

Project Title

To Reduce the Rate of Breakage of Periodontal Probe during the Central Sterile Service Department (CSSD) Sterilisation Process

Project Lead and Members

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Organisation(s) Involved

National Dental Centre Singapore

Healthcare Family Group Involved in this Project

Medical, Ancillary Staff

Specialty or Discipline

Dentistry, Central Sterile Service Department

Project Period

Start date: Jun-2019

Completed date: Jan-2020

Aims

To reduce rate of periodontal probe breakage that happens within the sterilization workflow in CSSD by 50% in 6 months time

Background

See poster appended / below

Methods

See poster appended / below

Results

See poster appended / below

Lessons Learnt

See poster appended / below

Conclusion

See poster appended / below

Additional Information

Singapore Healthcare Management (SHM) Conference 2021 – Shortlisted Project (Risk Management Category)

Project Category

Care & Process Redesign, Quality Improvement, Workflow Redesign, Job Effectiveness, Valued Based Care. Operational Management, Logistics Management

Keywords

Dental Instruments, Patient Examination, Replacement Cost

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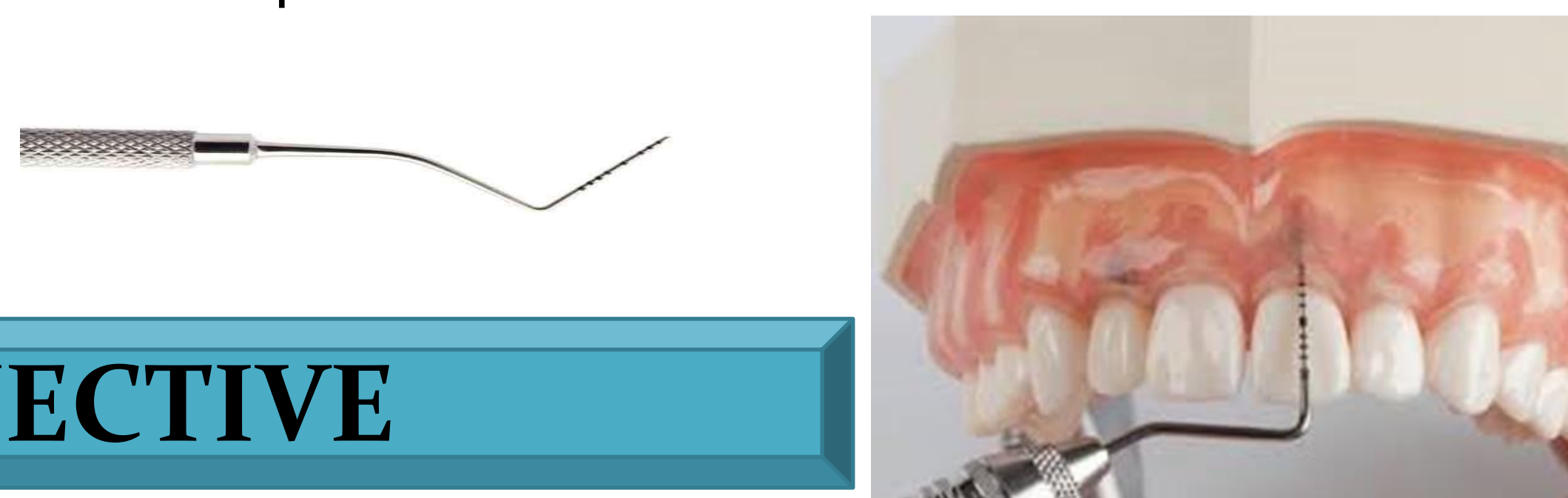


National Dental Centre Singapore
SingHealth

1. BACKGROUND

The perio probe is a common dental instrument which is used widely throughout the clinic levels. Due to its thin tapering end, it has a tendency to chip off or break off at the distal end.

The point of breakage can be unpredictable when the tip chipped off, making it difficult and time consuming for CSSD staff to check for breakages. On average, the cost of perio probe is \$18 per piece. The perio probe is used for patient examination and assessment



2. OBJECTIVE

To reduce rate of periodontal probe breakage that happens within the sterilisation workflow in CSSD by 50% in 6 months time.

