Partnered Pharmacist Medication Charting (PPMC) in Regional and Rural General Medical Patients

Tong E, Hua U, Edwards G, Van Dyk E, Yip G, Mitra B, Dooley M on behalf of the PPMC Research Group
(PPMC Research Group: Roman C, Shi L, Lloyd G, Polmear J, Spence L, Ayorinde D, Eldridge C, Richards J, Griffiths M, Gleeson A, Wendt T, Turner C, Ford D, Mason L, Zaici S, Dimond R, Colbert H and Sourlos N)

Introduction

Patients of General Medical Unit (GMU) are often comorbid, with polypharmacy, which introduces complexities to their medication therapy and increases risk of medication related harm[1]. Additionally, rural and regional hospitals are geographically isolated compared to metropolitan counterparts, which present challenges such as stretched resourcing, poorer workforce retention and burnout[2].

The Partnered Pharmacist Medication Charting (PPMC) model (Figure 1) was first established in 2012 and has been successful in reducing medication charting errors and hospital length of stay (LOS) across GMUs of metropolitan Victoria[3]. This model of care enables credentialed pharmacists to proactively document and chart patients' medication management plan on admission, in collaboration with the treating doctor and nurse.

This model was scaled to rural and regional hospitals, using a hub and spoke model, to replicate similar successes and address some barriers to safer patient care in this setting.

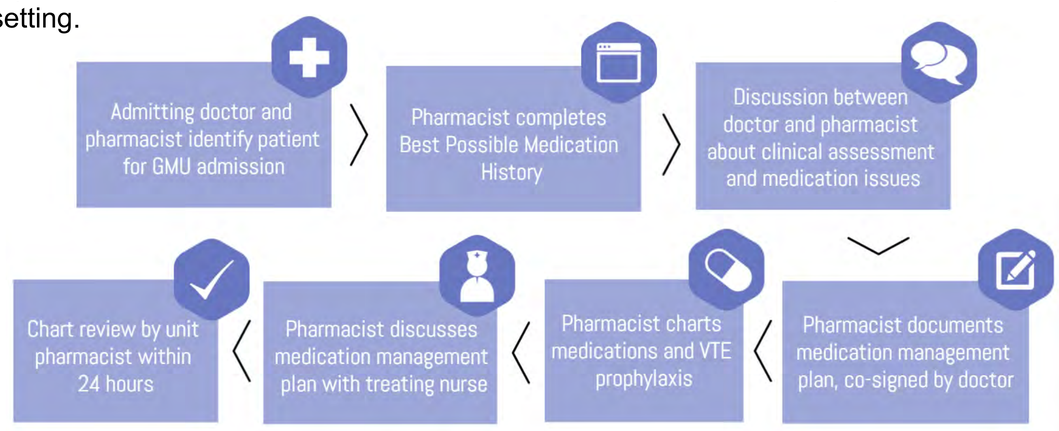

Figure 1: PPMC model of care

Aim

To evaluate the implementation of the PPMC model across GMUs in rural and regional hospitals in Victoria and assess the impact of this intervention on medication errors.

Primary outcome: Proportion of patients with ≥1 medication charting error on admission.

Secondary outcomes: inpatient length of stay, risk stratification of errors, MET calls, ICU transfers and 30-day readmission rate.

Methods

This was a prospective, cohort study comparing cohorts before and after the introduction of PPMC (Figure 2). PPMC was implemented as a new model of care in inpatient GMUs. Medication charting errors were identified by a second pharmacist conducting medication reconciliation within 24 hours of admission.

Twenty-five percent of pre-intervention medication errors and all post-intervention medication errors were stratified for risk of harm[4] by a blinded expert panel consisting of a GMU physician, Emergency Medicine physician and senior pharmacist.

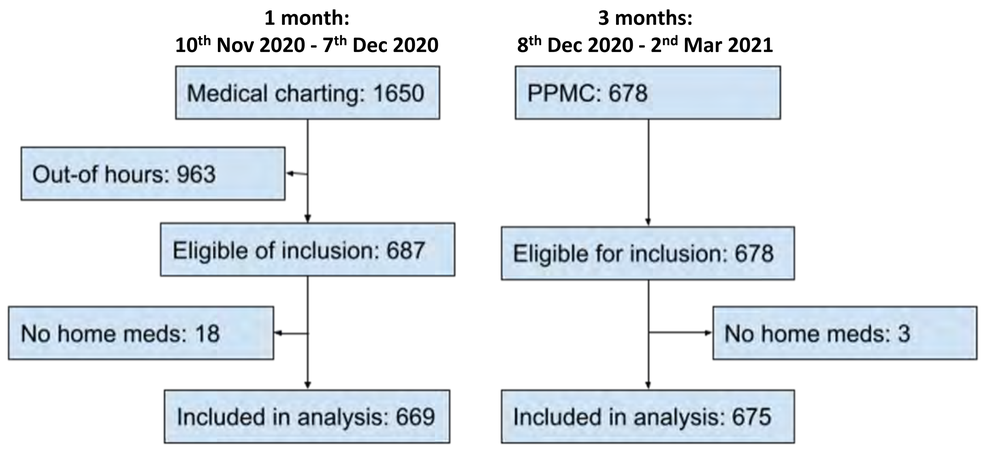

Figure 2: Selection criteria

Results

Partnered Pharmacist Medication Charting (PPMC) was adapted across 13 rural and regional health services.

A total of 669 patients received medical charting in pre-intervention phase and 675 patients received PPMC in intervention phase (Table 1).

