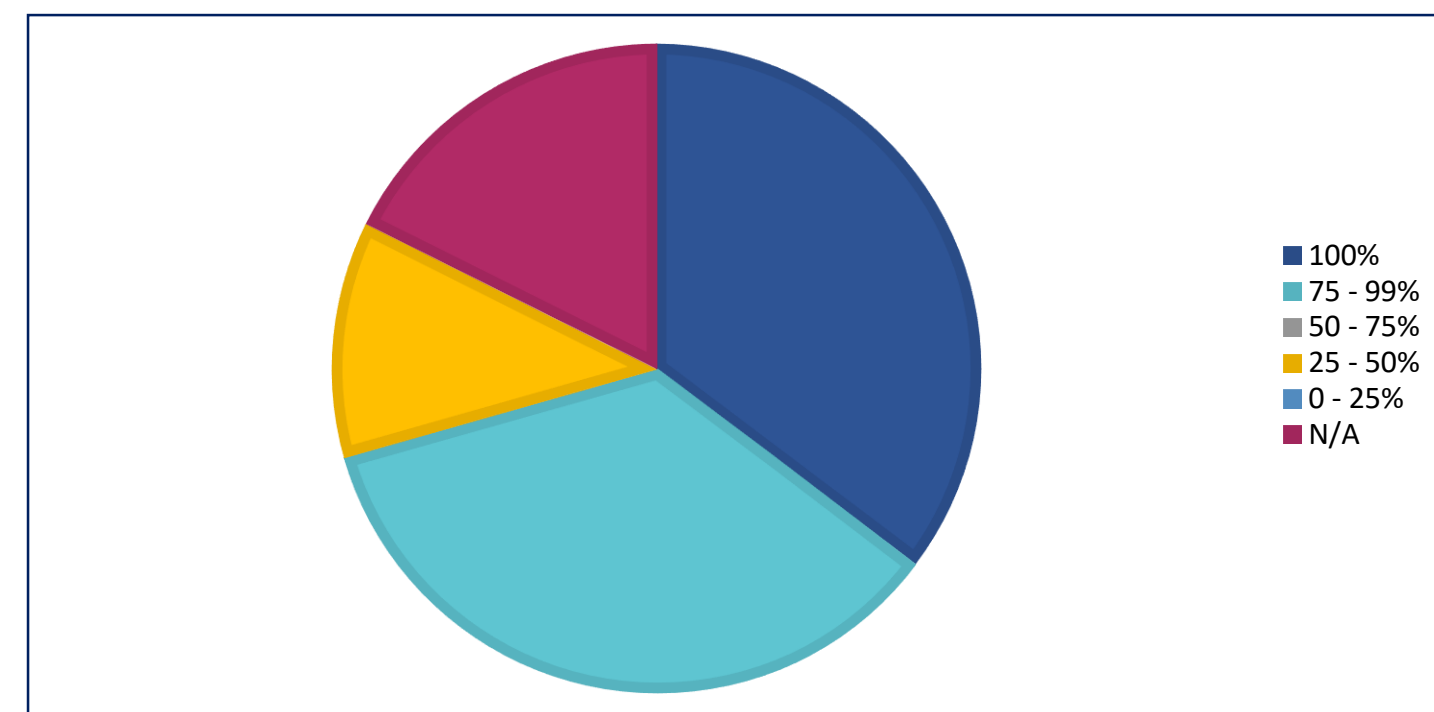


Figure 3: Ethyl chloride bottles issued by pharmacy to Day surgery unit theatres (DSU) and Main theatres in Ayr over 12 months. Cool Sticks were introduced in September 2022.

Conclusion

Our use of ethyl chloride has reduced by over 50% in the first six month period after the introduction of Cool Sticks in the theatre. Whilst this was not as high as perceived by anaesthetists, we hope this will improve with further education and awareness and engagement. This is helping to reduce our carbon footprint locally, and is part of the wider work of the National Green Theatres Programme to reduce the environmental impact of operating theatres. (Centre for Sustainable Delivery, NHS Scotland)

www.nhscfsd.co.uk/our-work/national-green-theatres-programme

1. BOC (2021) 'Chloroethane', SAFETY DATA SHEET, 1.1, pp. 1-17. Available at: https://www.boconline.co.uk/en/images/ethyl-chloride_tcm410-631289.pdf.