

Value based management of asthma in a tertiary institution in Singapore: Current efforts and future plans

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Introduction

Asthma hospital admission rate in Singapore is two times the average of countries in the Organization for Economic Co-operation and Development (OECD)¹. This leads to substantial economic burden in Singapore of estimated of US\$1.55 billion annually¹. By reducing hospitalization rate from 80 to below 40 per 100,000 per year, Singapore may be able to save US\$77m (projected) from 2023 to 2040². As an Ambulatory Care Sensitive Condition (ACSC), it is vital and attainable to review and implement appropriate measures to improve value in asthma management within the acute care setting, as well as across the healthcare continuum. We describe the approach to value based management of asthma in Singapore General Hospital (SGH), the largest tertiary institution in Singapore.

Methods

Population cohort included patients admitted to SGH through A&E (Accident & Emergency) and SOC (Specialist Outpatient Clinic) clinics in 2023 with primary ICD10-AM J45/J46. Patients who died at discharge and susceptible to readmissions were excluded. Literature review with PubMed search and guideline review including Ministry of Health (MOH) Agency for Care Effectiveness (ACE) Clinical Guidance for Asthma 2020³ and Global Strategy for Asthma Management and Prevention (GINA) 2023⁴ were performed to identify interventions that improve asthma outcomes at population level. These were subsequently reviewed and refined through consultations with respiratory specialists. This process ensured that the final list of indicators reflected priorities important to clinicians, patients, and the healthcare system. Baseline data were extracted from institution's electronic Health Intelligence Systems (eHIntS) to understand current performance. A chart (Figure 1) was plotted to identify patient's post-discharge destinations. Baseline data were discussed and improvement plans were initiated for lower performing areas based on quality improvement (QI) methodology.

Results

In 2023, 528 patients were admitted to SGH for asthma as the primary indication for admission. Literature review and guideline recommendations showed 5 outcome indicators were deemed pivotal in affecting health outcomes for asthmatic patients, with the respective rationale listed in Table 1.

Outcome indicators (Performance in %)	Rationale
Early outpatient review (40.2%)	Reduce HCU ³
Education on disease and management (76.5%)	Reduce HCU, improve quality of life ⁷
Length of stay <= 4 days (84.5%)	Ensure appropriate HCU
(No) Readmissions within 30 days (94.5%)	Balancing measure
Prescription of inhaled corticosteroids (ICS) (98.3%)	Reduce mortality ⁵ , healthcare utilization (HCU) ⁶

Table 1: Rationale for outcome indicators

Length of stay (LOS), readmission rates and ICS prescription had good performances. Education on asthma disease and guided self-management (76.5%) and Outpatient review post-discharge (40.2%) were areas for improvement.

