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Background

A partnered medication review and charting model between a pharmacist and medical officer was developed and endorsed by the relevant hospital committees. The service commenced in the Emergency and Trauma Centre (ED), Emergency Short Stay Unit (ESSU) and the General Medicine Unit (GMU) at The Alfred Hospital in 2012.

The GMU receives approximately 4,500 admissions per annum, predominantly through the ED and mostly with complex co-morbidities and poly-pharmacy. The GMU is divided into 4 teams (A/B/C/D) and the ESSU is divided into two teams. Pharmacy services at our hospital are well established and include medication history taking on admission within 24 hours (including weekends), daily medication review, and regular attendance on interdisciplinary ward rounds.

This evaluation, of the partnered pharmacist charting model, was funded through the Department of Health & Human Services Workforce Innovation Grants Program.

Aim

The aim was to compare a partnered pharmacist charting model in the GMU and ESSU, with the traditional medical charting model, at admission.

Method

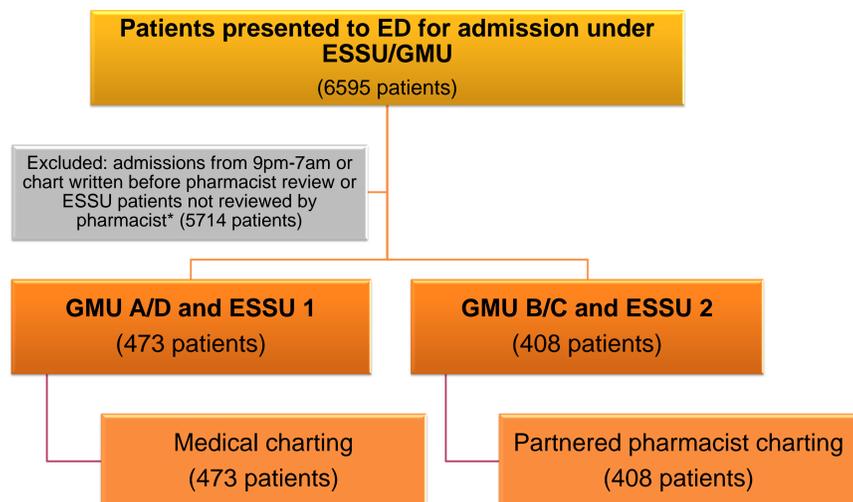
A randomised controlled trial was conducted. Upon admission to ESSU/GMU, patients are randomly allocated to the medical teams in GMU and ESSU. The partnered pharmacist charting occurred in half of the GMU/ESSU units, with standard medical charting continuing in the other half (Figure 1).

Intervention: Credentialed pharmacists charted pre-admission medications and venous thromboembolism prophylaxis in collaboration with the admitting medical officer for patients admitted to one team of ESSU and two teams in GMU. A second pharmacist reviewed all charts within 24 hours for each patient charted medication by a pharmacist, providing a double check.

Comparator: Standard medication charting, usually by medical officers of relevant teams.

The evaluation included patients medication charts written in the period 16th March 2015 to 27th July 2015. The assessor was not blinded to whether the admission chart was written by a pharmacist or medical officer. Errors identified were classified as either omitted drug, incorrect dose/frequency, incorrect/unnecessary drug or incorrect route. Only patients admitted during pharmacist working hours (7am-9pm, 7-days per week) were included, to remove the potential bias of overnight admitting medical staff not having an accurate medication list available.

Figure 1: Flow diagram of methodology



* Uncomplicated admissions or no regular medications

All errors identified were reviewed and assigned a risk rating by a blinded independent expert panel comprising of a general physician, an emergency physician and a senior pharmacist. The panel used previously published methodologies to review the errors using the risk classification tool published in the Society of Hospital Pharmacists' Australia Practice Standards for Clinical Pharmacy Services [1].

The potential consequence or 'risk' of each error was determined in the hypothetical scenario that it persisted for 48 hours [1]. Errors were classified as insignificant, low risk, moderate risk, high risk or extreme risk.

Results

A total of 408 patients received partnered pharmacist charting and 473 patients received standard medical charting during the study period (Table 1). The total number of medications charted was 4031 on the partnered pharmacist arm and 4459 on the medical arm.

Table 1: Demographics

	Pharmacist (n=408)	Medical (n=473)
Total number of medications charted	4031	4459
Average age (SD)	75 (16)	71 (18)
Median number of medications (IQR)	9 (5-11)	9 (4-11)

The total number of errors identified were 19 on the partnered pharmacist charting arm, equating to a 0.5% error rate, compared with 1584 on the medical arm, equating to a 35.3% error rate, p<0.0001 (Table 2).

Table 2: Charting errors identified

	Pharmacist	Medical
Total number of errors identified	19	1573
Error rate	0.5%	35.3%

The most common error identified was omitted drug (Figures 2 & 3).

Figure 2: Errors identified from partnered pharmacist charting



Figure 3: Errors identified from medical charting

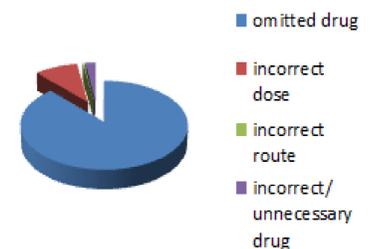


Table 3: Error risk stratification determined by expert panel

	Pharmacist charting	Medical charting	p-value
	No of errors	No of errors	
Number of insignificant errors	11 (0.3%)	904 (20%)	<0.0001
Number of low risk errors	1 (0.02%)	58 (1%)	<0.0001
Number of moderate risk errors	6 (0.15%)	292 (7%)	<0.0001
Number of high risk errors	1 (0.02%)	285 (6%)	<0.0001
Number of extreme risk errors	-	34 (0.8%)	<0.0001

In the pharmacist charting arm, 11 errors (0.3% of medications charted) were considered by the panel to be of insignificant clinical risk (Table 3). Six errors were considered to be of moderate risk (0.15% of medications charted) and one error was ranked as high risk (0.02% of medications charted). The high risk error identified on the pharmacist arm was the omission of long-term prednisolone in a patient with rheumatoid arthritis.

No errors identified on the pharmacist arm were categorised as extreme risk by the panel. Thirty-four errors (0.8% of medications charted), identified in the medical charting arm, were considered by the panel to be of extreme clinical risk. Examples of errors considered to be extreme risk by the panel included a four-fold overdose of metoprolol in a 94 year old, a two-fold overdose of prazosin in an 82 year old admitted post-fall with hypotension, and charting of 56 units of immediate acting insulin, instead of intermediate acting insulin, for a 60 year old.

Discussion

The results of this study demonstrate that partnered pharmacist charting undertaken by a credentialed pharmacist and medical officer is achievable, safe and effective in reducing medication charting errors.

In the current setting of increasing demand on acute care services, partnered pharmacist charting should be adopted as a standard of care in EDs and GMUs. Expansion of both the model to include charting beyond pre-admission medications and VTE prophylaxis, and the service to other clinical areas and institutions, is indicated and should be prioritised with appropriate evaluation.

References

1. SHPA Committee of Speciality Practice in Clinical Pharmacy, Standards of Practice for Clinical Pharmacy Services. *J Pharm Pract Res* 2013; 43(2), Supp.