Table 1: Demographics

	Medical charting (n=669)	PPMC (n=675)	p-value
Age (y); mean (SD)	72.1 (70.8)	72.3 (15.5)	0.81
Male sex (%)	333 (49.8)	325 (48.1)	0.5
Admission stream - **ED** - **Direct to ward**	 598 71	 657 18	
Charlson Comorbidity Index	5 (3-7)	5 (3-7)	0.54
Number of regular medications	7 (5-10)	8 (5-11)	0.08
Number of PRN medications	1 (0-2)	1 (0-3)	0.009

Results

Of the 669 patients who received standard medical charting during pre-intervention, 446 (66.7%) had ≥1 medication error identified compared to 64 patients (9.5%) using PPMC (p<0 .001).

The relative risk of a patient having ≥1 error with PPMC was 0.14 (95% confidence interval [CI]: 0.11-0.18), with a NNT to prevent 1 error of 1.75 (95% CI: 1.63-1.89).

A total of 340 of the 1361 medication charting errors identified in pre-intervention phase and all 80 in intervention phase were stratified by an expert panel (Table 2).

Table 2: Stratified Medication Errors

	Pre-phase, n = 340/1361 (25% sample)	Intervention, n = 80
Insignificant	51 (15%)	20 (25%)
Low risk	102 (30%)	41 (51%)
Medium risk	135 (40%)	12 (15%)
High risk	50 (14.7%)	7 (9%)
Extreme risk	1 (0.3%)	0

The median (interquartile range) LOS was 4.8 (2.7–10.8) days in pre-intervention and 3.7 (2.0-7.0) days among patients that received PPMC (p<0.001).

There were no clinically significant differences in other secondary outcome measures (Figure 3).

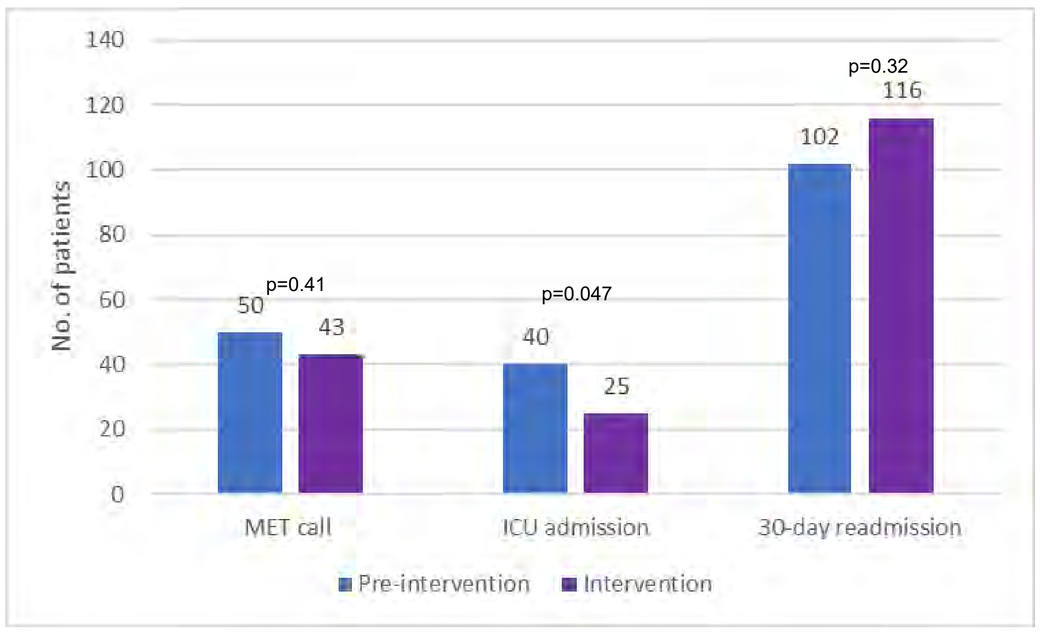

Figure 3: Secondary Outcome Measures

Discussion

This is the first study to evaluate the impact of the PPMC model of care in a rural and regional setting.

Findings:

PPMC was associated with reduced medication charting error on admission and shorter inpatient length of stay.

Benefits derived:

- Reduced risk of medication related patient harm in hospitals
- Promotes collaboration between pharmacists, physicians and nursing staff
- Expand the scope of pharmacist practice
- Utilise pharmacist capabilities to reduce burden and burnout on physicians in rural settings
- Hub and spoke model was a successful implementation tool in rural/regional setting

Limitations:

- This service is only available within pharmacist working hours
- Pharmacy resource constraints impair extent to which PPMC is conducted

Conclusion

The PPMC model was successfully scaled to GMUs of rural and regional Victoria as a medication safety strategy. There was a significant reduction in medication charting errors, high risk medication charting errors and hospital inpatient length of stay.

ACCESS PAPER

References

1. Hajjar ER, Cafiero AC, Hanlon JT. Polypharmacy in elderly patients. Am J Geriatr Pharmacother. 2007;5(4):345-351.
2. Australian Institute of Health and Welfare. Australia's Health 2010. Australia's Health Series No 12. Canberra: Australian Institute of Health and Welfare. 2010. p.579.
3. Tong EY, Mitra B, Yip G, Galbraith K, Dooley MJ, Group PR. Multi-site evaluation of partnered pharmacist medication charting and in-hospital length of stay. British Journal of Clinical Pharmacology. 2020;86(2):285-90.
4. SHPA Committee of specialty practice in clinical pharmacy. Standards of practice for clinical pharmacy services. J Pharm Pract Res. 2013;43(2):4