# Sustaining the Use of Smart Portable Drain Carrier in CGH Inpatient Wards

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## Background

The Smart portable drain carrier was developed and implemented in Apr 2018 in selected CGH inpatient wards with the aim of promoting post-op early mobilization and reduce risk of drain/catheter associated infection and dislodgement especially targeting patients with multiple attachments. However, sustaining the practice faced its challenges.



The aims of this sustain project are:

- Ensure sustained practice to increase post-op early mobilization
- 50% reduction of time spend on tracing and transferring of the attachments
- 50% improvement on patients and staff satisfaction.

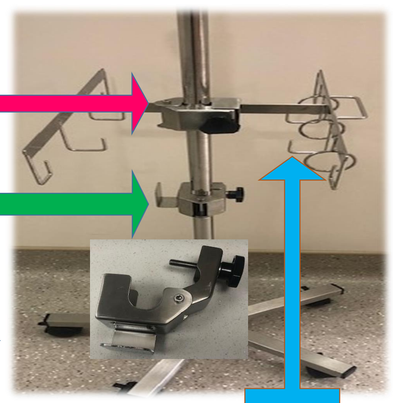
## Sustenance Strategies

1. PDSA Method with continuous improvement
   Series of modification to enhance the product design

Modified open clamp with single screw

Detachable Oxygen cylinder hook

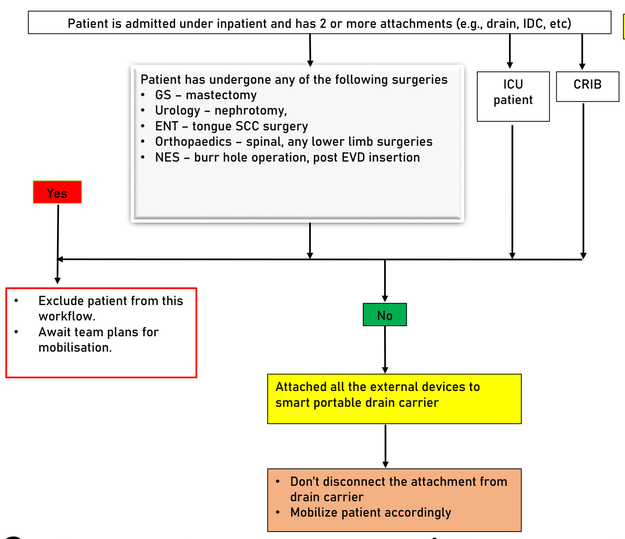
Multiple PDSA Cycles



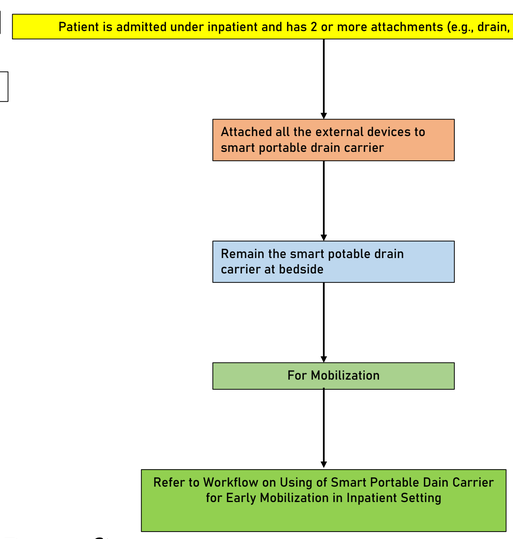
Hook face inward

2. Integrated into Workflow
   Ensure the users are familiar with the steps

Workflow on Using of Smart Portable Dain Carrier for Early Mobilisation in Inpatient Setting




Workflow on Using of Smart Portable Dain Carrier for Proper Organization in Inpatient Setting




3. Create Awareness and Promote Benefit
   Sharing session with doctors, nurses, physiotherapist

4. Clinical Key Performance Indicator (KPI) Monitoring
   Reflected on the effectiveness of the practice

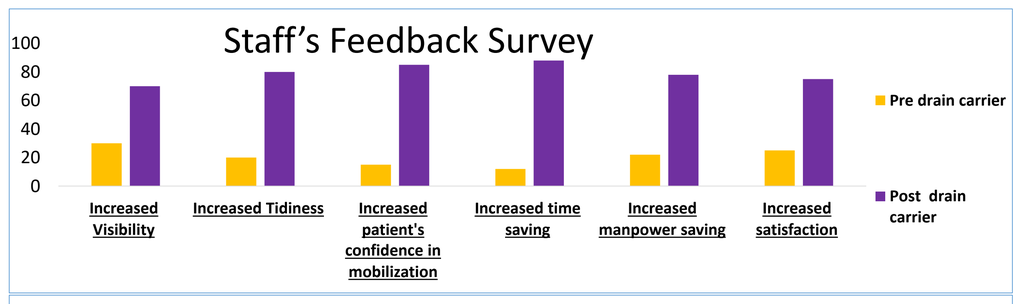
## Result

Data collected by three different methods on 200 patients and 100 health care workers during period from Jan 2019 to Sep 2020:

