



# Completing AcuPuncture with Safe Take Out of NEedles (CAPSTONE)

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## 1. Background

The Ministry of Health initiated the subsidisation of outpatient acupuncture services for lower back and neck pain in public hospitals in December 2020, resulting in an increased demand. Sengkang General Hospital's (SKH) acupuncture service, consuming approximately 1500 acupuncture needles weekly, encountered 2 episodes of unintended needle retention in patients and 1 needle-stick injury (NSI) in staff between January 2022 to December 2022. The incidents are collectively referred to as "needle-related incidents". Notably, needle-stick injury episodes may be under-reported.

Despite safety checks like visual inspections and patient pat-downs post-needle removal, recurring safety incidents persisted, primarily during the needle removal and disposal processes. Targeting the clinical workflows, the QI project team set out to improve both the accuracy of needle count and the safety of needle disposal steps. Acupuncture needles used by the service are of dimensions 0.13-1mm in diameter and 0.18-100mm in length.

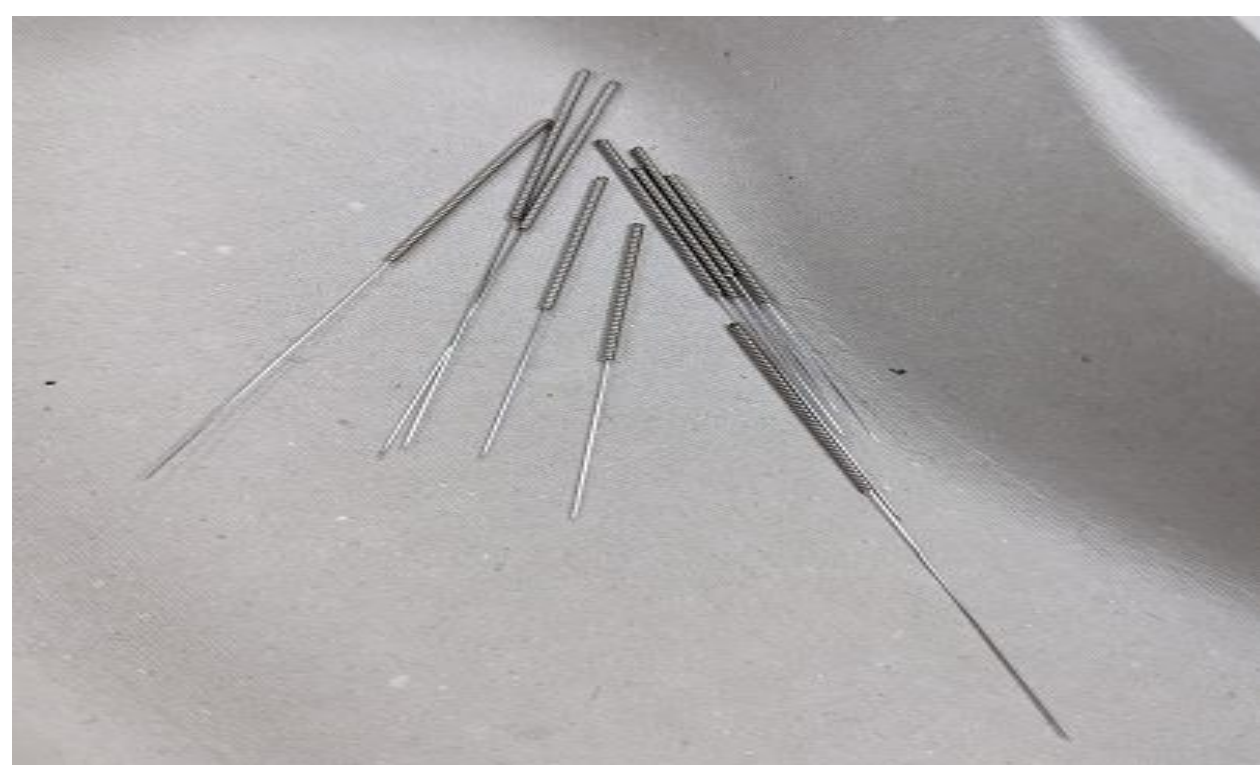
## 2. Aim

To reduce needle-related incidents by 50% in one year.