3. Methodology

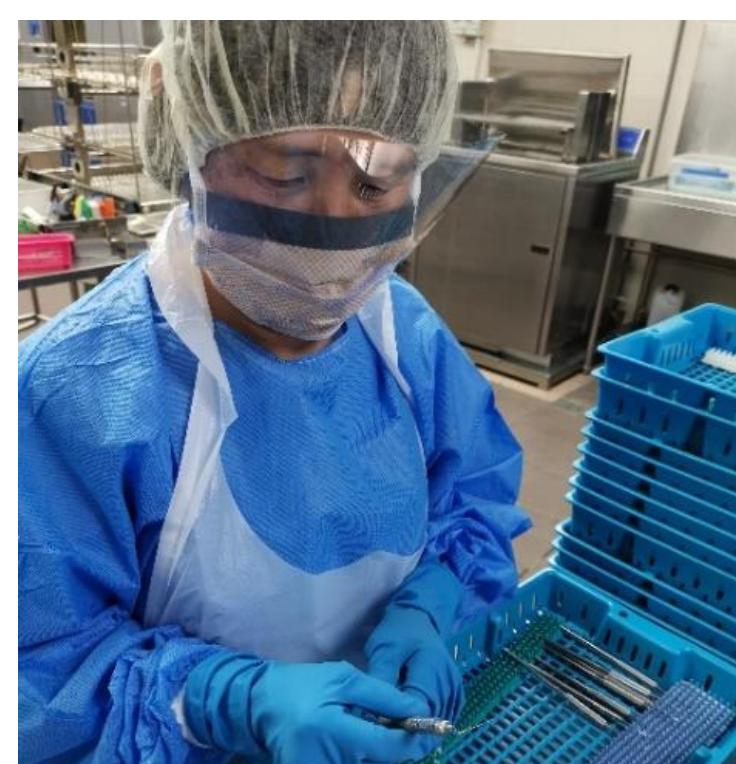
Project team utilise process mapping to study instrument flow and identify high risk areas that could cause equipment breakage. Fishbone diagram is then used to brainstorm for root causes of probe breakages.

Interventions implemented includes modification of sterilisation trays to minimise contact between equipment during sterilisation, as well as briefings to instill awareness among CSSD staff on proper handling of probes in sterilisation process.

IMPLEMENTATION PLAN – PDSA 1

Root cause:

Not able to identify at which point in the sterilisation workflow did the instrument breakage occur.



(1) Dirty Instrument receiving station



(2) After washer station

Intervention:

Incorporate checks for instrument breakages at 2 additional check points.

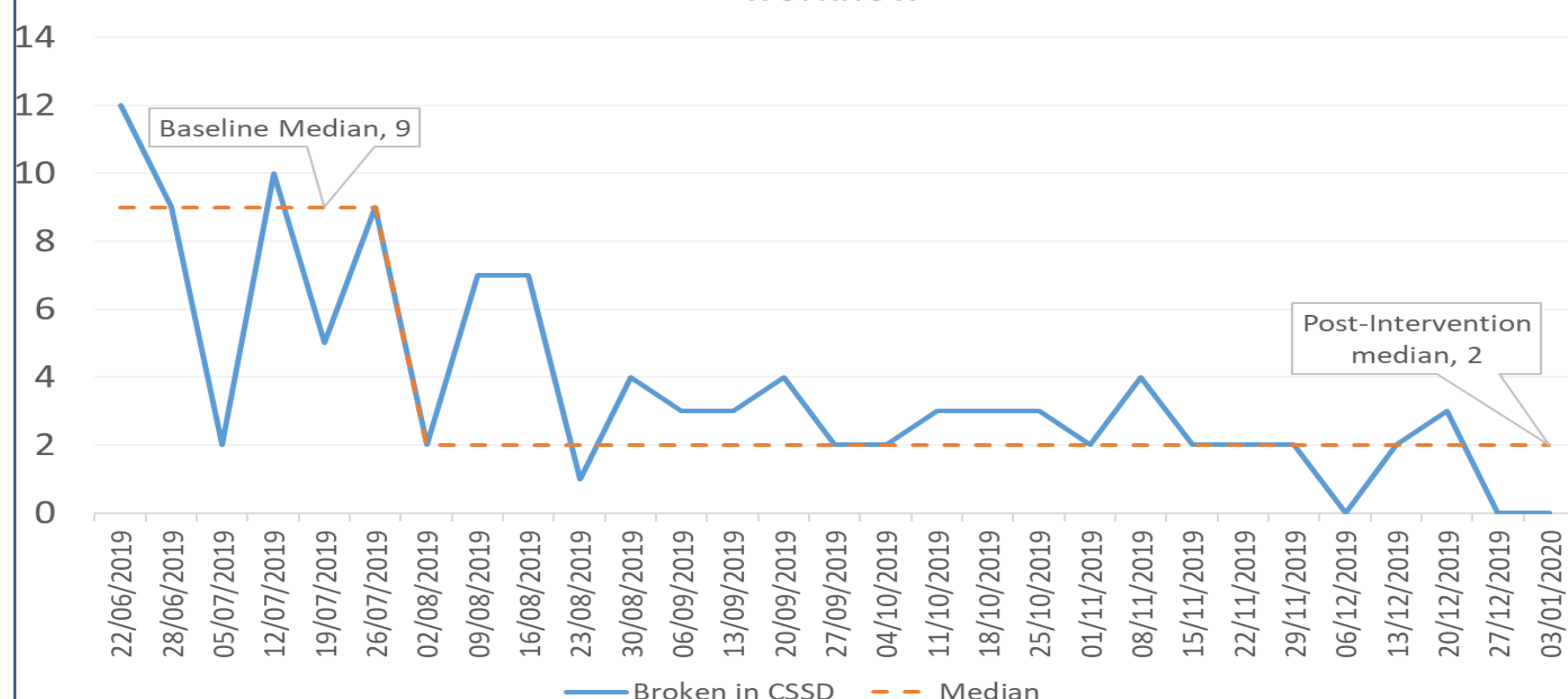
1. Dirty instrument receiving station
2. After washer station



