

Project Title

Population-based Medication Management at the Specialist Outpatient Clinics
(PopMed-SOC): Can early Medication Review in patients with polypharmacy improve
clinical outcomes?

Project Lead and Members

Project Lead: Dr Ng Tat Ming

Project Members: Dr Soh Huimin, Mr Gan Boon Sing, Ms Alisa Chan Siu Ling, Ms
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Organisation(s) Involved

Tan Tock Seng Hospital

Healthcare Family Group(s) Involved in this Project

Pharmacy

Project Period

Start date: 01 August 2019

Completed date: 31 December 2020

Aim(s)

To establish a population-based medication management at the specialist outpatient
clinic to resolve inappropriate polypharmacy

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Lessons Learnt

- 1) Engagement of sponsors and stakeholders during the planning phase and provide periodic updates to address problems collectively.
- 2) PROMs self-administration cannot be focused on digital solutions and we need to provide an “omni-channel” platform for patients and caregivers (e.g. pen and paper, assisted, digital text forms and digital voice-enabled forms).
- 3) Standardized documentation and workflow have to be aligned with the intent of the service and if established earlier, can guide pharmacists to perform the task more efficiently.
- 4) PROMs could have been considered a process and clinical outcome that should have been planned during the start of the project.

Conclusion

See poster appended/ below

Additional Information

Do not be afraid to try out new models after you have done your best to research on it.

Failures and iterations are the norm during innovation and have faith that you are getting closer to the endpoint with each change.

Have your patients’ care and interest in mind when designing change models

Identify stakeholders early and keep them engaged throughout the planning, implementation and analysis.

Other than the direct clinical outcomes that benefitted the patients, PopMed-SOC is an important pilot and proof of future pharmacy clinical service that focuses on population-based strategy, supporting patients and doctors in medication

management, regardless of the conditions each patient has. There is a great potential for better care if we can scale up and link with other medication management services in NHG institutions or nationally.

Project Category

Care & Process Redesign

Value-based Care, Risk Management, Adverse Outcome Reduction

Keywords

Medication Review, Polypharmacy, Clinical Outcomes

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Can early Medication Review in patients with polypharmacy improve clinical outcomes?

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INTRODUCTION

At Tan Tock Seng Hospital, we implemented an interdisciplinary programme (General Medicine Complex Care (GMCC)) comprising of a primary doctor, pharmacist, and care coordinator. Patients enrolled in this programme will be offered at least 2 medication review sessions with the pharmacists in a 6-month period.

