



Evaluation of a Clinical Pharmacy Service on an Inpatient Ward in an Acute Hospital



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Introduction

Pharmacists have a professional responsibility for ensuring the safe, effective and rational use of medicines and, as such, play a vital role in the delivery of health care worldwide. Medication errors are the single most preventable cause of patient injury, resulting in increased morbidity and mortality, and prolongation of hospital stay.

Intensive clinical pharmacy input from admission to discharge has been shown to improve patient outcomes.

In February 2017, the Health Information and Quality Authority (HIQA) published its report on its Phase 1 Medication Safety Inspection of Connolly Hospital Blanchardstown. The report noted the significant lack of clinical pharmacy service in the hospital. Specific areas including medication reconciliation, management of high-risk medicines, and medicines information for nursing staff, medical staff and patients were highlighted for particular attention.

Clinical pharmacy seeks to maximise the health benefits of prescribed medications and minimise toxicities, while also delivering better visibility and control of drug spend.

Aim

The aim of this study is to analyse the development of a ward-based clinical pharmacy service; to capture the activity of the pharmacist and to examine the impact of the service using a number of clinical, financial and safety metrics.

Methodology

A clinical pharmacist was assigned to provide pharmaceutical care to patients on a Medicine for the Elderly ward. Over an eight week period, the pharmacist prospectively recorded her interventions/activities. The method of communication and the acceptance/rejection of interventions were recorded.

- To assess impact on patient care, interventions were self-graded according to the Eadon criteria. A random sample of ten interventions was independently graded by pharmacy & medical staff to ensure validity of pharmacist self-grading.
- The potential cost avoidance associated with interventions was estimated using two mechanisms identified from the literature within the Irish setting.
- Medication incident reporting was analysed to assess the impact on patient safety.

Results

In the 8 week study period, the pharmacist was involved in the pharmaceutical care of 84 patients.

- Mean age was 76 years (range 38-100 years)
- Mean number of regular medicines was 9 per patient (range 1-21), indicating high levels of polypharmacy.

Clinical Outcomes

- A total of 267 pharmacist interventions were recorded (average 3.2 per patient; average 33.4 per week).
- 87% of patients had at least one pharmacist intervention, across a spectrum of activities including medication reconciliation, clinical review and provision of medicines information to patients and staff.
- 90% of interventions requiring follow-up with the medical team were accepted and resulted in a change to patient care.
- 81% were graded as Eadon grade 4 or above, indicating an improvement in the standard of care.
- Validity of pharmacist self-grading was confirmed with reliability analysis of independent grading of sample interventions by medical and pharmacy staff. A Cronbach's alpha of 0.932 indicated excellent consistency of interpretation of results, while an intra-class correlation of 0.679 (95% C.I. 0.413, 0.890) represented a good level of agreement between the six raters.

