

Improving Sustainability in Anaesthetics – One (Cool) Stick at a time

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Introduction

Climate change is a public health emergency recognised by the NHS, with anaesthetic gases responsible for 5% of all NHS carbon emissions [1]. Specifically, Ethyl Chloride is a hazardous air pollutant that can remain in the atmosphere for over a month before degrading, in addition to being detrimental to aquatic life. Importantly, there are potential harmful effects to humans; if inhaled, Ethyl Chloride can cause a dose-related continuum of neurological effects, ranging from seizures to cardiopulmonary arrest.

We have introduced reusable Cool Sticks (refrigerated plastic sticks with a metal tip) as an alternative to Ethyl Chloride sprays and subsequently monitored their environmental and financial impact over an 8-month period [Figure 1].



Figure 1. Cool Stick

Methods

A baseline survey demonstrated that the majority of anaesthetists at our trust were keen to trial a more sustainable method for testing sensory levels. The Cool Sticks were first introduced in obstetric theatres, and subsequently in all other theatre areas. The financial and environmental impact of using Cool Sticks compared with Ethyl Chloride sprays was assessed over an 8-month period. Feedback from staff was gathered via a survey, which assessed ease of use of the sticks, any problems encountered, and whether Ethyl Chloride sprays should be replaced with Cool Sticks in the long term.

Discussion

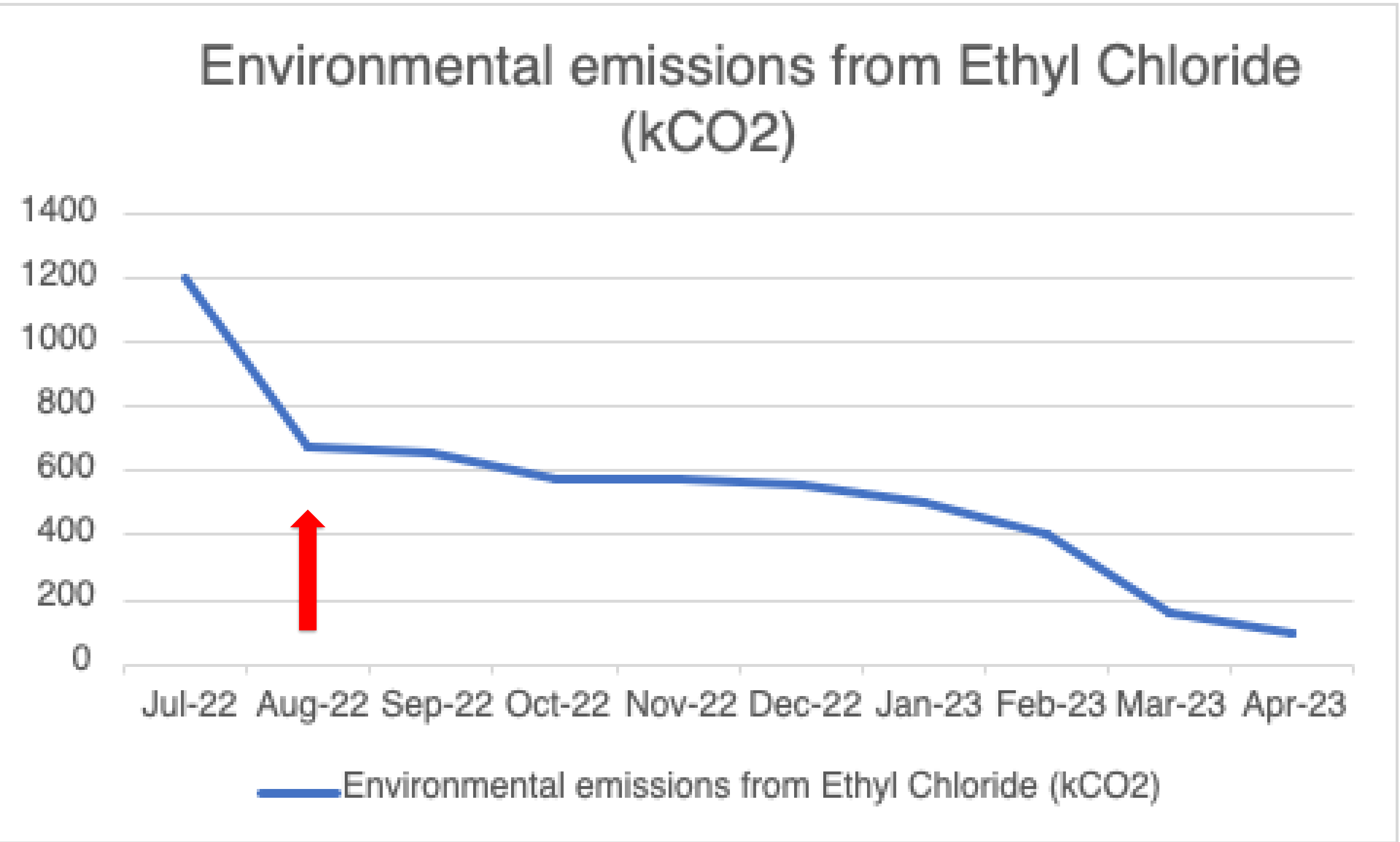
In the face of our current climate crisis, there is clearly a need to implement environmentally sustainable initiatives within the NHS [2]. We have demonstrated that Cool Sticks are a feasible alternative to Ethyl Chloride sprays for assessing sensory levels after neuraxial blocks, and are likely to exert a significant positive environmental and financial impact. By trialing sustainable practices such as the use of Cool Sticks, the NHS can aim to be a step closer to achieving net zero by 2040.