- (1) Perio probe that is received in broken condition, in the dirty instrument receiving station will be marked with rubber band.
- (2) Perio probe that is found broken after washer station will be segregated without rubber band.

4. RESULTS

Weekly Number of Instruments Broken within CSSD Sterilisation workflow



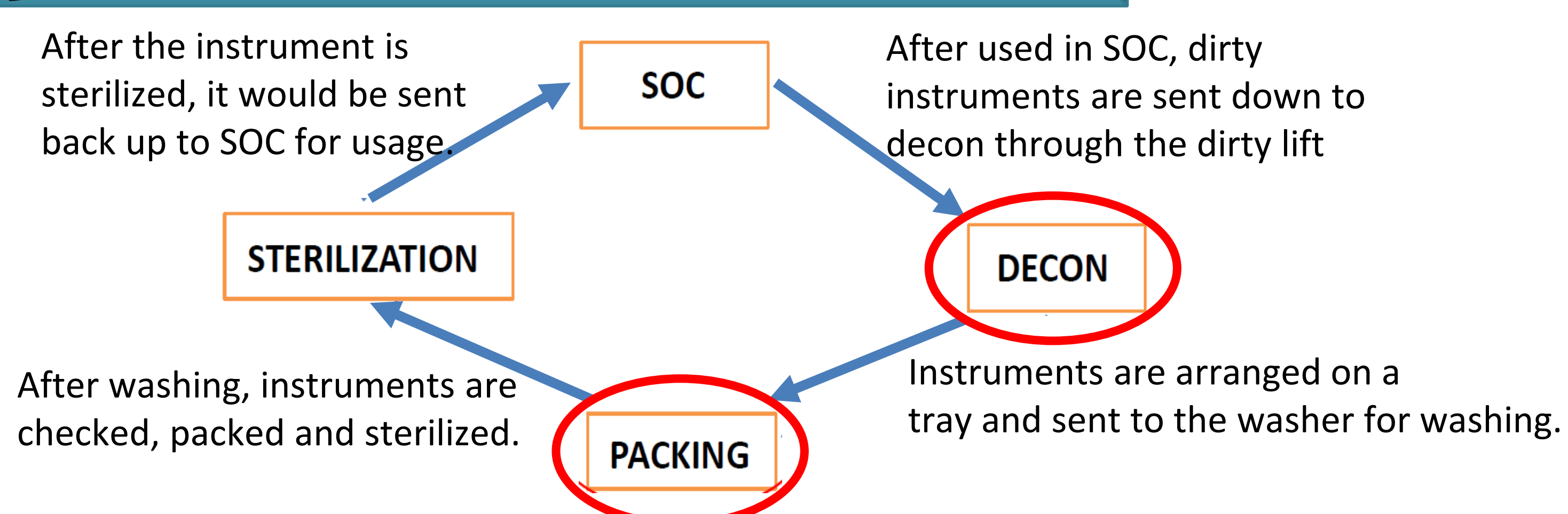
1a. Historical data on Perio probe breakages

The monthly breakages numbers reported in CSSD includes all instruments that suffer breakages in 2 scenarios.

