

Emergency Paediatric Pharmacist — a Success Story



Dhrita Khatri¹, Dr Joanne Grindlay², Molika In¹, Brian Lilley¹

1. Pharmacy Department, 2. Emergency Department, The Royal Childrens Hospital Melbourne, Australia

Background

The role of a clinical pharmacist in emergency department (ED) in Adult services has shown to be beneficial throughout Australia with almost all having at least one pharmacist as part of the multidisciplinary team. Conversely the number of paediatric emergency pharmacists is fairly low. The Royal Children's Hospital (RCH) has a level 4 emergency department and yet it does not have a dedicated clinical pharmacist. An ED pharmacist is needed at RCH, as paediatric patients are at a higher risk of medication errors, with rates as high as 5.7% compared to 3.9% in general adult ED.^{1,2} Studies have shown, physical presence of a clinical pharmacist in ED can significantly reduce medication related incidents.³ At RCH, it is predicted in the 12-month period 2016/17, approximately 87,000 patients will attend the ED. SSU (Short-stay unit) receives 49% of inpatient admissions from ED, yet have no clinical pharmacist present on the ward.

In June 2015, The ACEP (American College of Emergency Physicians) policy statement believes that pharmacists have a critical role in ensuring efficient, safe, and effective medication use in the ED. The ACEP advocates for health systems to support dedicated roles for pharmacists within the ED.⁴

Aim

To assess the effectiveness of a clinical pharmacist in ED and SSU in a specialised paediatric hospital.

Method

Pre-trial: The outpatient dispensary pharmacy team remotely "service" ED/SSU ward; nursing staff send medication charts via pneumatic chute to the pharmacy, a pharmacist then reviews and provides medication not kept on imprest. The team collected data on the number of interventions and charts reviewed based on inpatient charts that were sent to pharmacy. From this information, it was identified ED/SSU would benefit from having a clinical pharmacist present on the ward so short pilot trial of clinical pharmacy service was conducted in ED/SSU in 2016.

Pilot trial: A clinical pharmacist provided pharmacy service to ED/SSU (8:30-16:30). This involved the pharmacist attending ED and SSU handovers, discussing with the nurse-in-charge to prioritise which patients needed to be seen first. This included patients on multiple medications, those ready for discharge or those who are likely to be admitted. The pharmacist then tried to see all other patients present, processed discharge prescriptions, dispensed medications for inpatient use, helped with any medication information enquiries as well as counselled parents/patients on their medications. The ED/SSU pharmacist also collected data on number of interventions, medication reconciliations (MR) and medication charts reviewed.

After the trial period, data was analysed using excel spreadsheet. Comparison of ED/SSU clinical pharmacy service (pilot-trial) with remote pharmacy service (pre-trial) was conducted. As the pharmacy service was provided during the hours of 8:30 to 16:30, the number of new admissions were also from this time-frame even though it is a 24-hour service.

An online survey was also conducted after the completion of the trial period using Survey Monkey®. The online survey was sent to doctors and nurses in both the ED and SSU department as well as pharmacists to assess their views on the presence of a clinical pharmacist in ED/SSU.

Results

During the 13-day trial period:

- A dedicated pharmacist provided medicines information to doctors/nurses, prevented incorrect prescribing, initiated omitted regular medications and resolved non-formulary medication prescribing

- The number of charts reviewed by pharmacists greatly increased compared to pre-trial, for new admissions: (Table 1)

- 68% (100/147) MRs completed in SSU (= 21MR/day)

- 14.3% (173/1207) MRs completed in ED

- 62.8% (168/269) inpatient charts reviewed in SSU

- 178 inpatient charts reviewed in ED

- A total of 70 interventions recorded (Table 2 for examples)

- Online survey found: (Table 3a,b,c,d)

- 93.1% of doctors and nurses were aware of the ED/Dolphin clinical pharmacy service trial and 89.47% of pharmacists were aware of this service

- 87.93% of doctors and nurses utilised the clinical pharmacy service during the trial period

- 94.74% of doctors and nurses agree that ED/Dolphin wards need a dedicated clinical pharmacist and all pharmacists who completed the survey agree

- 80% of ward pharmacists received completed medication reconciliations from the ED/Dolphin pharmacists on their wards

- Doctors and nurses highly value the role of pharmacist in ED/SSU as shown in Table 3c

- Comments from online survey were analysed which showed that doctors and nurses believe that a clinical pharmacy service would be highly valued in these high turn-over wards

(See Table 3d for some examples of comments)

Table 1. A comparison of pre-trial and pilot-trial

Ward	Emergency department (ED)		Dolphin (SSU) ward	
	Pre-trial	Pilot-trial	Pre-trial	Pilot-trial
Number of NEW admissions: (between 8:30 to 4:30pm)	2,580	1,207	394	147
Number of patients on ward:	2,580	1,207	394	269
Number of in-patient charts seen by pharmacist	22	178	56	169
Number of medication reconciliation (MR)	0	173	0	100
Number of interventions:	2	36	9	34

Table 2. Some examples of interventions made in ED and SSU

Patient in ED cubicle, not charted any regular anti-epileptic medications. Morning meds over due by 2 hours ➔ Pharmacist dispensed in a timely manner to prevent any risk of seizure complications	Rate of glucose prescribed at 1.12g/kg/hour = double the correct rate of 0.5g/kg/hour ➔ Error picked up by pharmacist before any major harm was caused to patient
Patient prescribed a 20 fold overdose of medication (Oxybutynin 50mg as opposed to 2.5mg)	Low vancomycin level noted ➔ Advised by pharmacist to increase dose by 10% and to repeat vancomycin levels
Dual therapy prescribed, xylocaine 2% in addition to lignocaine "spray"	Celecoxib prescribed as "when required" therapy post tonsillectomy ➔ Made prescriber aware of current protocol

