Project Title

e-PASS – An Electronic Pre-Anaesthesia Self-Screening Questionnaire to Reduce Face-to-Face Consultations

Project Lead and Members

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Organisation(s) Involved

Singapore General Hospital

Project Period

Start date: Jun 2020

Completed date: On-going

Aims

To develop a low-cost yet sustainable solution to manage the Pre-Admission Centre (PAC)'s rising workload.

Background

See poster attached/ below

Methods

See poster attached/ below

Results

See poster attached/ below

Lessons Learnt

We learnt the importance of a structured quality improvement framework in implementing a new paradigm in patient care. While developing the questionnaire, we underwent several iterative rounds of feedback, evaluation and improvement to bolster the response rate and refine its clinical validity and accuracy. This ensures that the questionnaire is short enough to hold the patients' attention span and yet, accurate in identifying low-risk patients.

We also learnt that process improvement need not require expensive IT system enhancements. ePASS was built entirely on a free and secure survey platform, and the "task list" used to help PAC's nurses identify healthy patients was an Excel spreadsheet compiling demographic data with surgical information from SGH's data warehouse. These simple solutions were pieced together into a sustainable and free solution to mitigate the rising workload at the PAC, albeit requiring the seamless cooperation and coordination between administrators and nurses.

Conclusion

See poster attached/ below

Additional Information

Innovation does not need to be expensive nor complex. Simple-to-use software in our everyday lives can refine aged processes

Project Category

Care & Process Redesign

Keywords

Care & Process Redesign, Efficient Care, Quality Improvement, Plan Do Study Act, Self-Management, Multi-Disciplinary, Anaesthesiology, Nursing, Healthcare Administration, Surgery, Singapore General Hospital, ePASS, Electronic Pre-Anaesthesia Self-Screening, Pre-Admission Centre, Elective Surgery, FormSG, Telephone Screening

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Singapore General Hospital
SingHealth

SGH ePASS Team
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Introduction

All elective surgery patients requiring general anaesthesia at SGH must visit the PAC for pre-surgery investigations, anaesthesia risk assessment, counselling and optimisation. It takes approximately 2 hours for a patient to complete his journey at the PAC, 25 minutes of which comes from waiting to see an anaesthetist and 25 minutes of which comes from the anaesthetist consultation itself. The high ratio of wait time to service time for anaesthesia consultation suggests that PAC's manpower is insufficient to meet current demand for anaesthesia risk assessment.

The PAC's workload has grown from an average of 65 patients a day in Y2014, to an average of 86 patients a day in Y2019 and is projected to rise to 110 patients a day by Y2026. However, manpower allocation to the PAC has not risen in tandem with the increase in patient load, due to shortages of doctors within the public healthcare sector. This has led to the current high ratio of wait time to service time for anaesthesia consultation. The inefficiency in clearing the high patient workload in PAC has led to negative patient experiences and impaired staff work-life balance. As such, there is a need for a low-cost, sustainable solution to manage the PAC's rising workload.

The team observed that within the patient population attending PAC, 10% are low medical-risk patients undergoing simple, low surgical risk procedures. This patient group usually do not require any medical intervention after their pre-surgery assessment. If these "low-risk" patients could be identified prior to their PAC appointment and managed in a less resource-intensive manner, they would not need to come to the hospital and we would be able to conserve our anaesthetists' time at the PAC for higher risk patients instead.

Thus, SGH embarked on a project comprising a multidisciplinary team of anaesthetists, nurses and administrators to first, (1) pre-identify these healthy, low-risk patients using self-reported medical history and personal health status on FormSG and second, (2) develop an alternative workflow to manage these patients separately from patients with elevated risks for surgery. The project was implemented in June 2020, and is still ongoing.

Results

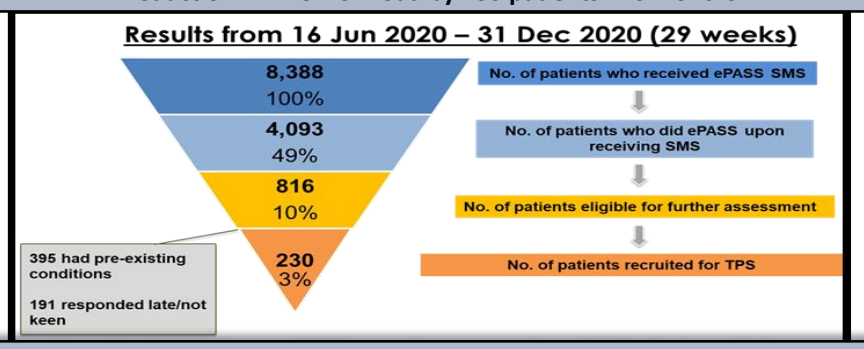
0 Day of Surgery cancellations for Telephone Screening patients due to inadequate risk assessment

$64,500 Medical manpower savings per annum for PAC by introducing remote screening by nurses instead of anaesthetists

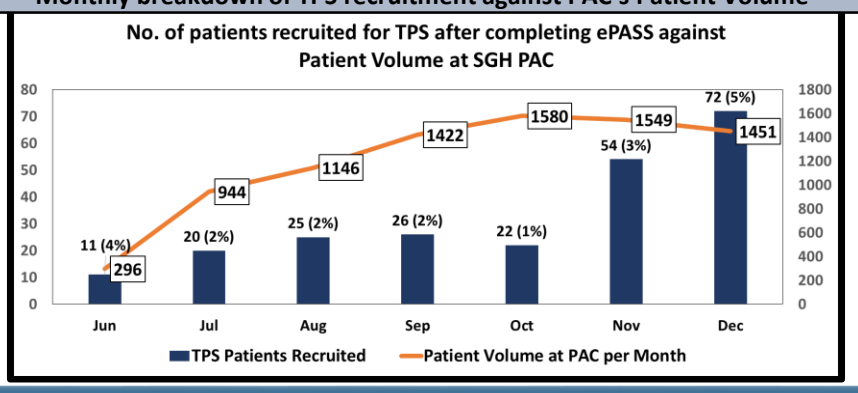
2 HOURS Time savings for each TPS patient by eliminating a visit to the PAC

