Improving Pre-operative assessment workflow for Anterior Cervical Discectomy and Fusion (ACDF) patients at Pre-Admission Centre (PAC)

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Background

Potential complications of anterior cervical discectomy and fusion (ACDF) surgery include temporary voice and swallowing difficulties, with dysphagia incidence estimated at 3.3% to 87.5% based on existing literature. In Singapore General Hospital (SGH), the dysphagia incidence is 42%. Educating patients about the incidence and risk factors for these complications is essential to pre-operative management. At SGH, the ACDF clinical pathway includes swallowing assessment and info-counselling by Speech Therapists (STs) pre and post-surgery. However, there was previously no pre-arranged appointment booking at the pre-admission centre (PAC), which resulted in increased waiting time for patients. ST referrals also came at unpredictable times, disrupting STs' schedules.

Aim

To reduce time spent by STs in assessing ACDF patients from 30 minutes to 15 minutes, over a period of 4 months.

Methodology

We utilized the 5 WHY diagram (Chart 1) to identify root causes of reduced efficiency and developed a new workflow (Chart 2). Upon patient's arrival, PAC nurses distribute educational handouts and the Eating Assessment Tool 10 (EAT-10) questionnaire. Using predetermined criteria, patients are risk-stratified into phone vs face-to-face groups. For phone consultation patients, therapy assistants (TAs) conduct a screening using the EAT-10 questionnaire and remind them to read the education handout provided. For patients identified with higher risks, STs will provide face-to-face evaluation.