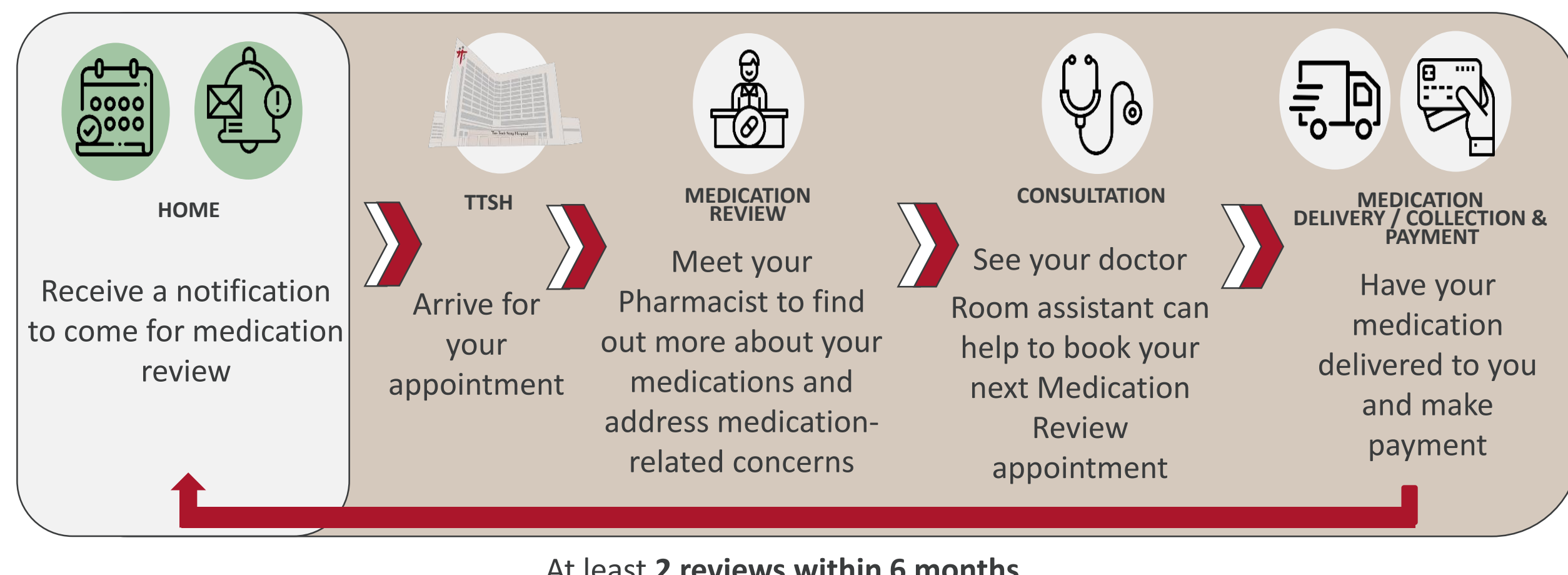


Figure 1. Patient's Clinic Journey

The medication review model emphasized on relationship-based care and patient and caregiver empowerment to resolve drug-related problems (DRPs).

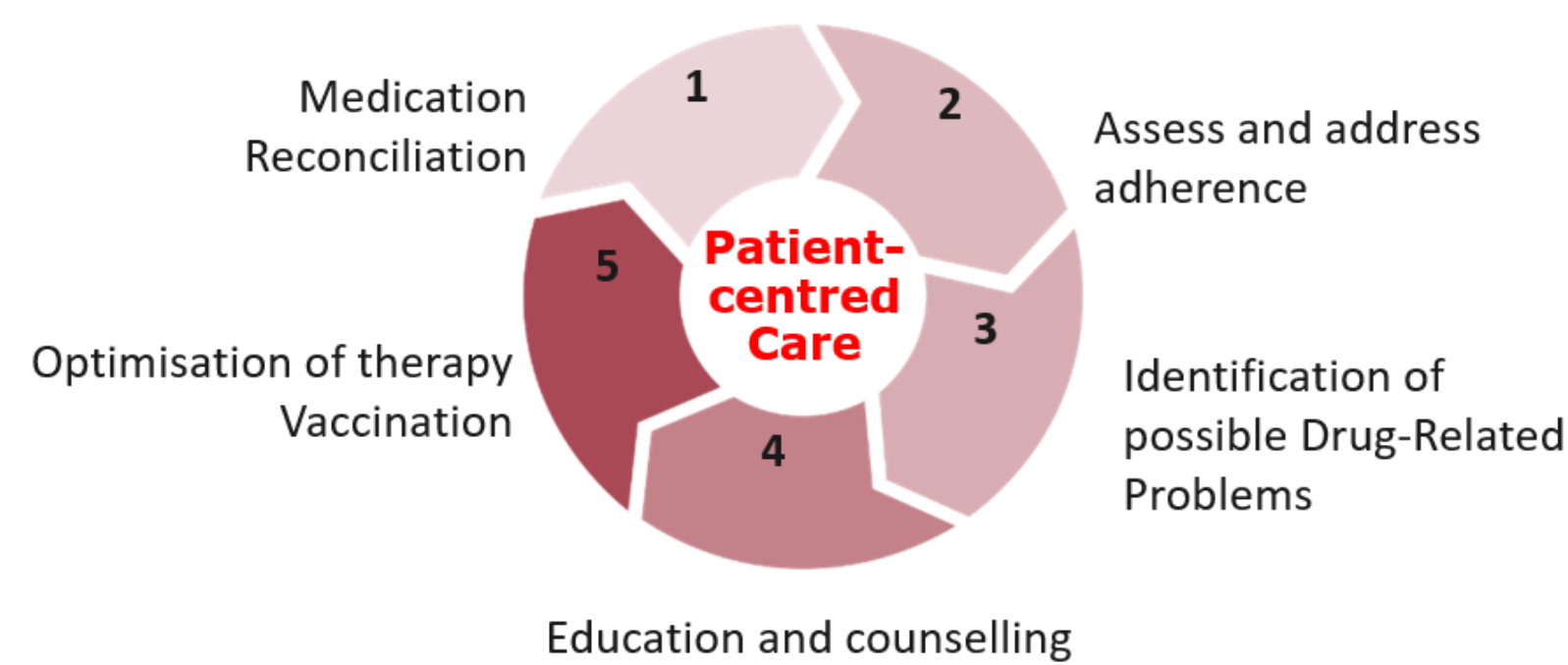


Figure 2. Activities at Medication Review Clinic

From	To
Multiple prescriptions from different doctors	One consolidated medication list
Episodic prescription review and interventions	Longitudinal, collaborative approach between patient, doctor and pharmacist to achieve desired outcomes
Lack of support towards self-management of medications by patients	Relationship-based coaching and patient activation to achieve patient-centred goals

Table 1. Model of Care at Medication Review Clinic

OBJECTIVES

We performed this study to evaluate the effectiveness of this model in reducing unplanned hospital admissions and Emergency Department (ED) visits and determine DRP resolution rates.