## 3. Methodology

### Interventions for PDSA Cycle 1 (1<sup>st</sup> Mar 2023)

1. Instead of counting the needles as they were removed and disposed one by one, all used needles are collected in a disposable kidney dish first for counting before disposal.
2. Addition of a second verifier to all needle count steps.



Acupuncture needles collected in a disposable kidney dish

### Issues faced after Cycle 1

1. The needles were not secured, and their haphazard movement hindered the counting process.
2. Risk of NSI due to staff using their fingers to separate the fine needles for counting.
3. Trial of using a tool to separate needles did not yield satisfactory results due to visual fatigue.

### Interventions for PDSA Cycle 2 (1<sup>st</sup> April 2023)

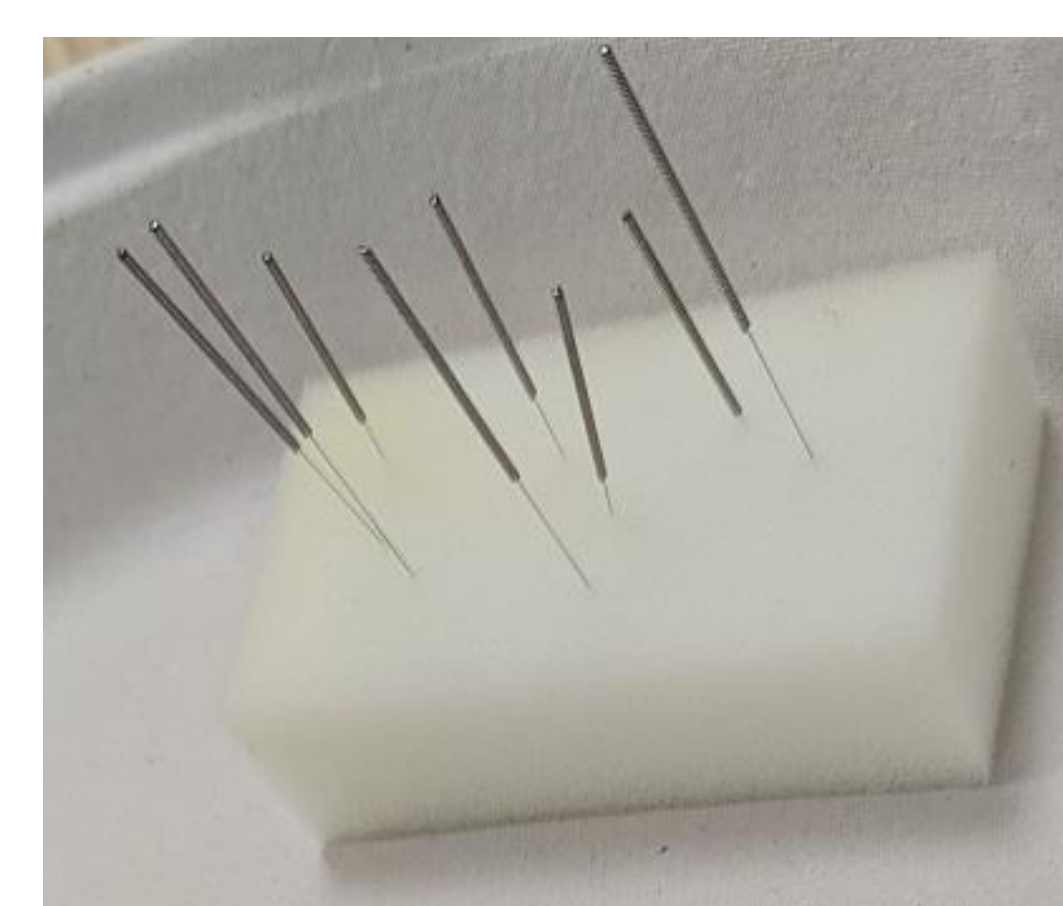
1. Introduction of a needle receptacle so that the needles are secured, and that the entire steps of needle count and needle disposal are performed hands-free.