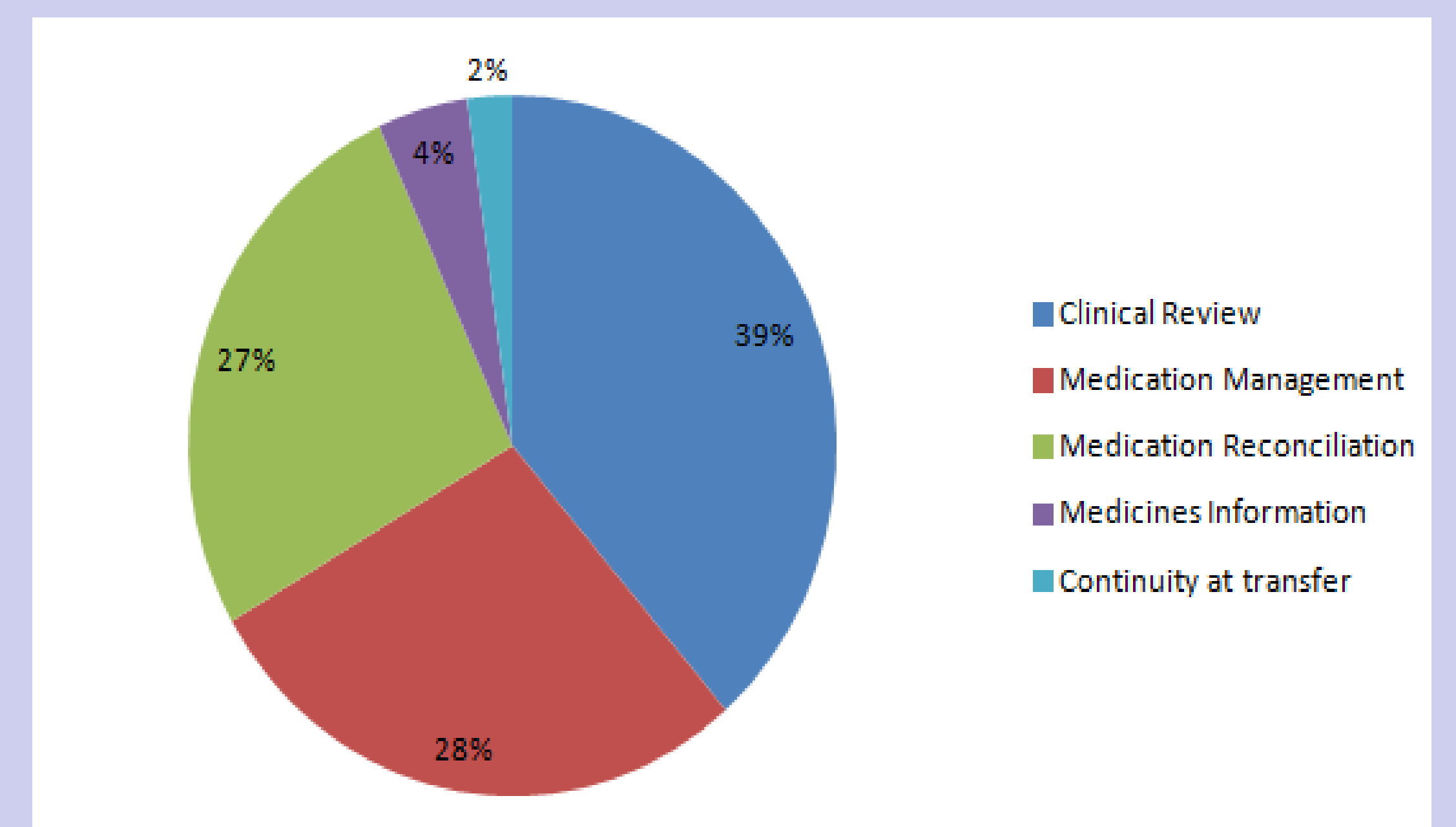


Figure 1 Breakdown of pharmacist interventions/activities

Financial Outcomes

- Potential cost avoidance associated with interventions was estimated using two methods based on the work of Miller et al (Antrim) and Gallagher et al (Cork); calculating estimated annual savings of €174,373 and €154,103 - €344,926, respectively.
- A 27% reduction in drug spend was observed during the study period. However, more longitudinal data are required to confirm and characterise this phenomenon.

Safety Outcomes

- In terms of medication incident report analysis, the study period falls within Quarter 3, 2018.
- A five-fold increase in medication incident reporting was observed in this quarter.

Eadon Criteria	Intervention Numbers	Miller et al	£ (sterling)	Gallagher et al	€
6	0	€1085-2120	-	€634.20	-
5	11	€713-1484	7843-16324	€422.80	4650.80
4	205	€65-150	13325-30750	€105.70	21668.50
3	48	€0-6	0-288	€10.57	507.36
1-2	3	€0-6	0-18	€0	0
Total	267		€21168-47380 €23708-53066		€26826.66
Estimation of annual cost avoidance			€154,103 - 344,926		€174,373.29