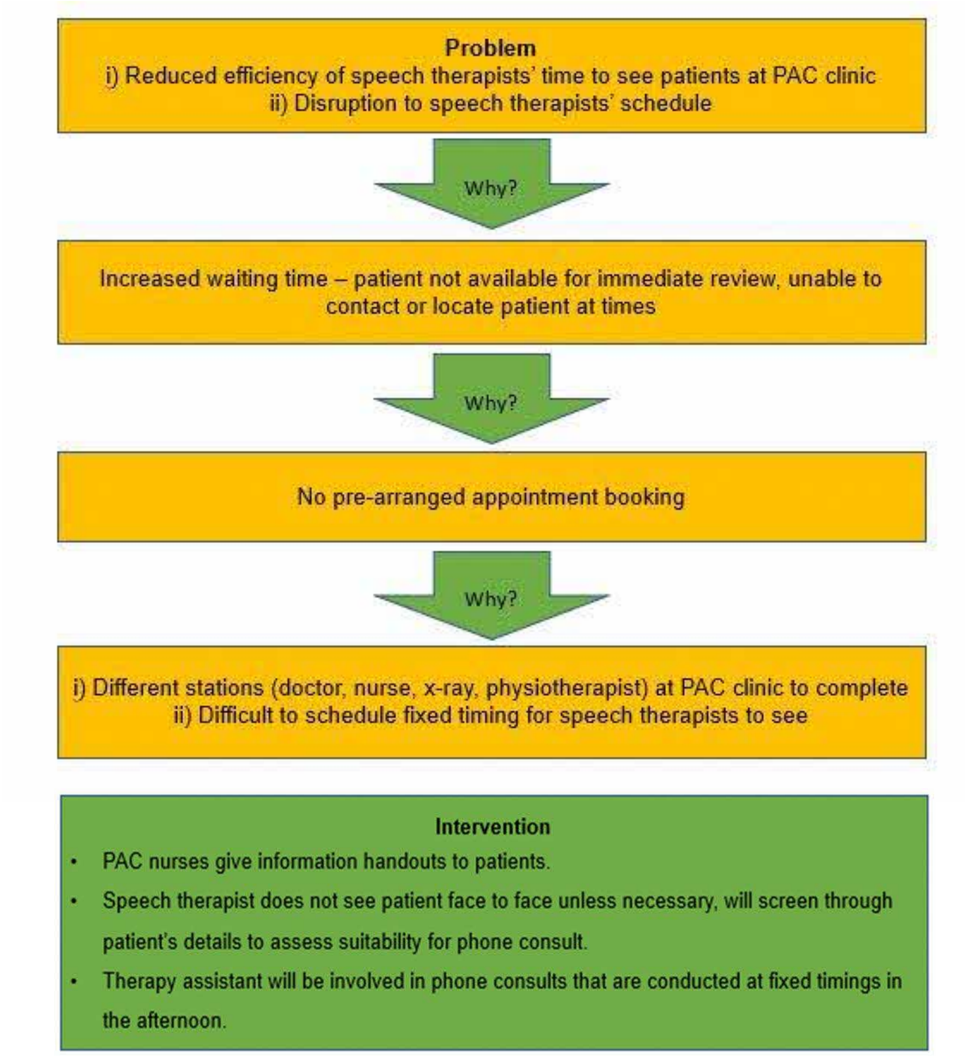

Chart 1. 5 WHY diagram to identify root cause of problem and propose solutions

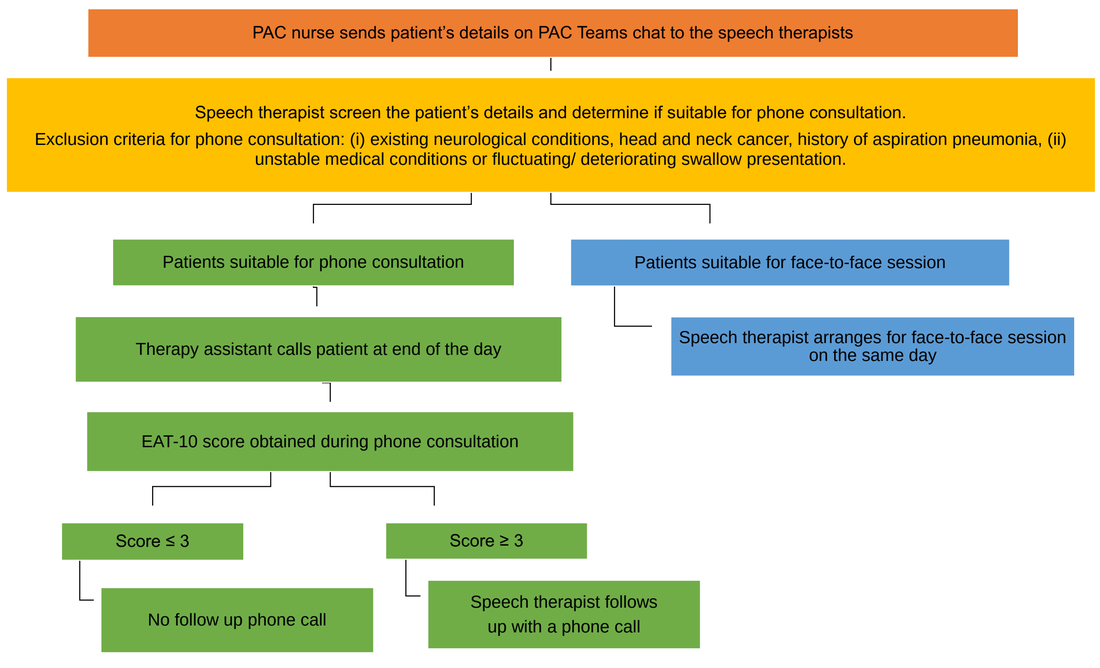

Chart 2. Proposed new workflow

Results

The data collection period was from January to October 2023, with PDSA 1 starting on 25 July 2023, with 38 patients at pre-intervention and 36 patients at post-intervention. The average time spent by STs and TAs on assessing pre-operative ACDF patients has been reduced as shown in Fig 1 below. The percentage of patients seen by STs has also reduced from an average of 100% to 24% (Fig 2).