A sponge was identified to be most suitable option, based on the following criteria:

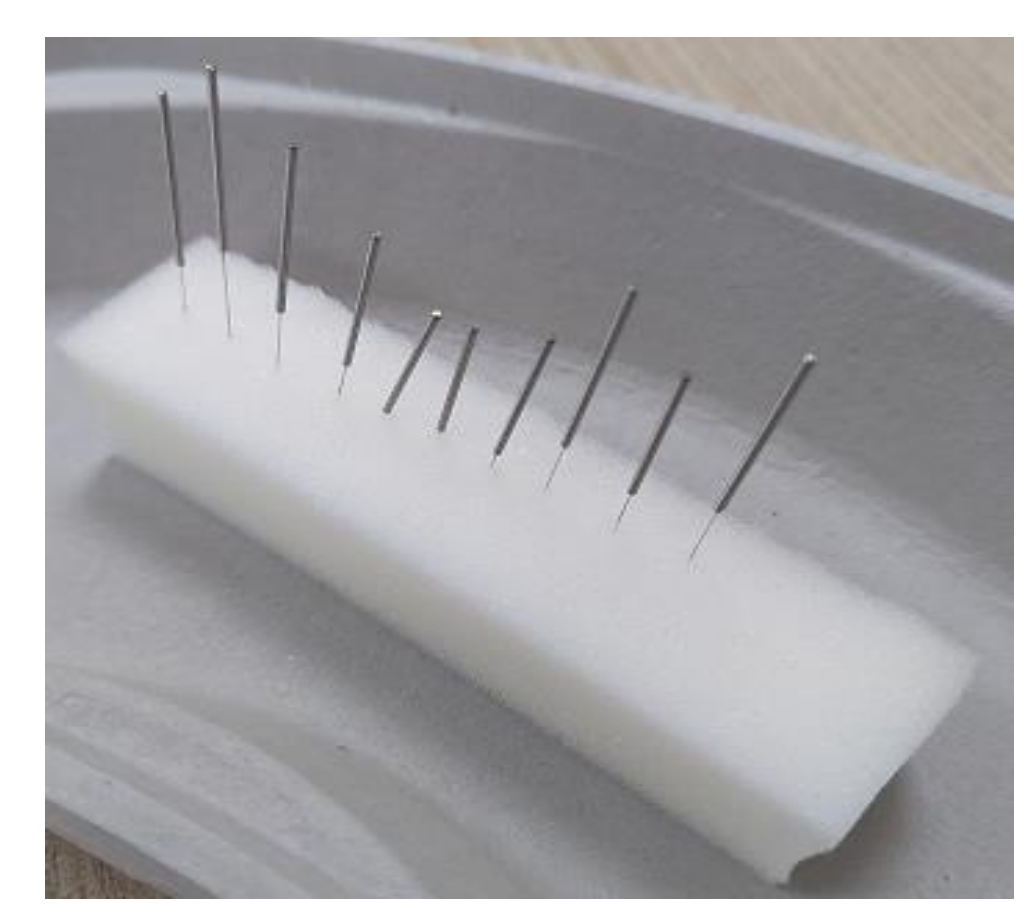
- a. Able to hold needles upright for easy visual counting
- b. Able to fit through the opening of a 64L sharp box for direct disposal
- c. Sufficient thickness and density for needle insertion



