Improvised Call Bell for Cervical Cord Injury patient with limited upper limb motor power

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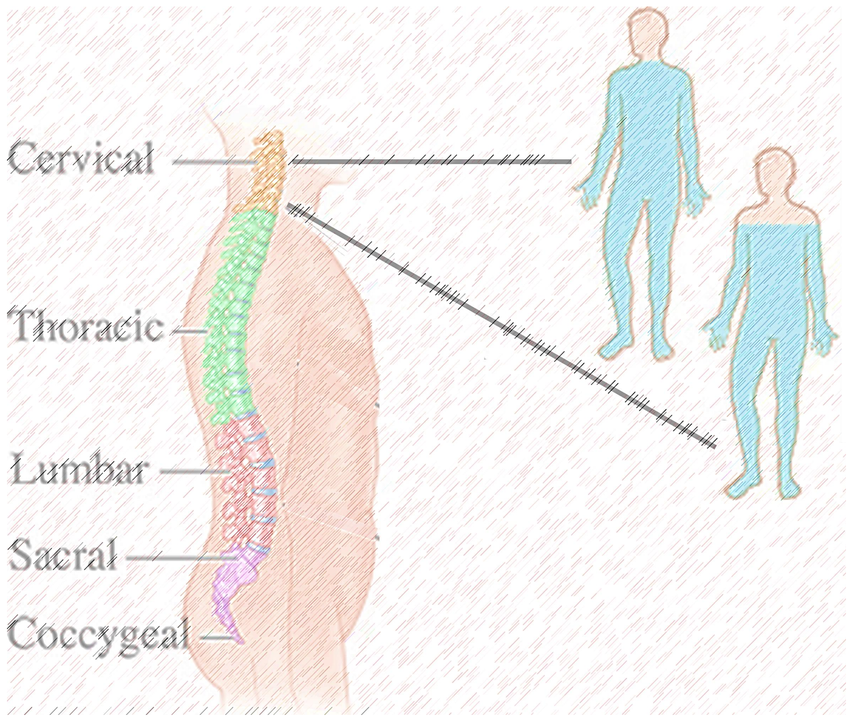
Cervical cord injury (CCI) patient suffers from functional disability with majority of them resulting in permanent disability thus being dependent on their Activities of Daily Living (ADL).