### Staff and Patient Feedback Survey

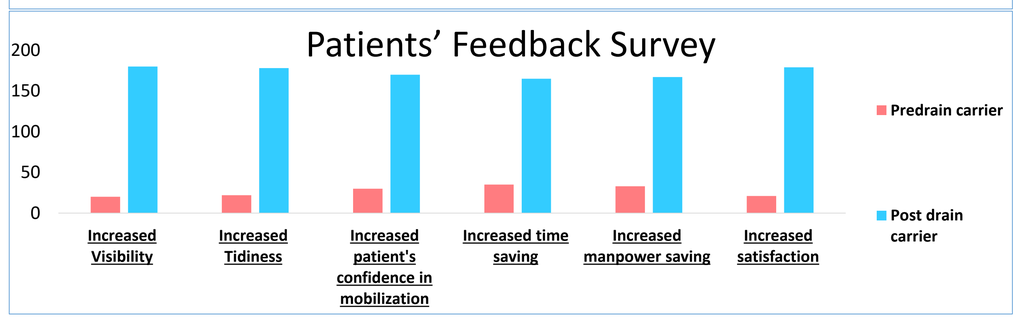
75%

Staff's Satisfaction Rate




89.5%

Patients' Satisfaction Rate




### Time & Motion Study

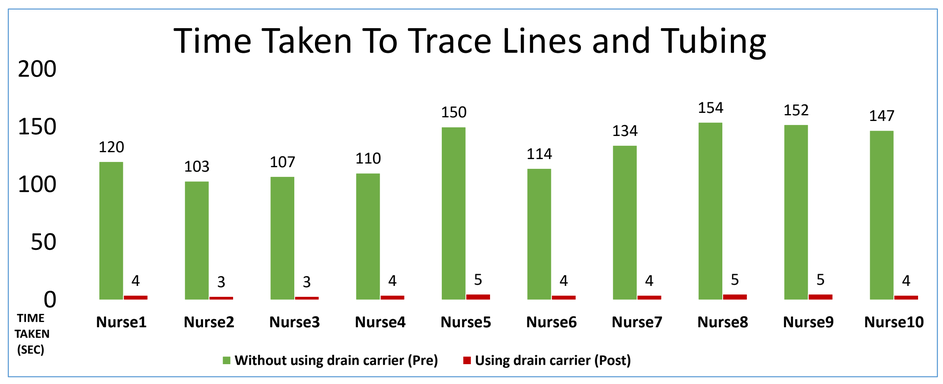
Two studies were performed to compare the time savings of managing attachments between traditional method versus using smart portable drain carrier.

**Study 1:** Time used to trace the lines and tubing for patient with 4 infusion medications, 1 IA line,1 CVC line, 1 IDC, and 2 drains.

Calculation Formula:

$$\frac{120+103\ldots+14}{4+3\ldots+4}$$

97% Time Saving




**Study 2:** Patient transfers from bed to chair and vice versa

Calculation Formula:

$$\frac{920-230}{920}$$

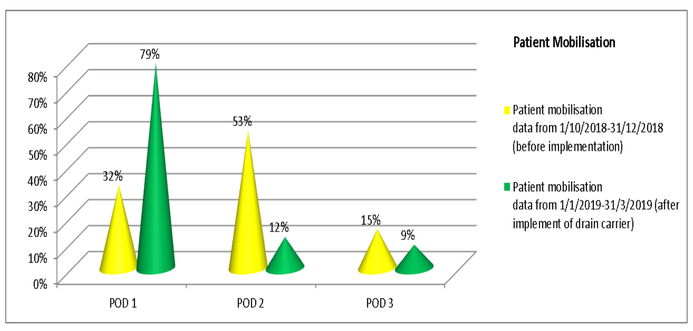
75% Time Saving

| Time Motion Study on transfer patient from bed to chair & chair to bed | | | | |
|---|---|---|---|---|
| | Without using drain carrier | | Using drain carrier | |
| | Time taken | Manpower | Time taken | Manpower |
| Prepare pt to sit up | 90 sec | PT + Nurse | 10 sec | PT |
| Sit up in bed & shift to edge | 60 sec | PT + Assistant | 30 sec | PT |
| Transfer from bed to chair | 90 sec | PT + Assistant | 30 sec | PT |
| Post transfer organising | 120 sec | PT + Nurse | 20 sec | PT |
| Prepare pt for transfer back | 90 sec | PT + Nurse | 10 sec | PT |
| Transfer from Chair to bed | 90 sec | PT + Assistant | 30 sec | PT |
| Post transfer organising | 360 sec | PT + Assistant | 100 sec | PT + Assistant |
| Total time taken | 920 sec | | 230 sec | |

### Early Mobilization Logbook

Data of pre and post implementation of drain carrier for patient's mobilization status was collected over 3 months by using early mobilization logbook

- **Patient's mobilization rate on POD 1 increased by 47% (=79%-32%) with using drain carrier**
- **0 cases of attachment dislodgement**
- **0 cases of attachment infection**




## Conclusion

There was no dislodgement reported and demonstrated a significant increase in cases for early mobilization. Based on motion analysis report, there was time savings in terms of the work processes aiding in improving productivity and cost savings. We look forward to share our products with other acute hospitals in Singapore and worldwide.