1. Breakage happens in clinic.
2. Breakage happens within the CSSD sterilization process.

Month (2019)	No. of breakages
January	55
February	58
March	65
April	59
May	60

3a. FLOW OF INSTRUMENTS



After the instrument is sterilized, it would be sent back up to SOC for usage. After used in SOC, dirty instruments are sent down to decon through the dirty lift. After washing, instruments are checked, packed and sterilized. Instruments are arranged on a tray and sent to the washer for washing.

If an instrument is found broken or faulty, it will be condemned and replaced. The replacement of broken perio probe would typically take 15 mins, however, if there are no existing stock, replacement lead time could take up to 3 months.

IMPLEMENTATION PLAN – PDSA 2

Root cause:

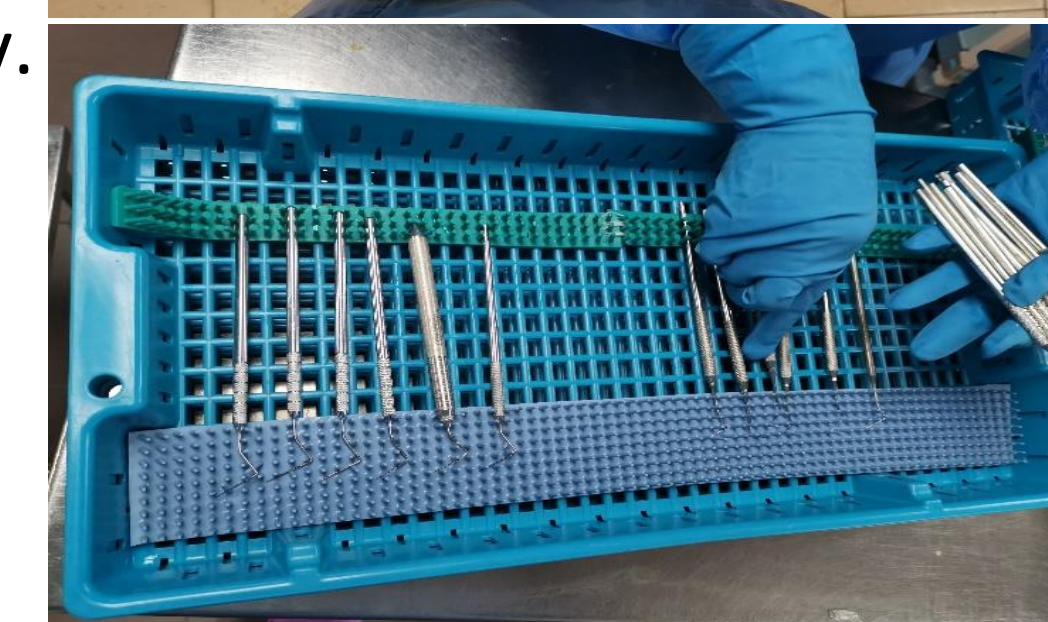
Breakage of perio probe due to instruments colliding with each other :

- Mixture of heavy and fine instruments in the same tray.
- Over crowding of instruments in one tray.

Intervention:

Segregate the Perio Probe from other instruments onto tray for washing.