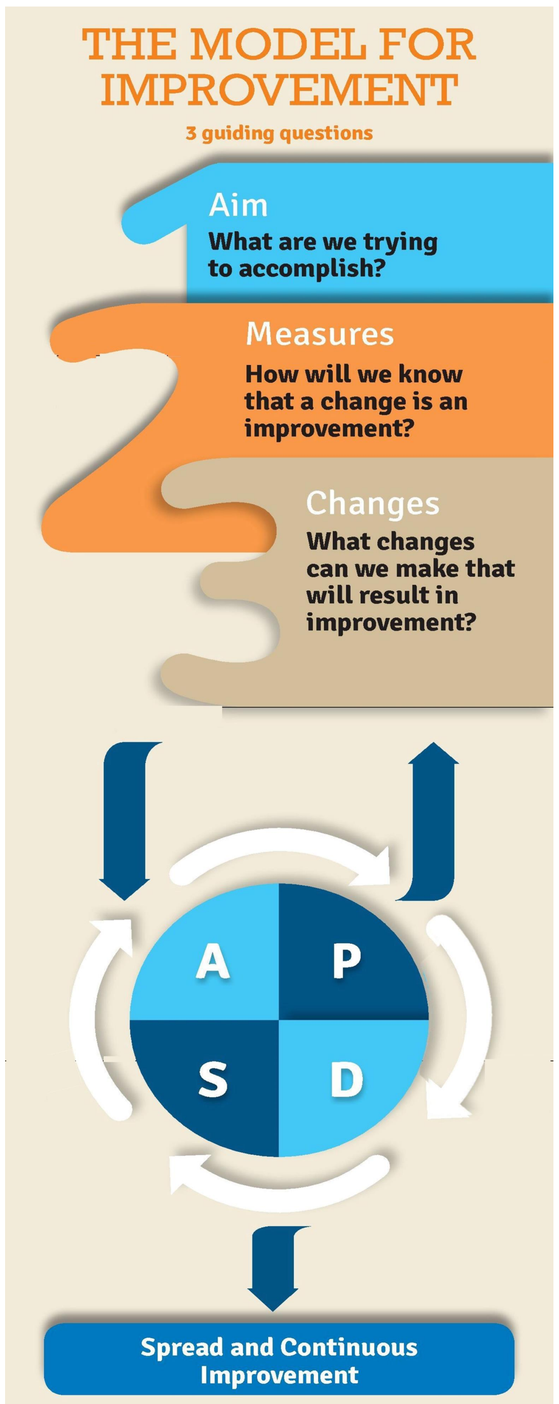


With loss of functionality in their upper limbs to press the call bell, patients often resort to calling out loudly for assistance. Realistically, a typical ward environment often drowns the voice of these patients.

Having witnessed patients' frustration of having difficulty in obtaining assistance, the need of having a system where the convenience for CCI patients became a pressing issue to both increase patient's confidence with lesser frustration in calling for help, and to help clinicians to attend to their needs more promptly.

Researching into current market, existing market product cost up to **SGD280 per device** and the device can only be used within the hospital compound. CCI's incidence is at about 40 new cases per million population per year (WHO, 2014). With enabling greater independence as the core of idea development, the team focused on having a product with extreme sensitivity.

The team started off with a portable door bell and a lanyard, with a total cost of **SGD 4**.

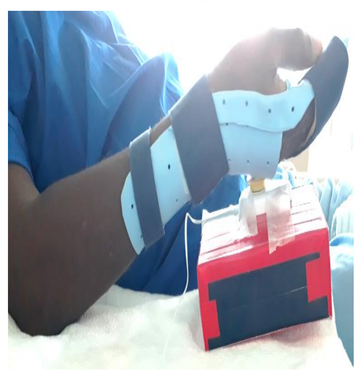


PDSA 1 – An Alternative

PDSA 1 started off with having a small foam added above the door bell to create a protruding surface that indirectly sounds off the alarm when triggered.

Feedback from the patient and the clinical team raised
- modified call bell was often slipped off and not within reach
- Volume was not optimized
- Modified call bell appears fragile

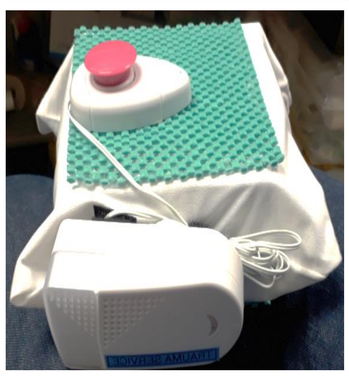
PDSA 2 – Keeping it within reach



PDSA 2 added a securing function using clean recycled boxes to keep the modified call bell within reach. Nurses were briefed on how to adjust volume of modified call bell accordingly.

Feedback from the patient and the clinical team raised
- Version 2 still slips out of range at times;
- Feasibility of having a similar system post discharge to reduce care giver stress

PDSA 3 – Portability for continuity



PDSA 3 focused on sustainability.
- A washable protective pillow case sealed with Velcro was added
- Non-slip mat was also sewed on both surface to prevent slip off
- The ringer was attached to the side of the box using Velcro

Total cost of product of which patient was discharged with sum up to be **SGD 7**.

Improvement in patient's care, safety and finances can be **balanced** using innovation through assistive technologies. The initial hospitalization period when the ability to handle their own ADLs are not within their control is crucial in determining the later impact in their willpower for **maximized recovery**. Although the product development targets a very small specific group of patient, the impact of enabling them with greater independence upon discharge surpasses statistical values.

Reference
Whoint. (2018). Whoint. Retrieved 27 February, 2018, from http://apps.who.int/iris/bitstream/10665/94190/1/9789241564663_eng.pdf
Credit : OIS Improvement Pocket Guide, Centre for Performance Excellence - Office of Improvement Science, 2015.