References

- Charlesworth, M. and Swinton, F. Anaesthetic gases, climate change, and sustainable practice. *Lancet Planet Health* 2017, 1(6), e216-7
- Tennison, I., Roschnik, S., Ashby, B., et al. Health care’s response to climate change: a carbon footprint assessment of the NHS in England. *Lancet Planet Health* 2021, 5(2), e84-92

Results

We introduced Cool Sticks at our trust in August 2022. This resulted in a gradual decrease in the use of Ethyl Chloride sprays. In July 2022, a total of 60 cans of Ethyl Chloride were used in all theatre areas, compared to just 5 cans in April 2023, resulting in a reduction of 92%. This led to a significant reduction in the carbon emissions during this period, as each can generates up to 20 kCO₂ [Figure 2].



The total sum spent on Ethyl Chloride sprays in April 2023 was only £102, compared with £1,436 in July 2022. The environmental impact and the projected financial savings would be even more considerable if the number of Ethyl Chloride sprays being used continue to decrease.

We have received excellent feedback for undertaking this sustainable initiative. The feedback has been summarised in Figure 3, with some of the comments shown in Figure 4.

Figure 2. Reduction in carbon emissions from Ethyl Chloride sprays from July 2022 to April 2023. (Red arrow denotes introduction of Cool Sticks at our trust.)