METHODS

This is a retrospective observational study conducted on patients reviewed by pharmacist between 1 August 2019 and 31 December 2020. At least 2 pre-consult medication review sessions within 6 months were provided by the pharmacist.

Unplanned admission and ED visit rates 1-year before and after first medication review session were compared using Poisson regression. These were also evaluated based on when the first medication review was performed, in relation to GMCC enrolment. DRP resolution rates were collected 1-year after the first session.

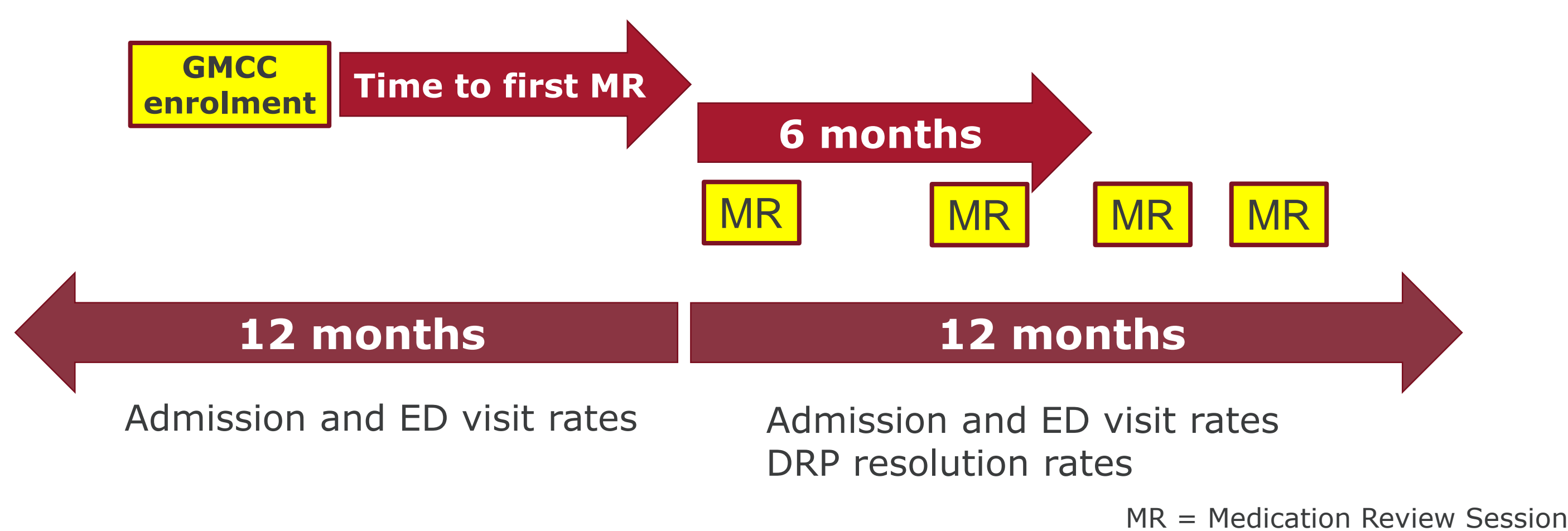


Figure 3. Timeline of data analysis

Sample Size Calculation

A minimum of 78 patients was required to detect a 20% reduction in incidence of hospital admissions, based on the baseline hospital admission rate of 37.8 per 100 residents aged more than 65 years according to the Singapore Ministry of Health's statistics in 2020.

RESULTS

Ninety-seven patients were included. The median age was 76 years (interquartile range (IQR) 69-81), median Charlson Comorbidity Index score (CCI) was 7 (IQR 6-9) and median number of medications was 13 (IQR 10-16).

Variables (n=97)		Univariate analysis (p value)	
		ED visits	Admissions
Age (Median, IQR)	76 (69-81)	0.181	0.303
CCI score (Median, IQR)	7 (6-9)	0.984	0.209
Number of (Median, IQR) medications	13 (10-16)	0.034	0.014
Male (n(%))	56 (57.7%)	0.582	0.123
Race (n(%))			
a. Chinese	76 (78.3%)	0.217	0.275
a. Indian	11 (11.3%)	0.586	0.790
a. Malay	8 (8.2%)	0.337	0.618
a. Others	2 (2.1%)	*Count is too low for analysis*	
Interval between GMCC enrolment and first MR (Median, IQR)	498 (331-1270)	Not done as effects of primary outcome only set in after enrolment	

Table 2. Baseline demographics

All statistical tests were two-tailed, with p values of less than 0.05 considered statistically significant. Only the number of medications was statistically significant on univariate analysis of baseline demographics with the primary outcomes (ED visits and unplanned admissions 12 months before first medication review session).