Table 3a. Online survey from nursing/medical staff

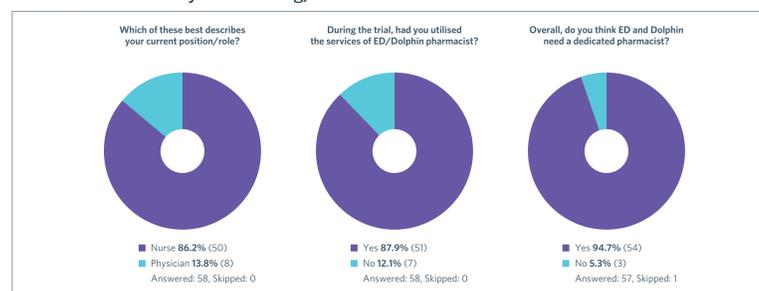


Table 3b. Online survey from pharmacy staff

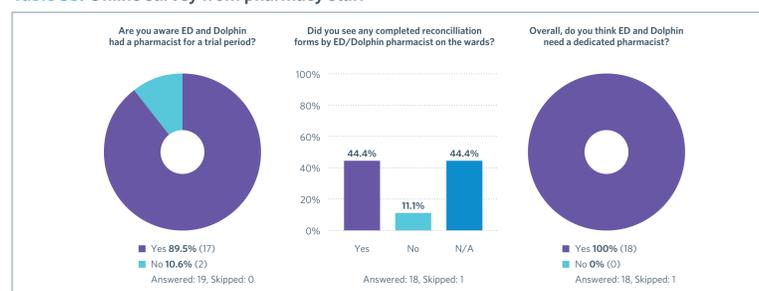


Table 3c. Assessing the value of ED/SSU pharmacists role — from a doctors/nurses perspective

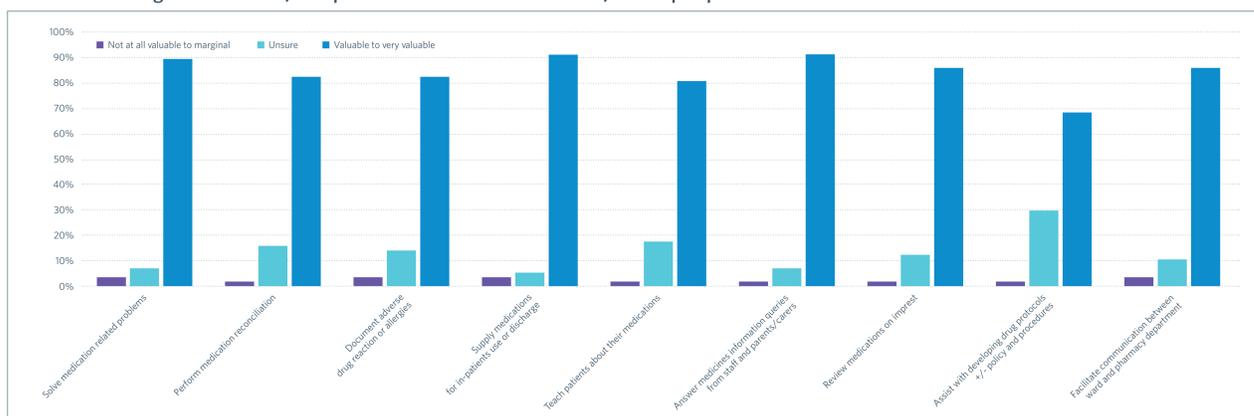


Table 3d. Some examples of comments from survey

"Mandatory for a high turnover ward"

"Excellent resource! Time saving, prompt, efficient and valuable member of the team"

"Saved a lot of time. Often we had to wait over an hour for a simple medication to be dispensed from Pharmacy. The pharmacist was always available and was very efficient in assisting when needed. I found it much more safe when the pharmacist had also checked the medication charts in the morning. It was great for the pharmacist to provide education to the families which saved the nursing staff a lot of time. Nursing staff are often faced with pharmacy specific questions so I felt as though better care was able to be provided with the pharmacist able to educate families."

"Helping expedite discharge"

"The pharmacists were helpful, proactive and were first to help and sort out discharge scripts, medication problems, drug availability etc during hours. It saved much time throughout the day to allow me to complete other tasks knowing that the pharmacist was sorting out medication related tasks"

Conclusion

A dedicated clinical pharmacist in ED and SSU is an important and valuable team member, who prevented medication incidents, completed accurate medication reconciliations and ensured quality use of medications in a specialised paediatric hospital.

References

- Kozer E, Scolnik D, Macpherson A, Keays T, Shi K, Luk T, Koren G. Variables associated with medication errors in pediatric emergency medicine. *Pediatrics*. 2002 Oct;110(4):737-42.
- Weart KA, Bailey AM, Baker SN. Strategies for reducing medication errors in the emergency department. *Open access emergency medicine: OAEM*. 2014;6:45.
- Foster ME, Lighter DE, Godambe AV, Edgerson B, Bradley R, Godambe S. Effect of a resident physician educational program on pediatric emergency department pharmacy interventions and medication errors. *The Journal of Pediatric Pharmacology and Therapeutics*. 2015 Jan;18(1):53-62.
- American College of Emergency Physicians. Clinical Pharmacist Services in the Emergency Department [Internet]. 2015 [cited Jan 19 2017]. Available from: <https://www.acep.org/clinical-practice-management/clinical-pharmacist-services-in-the-emergency-department/>

Acknowledgements

Thank you to Kathleen Thai for her invaluable help in conducting the pilot trial and April Deneyh in helping reviewing the Emergency Pharmacist proposal
Note: Short stay unit (SSU) also known as Dolphin ward at RCH