$108,446 Combined PAC consultation fee savings per annum for TPS patients by eliminating a visit to the PAC

Reduction in PAC workload by 230 patients in 6 months



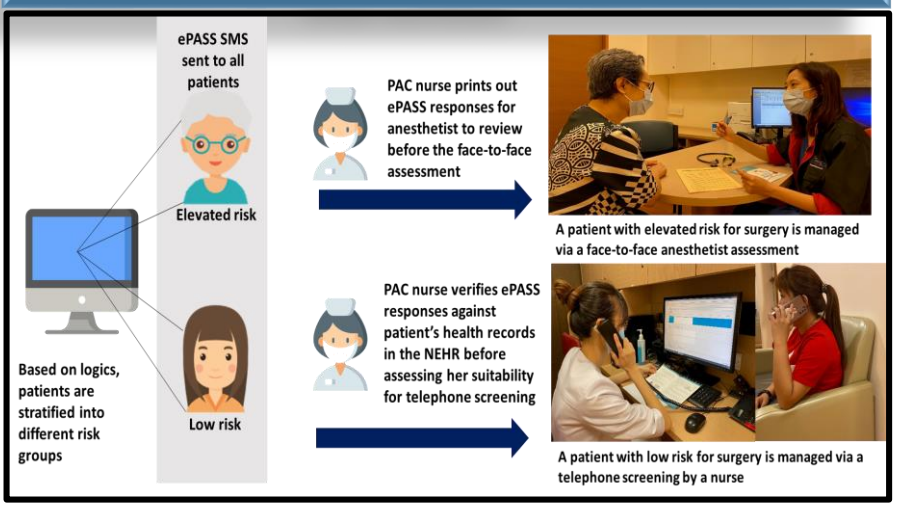
Monthly breakdown of TPS recruitment against PAC's Patient Volume



Objective

SGH has developed an Electronic Pre-Anaesthesia Self-Screening (ePASS) questionnaire on FormSG to intelligently pre-identify and enrol eligible patients for telephone screening (TPS) performed by trained nurses. Patients who completed TPS successfully would not need to be seen by an anaesthetist, saving them a trip to the hospital and freeing up the anaesthetist's time to see only elevated-risk patients.

Intervention



The proposed intervention comprises two aspects:

1) Developing an Electronic Pre-Anaesthesia Self-Screening (ePASS) questionnaire to screen for health conditions affecting patients' anaesthesia risk before their Pre-Admission Centre (PAC) appointment
2) Extending telephone screening (TPS) to low medical-risk patients for their anaesthesia assessment.

The intervention went through multiple iterations of PDSA (Plan – Do – Study – Act) cycles.

<u>Development of an Electronic Pre-Anaesthesia Self-Screening (ePASS) Questionnaire</u>

The ePASS questionnaire was developed on FormSG to screen for pertinent health conditions in patients. Questions in the questionnaire were compiled and adapted from published questionnaires in literature. Subsequently, the questionnaire was critically evaluated by a small focus group of non-medical people and anaesthetists to improve the clarity of the questions and reduce unnecessary medical jargon before its deployment.

After questionnaire deployment, feedback was obtained from all PAC patients. Responders were asked for the duration they took to complete the questionnaire and their questionnaire experience, whereas non-responders were asked for their reasons for declining to respond. Self-reported health conditions were also validated against the anaesthesia consult notes. Questions which had poor accuracy (low inter-rater reliability between patient's responses and anaesthetists' notes) were identified for further refinement at subsequent iterations of the questionnaire.

Links to ePASS questionnaire were sent via SMS to patients prior to their PAC appointment, and responses were reviewed to determine the course of action required for each patient. Over time, the SMS notification workflow was tweaked to optimize messaging frequency and wording to elicit a higher response rate.

<u>Stratification of patients into different risk groups</u>

Patients planned for a visit to the PAC were stratified into low-risk and elevated-risk groups based on their health demographics. Low-risk patients were defined as those of 21 to 64 years of age, with ASA (American Society of Anaesthesiologists) Score of 1, and going for low-risk surgeries. Surgery risk was determined based on an array of considerations including site of surgery, expected duration of surgery and expected blood loss.

<u>Management of low-risk and elevated-risk patient groups</u>

ePASS responses of patients provisionally identified as low-risk, based on their age and nature of surgery, would be reviewed in detail by PAC's nurses to determine their eligibility for telephone screening (TPS). They would verify patients' key responses and conduct anaesthesia-risk counselling. Patients who completed TPS successfully would not need to be seen by an anaesthetist at PAC, thus saving them a trip to the hospital and freeing up the anaesthetist's time to see only elevated-risk patients.

Patients with elevated risks of surgical complications cannot be recruited for TPS. Their ePASS responses would be printed out during their PAC visit, with key responses reviewed by an anaesthetist so that they can conduct a quicker and targeted consultation.

Conclusion

Our ePASS project of integrating self-reported patient history with demographic data, and using simple logics to manage patients of different risk groups, is a sustainable and safe method to address PAC's growing workload. We believe ePASS has the potential to be scaled to reduce workload on a hospital level, by relying on self-reported data to inform clinical decision-making. This ensures that we continue to provide cost-efficient and patient-centric care in light of shortages of doctors across the public healthcare sector.