64L sharp box



Sponge from OT scrub brush



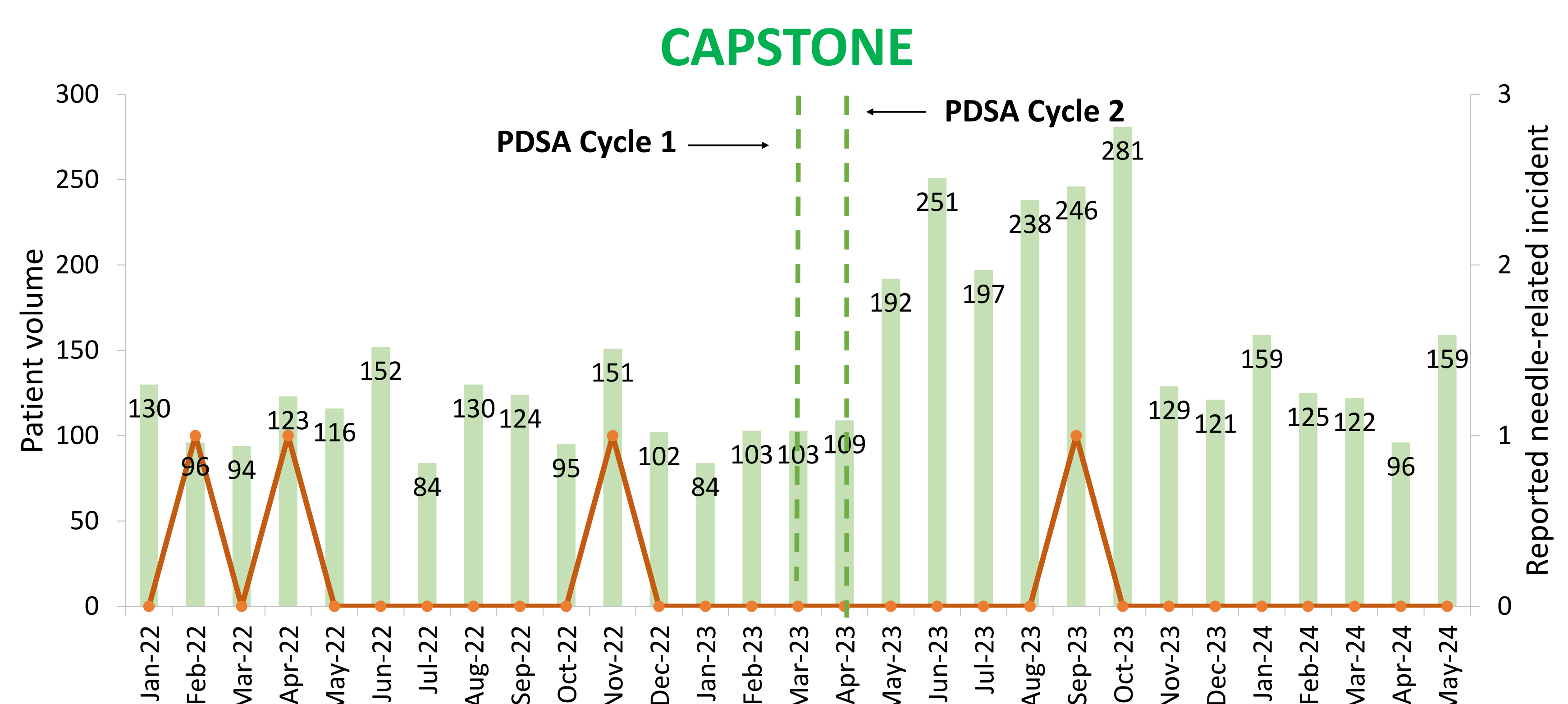
Sponge from face shield

## 4. Results

Since the implementation of the improved workflow in March 2023, the occurrence rate for reported needle related incidents has **dropped from 0.215% in 2022 to 0.0487% in 2023 to 0% between Jan 2024 and May 2024 (to date)**, with increasing workload from a monthly average of 116 cases in 2022 to 171 cases in 2023.

The Sept 2023 incident resulted from protocol non-compliance, which was adequately addressed by reinforcing protocol adherence and emphasising immediate escalation when needed.

Sponges are either purchased or upcycled by harvesting the sponge components of used-and-cleaned operating theatre (OT) scrub brushes and new-but-expired face shields.



## 5. Conclusion

The introduction of two crucial enhancements in workflow — the inclusion of a second verifier for needle counting and the integration of a sponge receptacle for hands-free needle disposal — played a pivotal role in mitigating safety risks associated with handling sharps in the acupuncture clinic. Continuing education and reinforcement is recommended as staff adherence to protocol is key. The cost-effective sourcing of upcycled materials contributed to the organisation's sustainability efforts.

## 6. Acknowledgements

We would like to extend our appreciation to A/Prof Sharon Ong, SKH's Green Committee and OT Services for their guidance and support in the project.