Primary Outcome

After adjusting for number of medications, medication reviews were associated with a 23.8% significant reduction in unplanned admissions (incidence rate ratio (IRR) 0.762, 95% CI 0.582-0.998, p=0.049), 1 year after first medication review session, compared to 1 year before. There was also a 13.7% reduction in ED visits (IRR 0.863, 95% CI 0.680-1.095, p=0.225).

	Percentage difference (%)	Incidence Rate Ratio (IRR)	p value
Unplanned admission	-23.8	0.762 (95% CI 0.582-0.998)	0.049
ED visits	-13.7	0.863 (95% CI 0.680-1.095)	0.225

Table 3. Primary outcome

With every 1-month earlier initiation of medication reviews, reduction in admissions (IRR 1.035, 95% CI 1.018-1.052, p<0.001) and ED visits (IRR 1.029, 95% CI 1.013-1.045, p<0.001) were significantly greater.

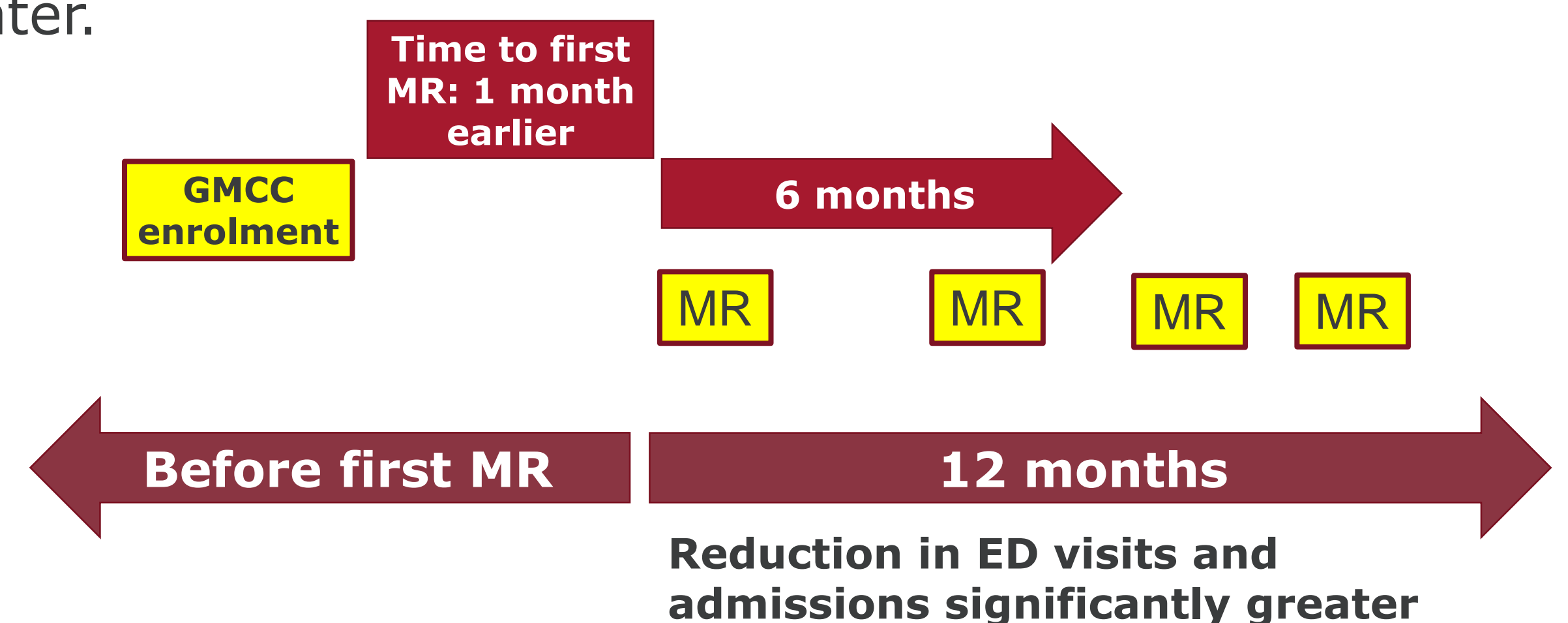


Figure 4. Early enrolment has greater reduction in ED visits/admission

Secondary Outcome

DRP resolution outcomes are determined at the subsequent medication review. The rates are high at 80.7%.

CONCLUSION

Preliminary analysis demonstrated potential that our interdisciplinary care model reduced ED visits and unplanned admission rates, with greater reduction in patients seen early by a pharmacist into their GMCC enrolment. Further patient recruitment is ongoing.