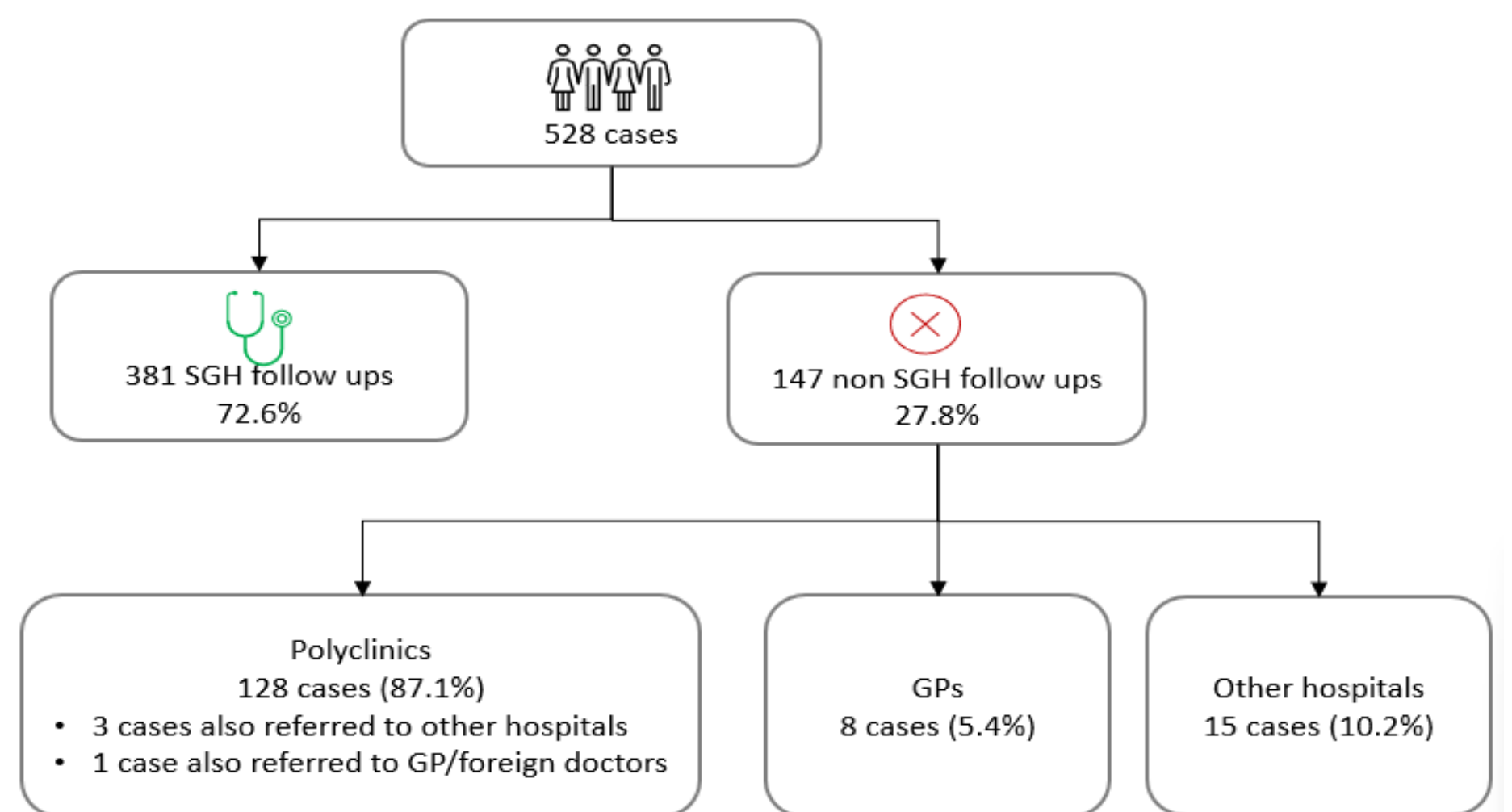


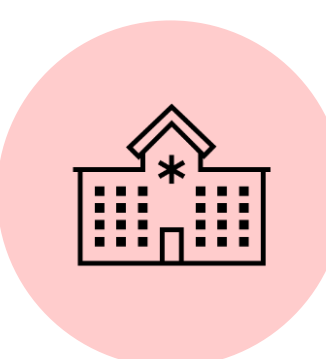
Figure 1: Post-discharge destinations. Non SGH follow ups are outpatient referral locations outside of SGH. This includes polyclinics, general practitioners (GPs) and other hospitals

Improvement efforts

The following initiatives were thus implemented starting Jan 2024:



Root cause analysis done for patients not receiving education showed 42.7% were discharged on weekends or on the same day of admission. Hence, respiratory coordinators started workflow to identify patients discharged over weekends/admission day via electronic medical system and provide phone/video counseling if these were not provided due to short stay.



Case review of the 59.8% who did not meet receive outpatient review (defined as visit within 2 months of discharge) showed that 8.8% were given follow-ups dates past the 2 months range and 32.5% defaulted their follow-ups (within 2 months). Hence, education was provided to the medical teams to schedule follow up appointment within 6 weeks post-discharge instead. For patients who missed the appointments, coordinators will re-schedule a visit within the next 2 weeks.



Data analysis revealed a significant limitation, where tracking of patients on follow up at other healthcare facilities was not possible. This gap prevented a comprehensive assessment including compliance to follow up. Analysis of patients' discharge disposition (Figure 1) showed 87.1% of this cohort were discharged to polyclinics. Consequently, a data sharing agreement with SingHealth Polyclinics, cluster primary care group was initiated to elucidate outcomes of this subset of patients.

Future action

SGH demonstrated good performance in provision of regular inhaled corticosteroids, ensuring asthmatic patients are managed well within a short time frame during acute exacerbations and not require early readmission within 30 days. Review and analysis of indicators aided in the identification of targeted interventions to improve on. The team will continue to monitor the performance of indicators post interventions and adjust strategies accordingly. Primary care management is paramount in asthma management and having clarity on patients' movements post-discharge enable appropriate allocation of resources, and data sharing with cluster polyclinics is the first step forward. This is also a pioneer for other conditions to emulate. Lastly, ongoing enhancement initiatives in primary care settings are being implemented, with the aim to foster a more comprehensive approach to asthma management throughout the entire care continuum.