Figure 2 Estimation of cost avoidance associated with interventions

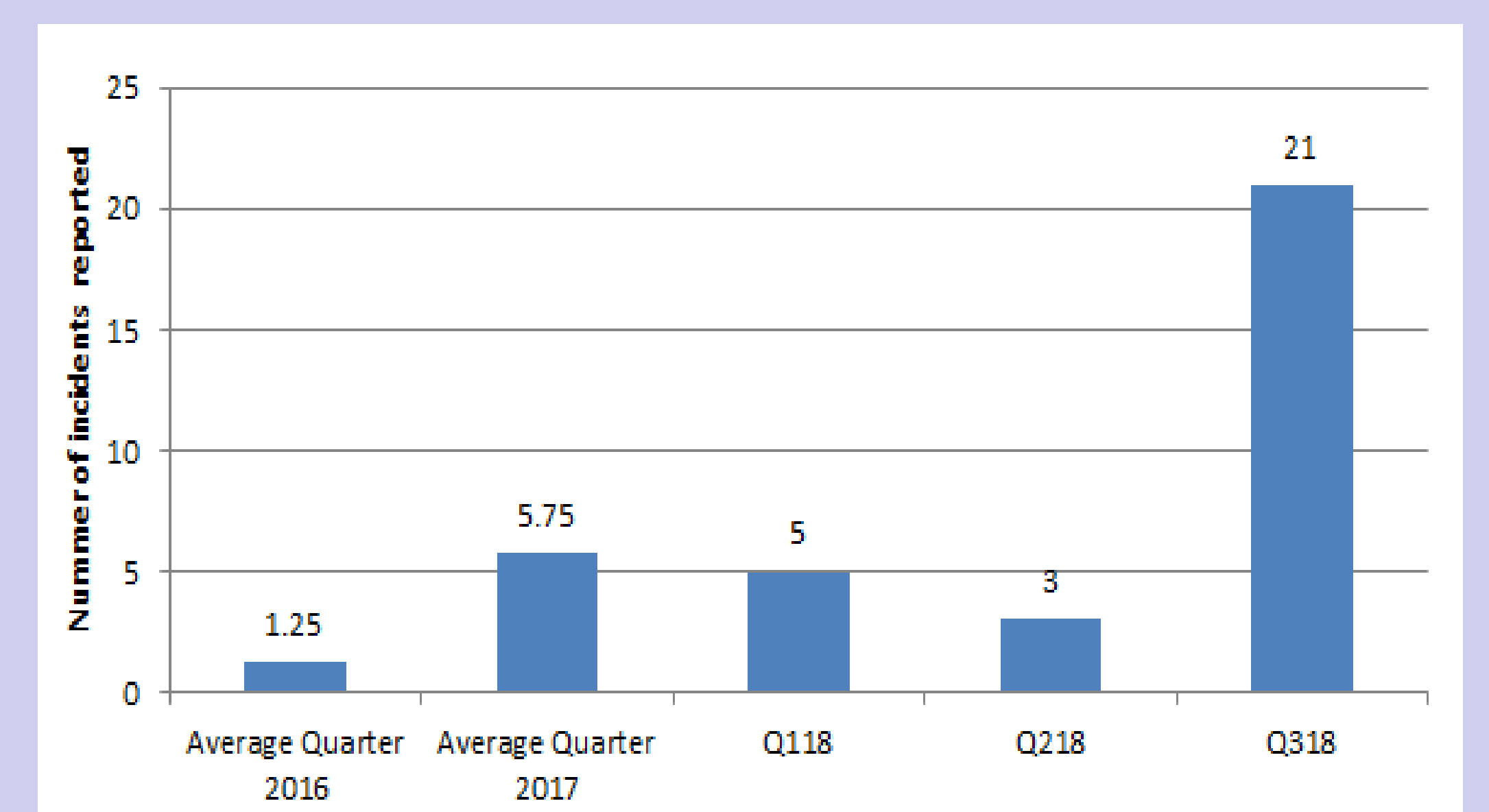


Figure 3 Medication Incident Reports from ward per quarter

Discussion

- Almost 9 in 10 patients had at least one intervention identified by the pharmacist. Two thirds of these related to the review of treatment received during their in-patient stay (39% clinical review, 28% review of current medication management) and one third (27%) related to medication reconciliation.
- In comparison to other Irish studies (acceptance rate 30 - 55%), a high level of acceptance of interventions was observed (90%). It is likely that the high level of acceptance found in this study is, at least in part, as a result of close collaboration with the multidisciplinary team.
- Significant annual cost avoidance was identified, €154,103 - 344,926; €174,373.29. Given current pharmacist salary costs, this equates to a cost-benefit ratio of 1:2.8 to 1:6.3.
- A five-fold increase in medication incident reporting from the ward was observed, suggestive of an enhanced culture of patient safety.

Conclusion

This study assessed and quantified a wide spectrum of pharmacist contributions to medication management and safety. Costing of these contributions estimates the cost-benefit ratio of the clinical pharmacy service, providing compelling support for the extension of this service throughout the hospital.

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References available on request



<https://www.eahp.eu/>
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