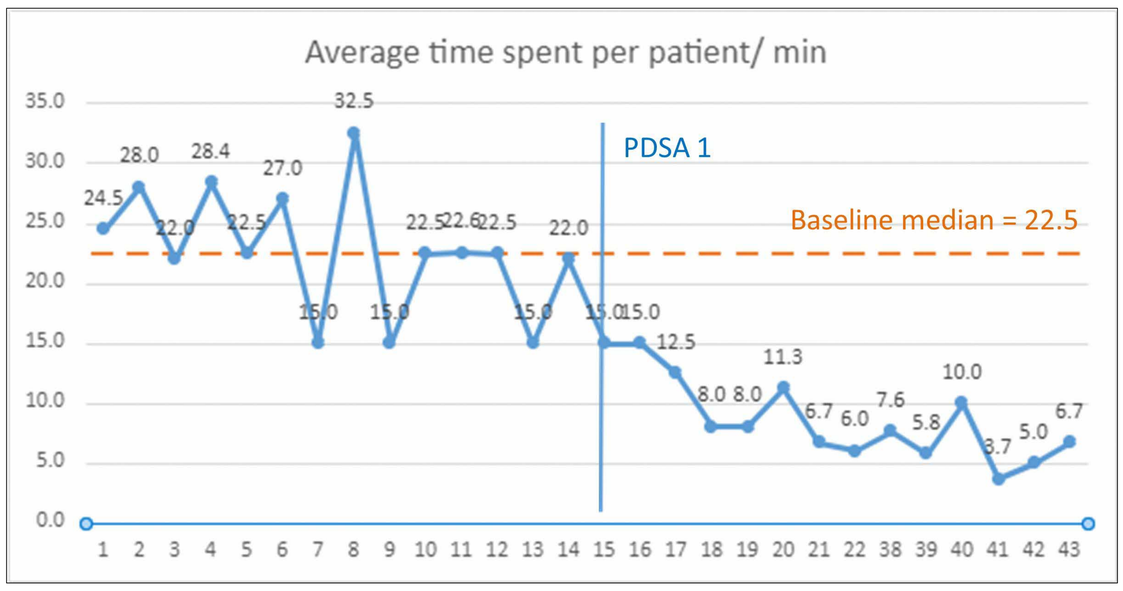

Fig 1. Average time spent per patient/min from Jan 2023 to Aug 2024. PDSA 1 started on 25 Jul 2023

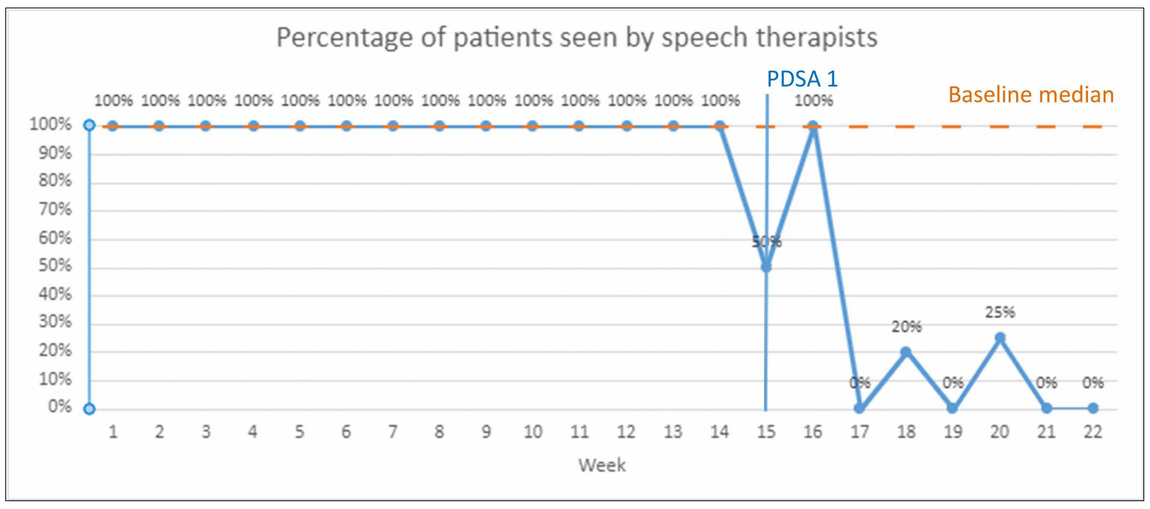

Fig 2. Percentage of patients seen by ST from Jan to Jul 2023. PSDA 1 started on 25 Jul 2023

We have successfully reduced the median time spent by STs and TAs from 22.5 minutes to 8.0 minutes per patient (Table 1). This has resulted in cost savings from the ST clinical resource perspective (Table 2). We have 15.04 man-hours saved per annum, which relates to $1392.75 manpower savings per annum. Additionally, STs can allocate more time to urgent cases in inpatient wards and the overall waiting time for patients undergoing ACDF has also reduced.

	Pre-Intervention	Post-Intervention	Improvement
Median time spent (min)	22.5	8.0	14.5

Table 1. Reduction in median time spent pre and post intervention

Man-hours saved per annum	15.04 hours
Manpower savings per annum	$1392.75

Table 2. ST cost savings per annum

We have been using this new workflow daily since 2023 and it also has a direct impact on the work processes of other medical staff attending to patients at PAC. This includes the nurses and doctors at PAC, as well as the orthopedic surgeons. They are all on board and have provided positive feedback regarding the improved efficiency of the new workflow. Patients have also given feedback that phone consults are clear and information on the education handouts are easy to comprehend.

Conclusion

Overall, the initiative has effectively addressed the mission statement, improved patient care and optimized resources. The ST department plans to continue using the new workflow beyond the project's completion, ensuring sustained benefits for both patients and STs.