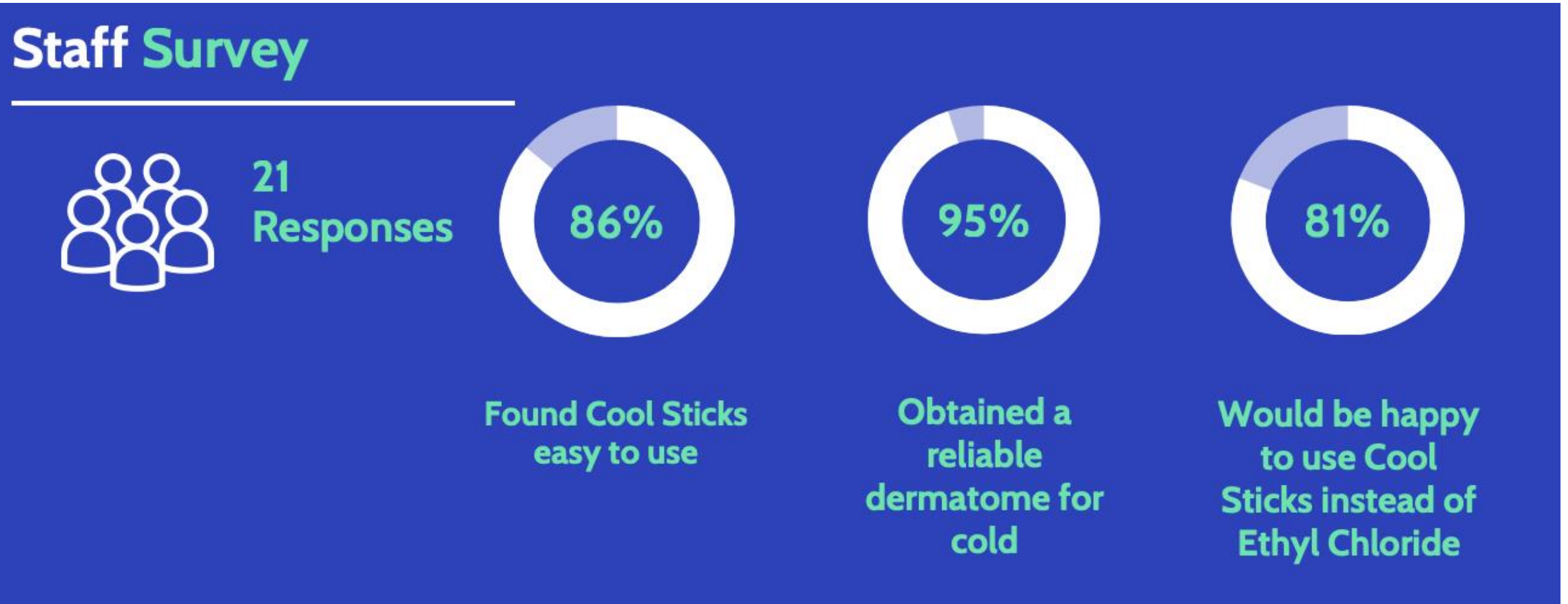


Figure 3. Summary of staff feedback on the use of Cool Sticks at UHCW

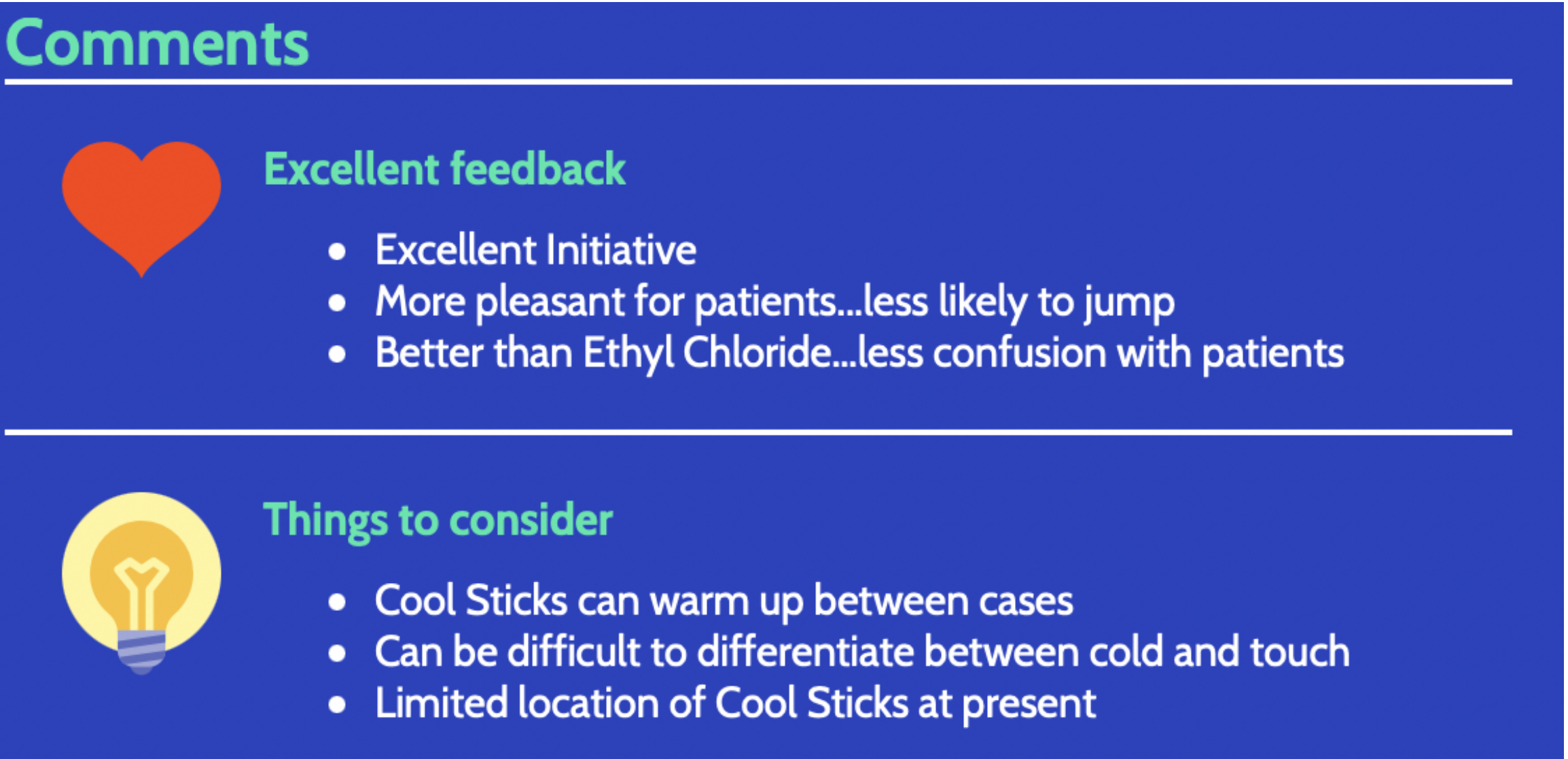


Figure 4. Selected comments from staff regarding the use of Cool Sticks at UHCW