Impact of 7-day vs 5-day clinical pharmacy service for patients following ST-elevation myocardial infarction

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Introduction

Approximately 25,000 patients that present to the emergency department each year with symptoms of acute coronary syndrome (ACS), are diagnosed with a STEMI[1]. Post-STEMI, patients are at high risk of complications, including death and re-hospitalization. As a result, they are commenced on evidence-based secondary prevention medications, tailored to the patient[2], where pharmacists play a key role in medication optimisation.

Pharmacists are known to significantly reduce the incidence of medication errors at transitions of care[3,4] and can play a key role in optimising medications following a STEMI. This is supported by a study where recommendations relating to secondary prevention medications post ACS were largely accepted by cardiologists[5]. Medication reconciliation and discharge counselling conducted by pharmacists, can substantially reduce emergency department visits and hospital readmissions by 28% and 19% respectively[6].

In Frankston Hospital, one of the most frequently referred to guidelines for post STEMI management is the European Society Cardiology (ESC) guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation (2017 guidelines were utilized). This recommends secondary prevention medications that require optimisation [Statins, dual antiplatelet therapy (DAPT), Angiotensin-converting enzyme inhibitors (ACEIs)/Angiotensin receptor blockers (ARBs), Beta-blockers (BB) and Mineralocorticoid receptor antagonists (MRAs)].

Recently, the hospital extended its clinical pharmacy service from five to seven days. The impacts of this extension on patient medication optimisation and pharmacist interventions post-STEMI is unknown.

Aim

To evaluate the impact of an extended clinical pharmacy service on pharmacist interventions in optimisation of patient medications following a STEMI.

Methods

Design – Single centre retrospective cohort study.
Setting – Frankston Hospital inpatient cardiology wards.
Period 28/02/2022 to 29/05/2022 (5-day clinical pharmacy service).
27/02/2023 to 28/05/2023 (7-day clinical pharmacy service).
Steps

Inclusion Criteria Patients discharged from Frankston Hospital inpatient cardiology wards following a STEMI to any destination.

Exclusion Criteria Patients, <18 years of age, on the Care of the Dying pathway, discharged following elective procedures or to an alternate site for acute management.

Primary outcome Proportion of patients with pharmacist intervention on prescribed secondary prevention medications, following a STEMI.

Secondary outcome Proportion of patients discharged with an optimised medication regimen following a STEMI.

Results

A final sample of 25 (5-day service) and 28 patients (7-day service) was used for data analysis (n=53).

Table 1: Patient demographics

	5-day service	7-day service
Mean age (years)	63	63
Sex	64% (M) 36% (F)	75% (M) 25% (F)
Median length of stay (days)	4	3.5
Prior myocardial infarction	12%	25%
Heart failure OR LVEF<40% post STEMI prior to discharge*	24%	43%
HFrEF post STEMI prior to discharge^	12%	18%
STEMI medications prescribed prior to admission		
Dual antiplatelet therapy	0%	7%
Intensive statin therapy	4%	21%

* These patients would be expected to be discharged on ACEIs/ARBs and BB
^ These patients would be expected to be discharged on ACEIs/ARBS, BB and MRA
LVEF= left ventricular ejection fraction; HFrEF = heart failure with reduced ejection fraction

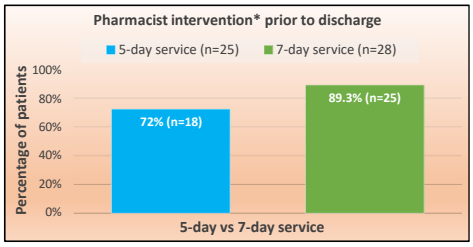

Figure 1: Patients with documented pharmacist interventions prior to discharge
*Pharmacist intervention defined as documentation of recommendation to optimise any medication or provision of a medication list on discharge

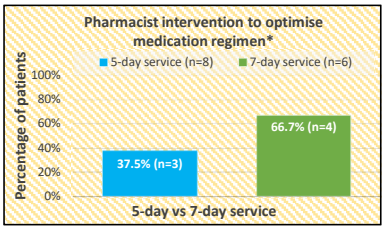

Figure 2: Patients that had pharmacist intervention on prescribed secondary prevention medications where required.
*In the 5- and 7-day service group of Fig 1, 8 and 6 patients in this figure required pharmacist intervention, respectively.

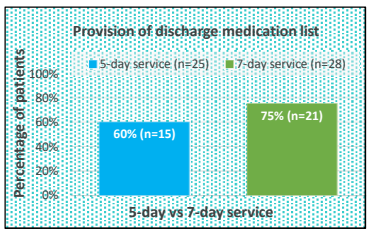

Figure 3: Patients discharged on an optimised medication regimen that had documented pharmacist interventions

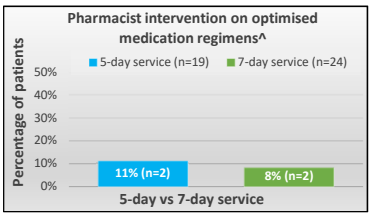

Figure 4: Patients discharged on an optimised medication regimen that had documented pharmacist interventions.
^In the 5- and 7-day service group of Fig 1, 19 and 24 patients in this figure had optimized medication regimens respectively.

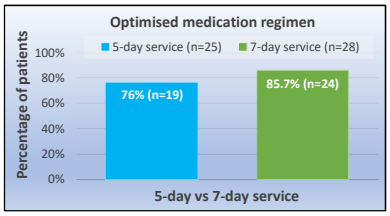

Figure 5: Patients discharged on an optimised medication regimen

Discussion

In the 7-day service group, there was an increase in the number of patients that received pharmacist intervention prior to discharge either as interventions to optimise medication regimens, or provision of a discharge medication list (Fig 1).
Pharmacist interventions almost doubled in identified cases where patient's medication regimens were not already optimised by prescribers prior to discharge (Fig 2).

However, this is in contrast to figure 4, which shows that of the patients with fully optimised medications regimens on discharge, only 2 in each group had a pharmacist intervene. This suggests the increase in clinical pharmacist availability may be associated with an improvement in patient medication regimens, although full optimisation may not occur. There was also an increase in percentage of patients that received a discharge medication list in the 7-day group.(Fig 3).

Additionally, the improvement in patients discharged with an optimised medication regimen (Fig 5) may reflect the increase in pharmacist activity and the potential benefits to patient care with the 7-day service. An increase in clinical pharmacist availability was associated with increased patient medication optimisation which is consistent with the literature[4].

Other studies observed a direct effect of pharmacist interventions optimizing patient medication regimens which was not observed in this study[5]. There were significantly greater pharmacist interventions where required, to improve patient medication regimens, and optimization rates remained identical in both groups. A possible explanation relates to workload with significantly higher pharmacist-to-bed ratio on weekends (1:84) in comparison to weekdays (1:24).

Limitations

This was a single centre study with a small sample size which reduces the external validity of results and affects generalisability of results respectively.

Conclusion

Although this study did not demonstrate any increase in pharmacist interventions to optimize patient medication regimens, consistent increases in pharmacist interventions to improve patient medication management were noted. This study provides a good indication of the potential benefits to patient care associated with increased pharmacist availability. Therefore, it forms a strong basis for larger studies to further investigate this association and advocate for increased clinical pharmacy service availability.

References

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