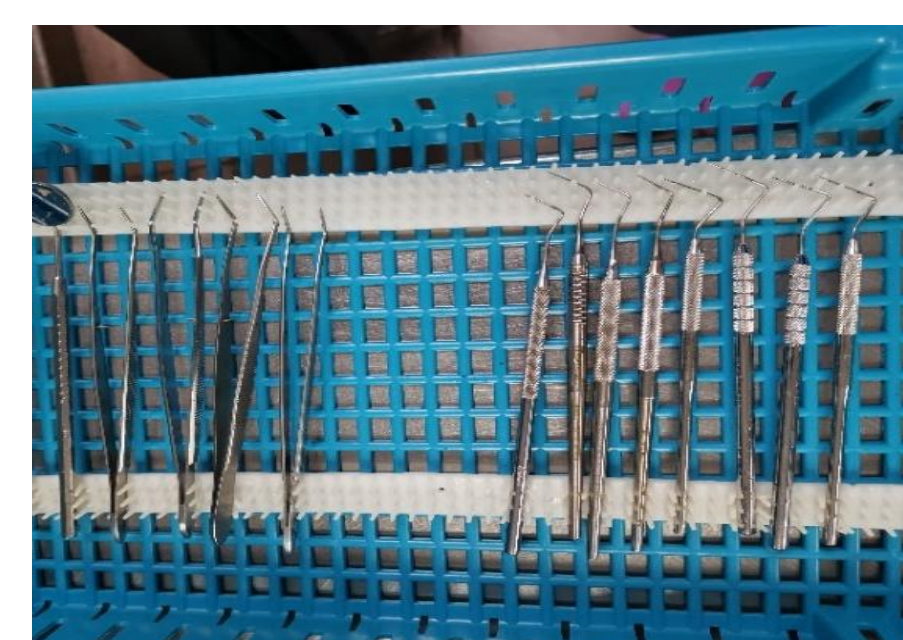
To dedicate the space on the silicone mat for putting of sharp instruments.



IMPLEMENTATION PLAN – PDSA 3

Root cause:

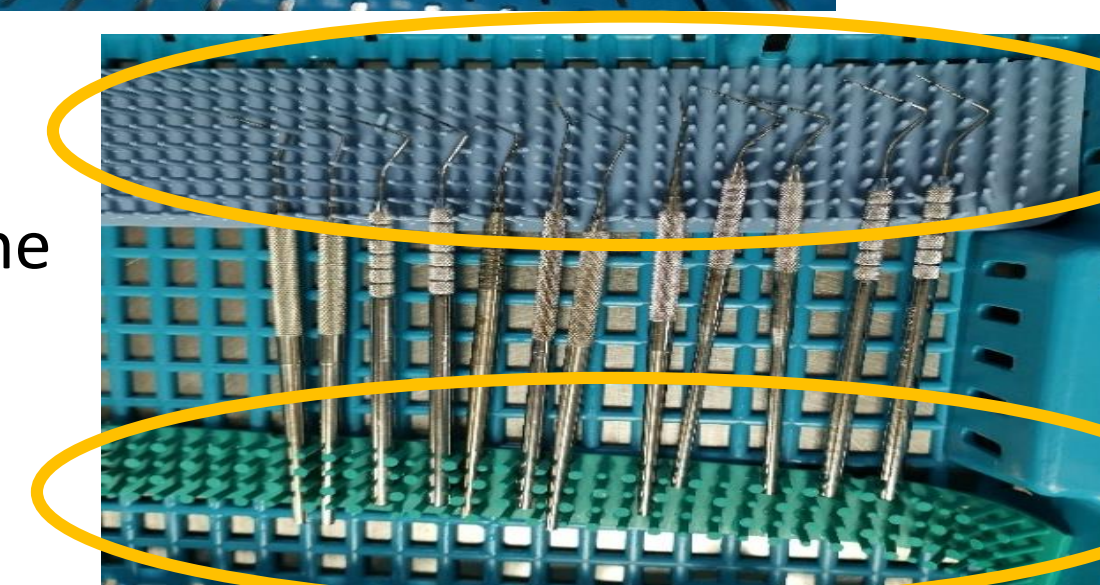
The tip of the Perio Probe is not adequately protected.



Before: The width of silicone mat used to hold perio probe in place in the washer rack is too narrow. In the process of transporting, perio probe may poke out of perforated holes and is prone to breakage.

Intervention:

Increase the width of the silicone mat for placing instrument on tray for packing.



After: Silicone mat with broader width protects the tip of perio probe from breakage.

5. CONCLUSION

Before	After
<ul style="list-style-type: none"> • The baseline median weekly breakages happening in CSSD is 9 cases per week. 	<ul style="list-style-type: none"> • Post intervention, the median weekly breakage showed improvement, and is reduced to 2 cases per week.
<ul style="list-style-type: none"> • Broken instruments that is found in CSSD is condemned and replaced without distinguishing the source of breakage. 	<ul style="list-style-type: none"> • Additional check before and after washing of instruments helps to pin-point sterilisation steps that pose higher risk to the instruments. These steps are redesigned to mitigate breakage risks.
<ul style="list-style-type: none"> • Annualised replacement cost is \$8,424. 	<ul style="list-style-type: none"> • Annualised replacement cost is \$1,872. Replacement cost would be reduced by 77.8%, with \$6,552 projected savings annually.