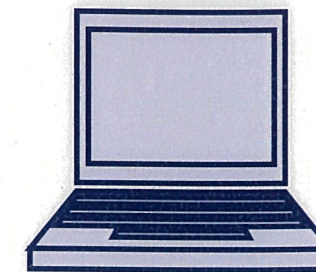# In an Inpatient Setting, How Does the Implementation of Electronic Prescribing and Administration Technologies Result in Reduced Medication Errors?

Drug errors have the potential to severely jeopardise a patient's wellbeing leading to increased hospital stays, loss of trust in a therapeutic relationship and the potential for long term harm or even death (Cowen, 2007). A study of Electronic Prescribing & Administration (ePA) at Dunedin Hospital estimated that medication errors cost the health system $590 million a year (Houghton & Parsotam 2011).

Electronic Prescribing and Administration technologies reduce medication errors by reducing the risk of human error in a number of ways.

There is evidence that medication errors are seven times less likely with an ePA system than when prescriptions are hand written (Tolley, 2011).

It is clear when reviewing a wide range of literature, that Electronic Prescribing and Administration technologies are a massive advantage in hospital settings.

Electronic Prescribing and Administration technologies have a valuable role in inpatient wards and I believe that they have the potential to one day replace paper charting in all hospitals.

Issue	How ePAs Minimise or Eliminate Issue	Result
Lack of identity control		
Omission of a medication name or formulation when prescribed	Gaps/unclear information flagged at time of prescription	
Wrong dose being prescribed or no clear dosing stated	Potential to bar code patient records and patient arm band	
Incorrect dosing regimen or no regimen stated	Gaps/unclear information flagged at time of prescription	
Missing dates	MIMs easily accessible	Right Patient
Unordered medication or formulation	Automatic medication dosing capabilities.	Right Medication
Illegible writing	Can order medication on same system	Right Dose
Omitting doses or giving extra doses	Patient electronic medication chart confirmed at bedside.	Right Route
Administering the wrong dose	Easy to read.	Right Time
Administering medication at the wrong time	Automatically calculates time to be given	
Using the wrong route	Alerts when medication is due	
Giving at an incorrect rate	Clinical decision support available for prescribing and administration	

(Doran, 2003; Houghton, 2011; Lisby, 2005; Tolley, 2011; Westbrook, Ling, Georgiou, Paoloni & Cullen, 2013)

References:

Cowen, M., R. (2007). *Medication Errors*. American. Pharmacists Association: Washington D.C.

Doran, D., M. (2003). *Nursing- Sensitive Outcomes State of the Science*. London: Jones and Bartlett Publishers, Inc.

Houghton, E., & Parsotam, N. (2011). Evaluation of the Electronic Prescribing and Administration System in Dunedin Hospital. *Health Quality and Safety Commision New Zealand*, 1–65.

Lisby, M., Nielson, L., Peter, & Mainz, J. (2005). Errors in the medication process: frequency, type, and potential. *International Journal for Quality in Health Care, 17*, 15–22.

Tolley, R. (2011). An overview of e-prescibing in secondary care. *Nursing Standard, 26*, 35-38.

Westbrook, J. I., Ling, Li., Georgiou, A., Paoloni,R., & Cullen, P. (2013). Impact of an electronic medication management system on hospital doctors' and nurses' work: a controlled pre–post, time and motion study. *J Am Med inform Assoc. 0(19),* 1-9. doi: 10.1136/ amiajnl2012-001414

Published By Chelsea Blackley - Student ID 11003137
3rd Year Bch Nursing 2014

Search Question PECOT Evidence and Findings

I undertook a search of peer reviewed articles relating to the question *'In an inpatient setting, How does the Implementation of Electronic Prescribing and Administration Technology Result in Reduced Drug Errors?'*. The PICOT method was used to clarify this question in order to focus the search for valid literature. PICOT stands for the patient population of interest, the intervention, a comparison, the outcome of interest and time (Schneider & Whitehead, 2013). The population that this review focuses on is those within an inpatient setting. This excludes any use of paper charts or ePAs in outpatient or community settings. This should also exclude any use of uncharted medication. The exposure or intervention that this literature review is focusing on is the introduction of Electronic Prescribing and Administration systems (ePAs) and this will be compared to the use of handwritten, paper charting. The outcome being investigated is whether this exposure decreases the amount of drug errors in this setting. Through the process of developing this review, a drug error was defined as being an error in the medication process: ordering, transcription, dispensing and administration and discharge prescriptions that has the potential to result in patient harm (Lisby, Nielson, & Mainz, 2005). The time aspect of the PICOT model did not apply to this review.

How PICOT was used.

Population	In-patient setting
Intervention	Introduction of ePA technology
Comparison	Use of handwritten charts
Outcome	Decrease in drug errors
Time	(Not relevant)

Example of how main point of articles was identified.

Literature	Relevant to drug errors	Relevant to ePA systems
1	●	
2	●	
3		●
4	●	
5		●
6	●	●
7		●
8	●	●

I originally based this research on whether ePAs did or did not reduce drug errors but soon found that the concept of *how* these drug errors were reduced was more interesting and substantial than a yes or no answer. I first searched for articles related to ePAs in general. I found that electronic prescribing and administration systems were most likely to be based in tertiary healthcare settings and an easily observed indicator of their success is the reduction in the number of drug errors on wards where ePAs have been implemented.

References:

Lisby, M., Nielson, L., Peter, & Mainz, J. (2005). Errors in the medication process: frequency , type, and potential. *International Journal for Quality in Health Care*, *17*, 15–22.

Schneider, Z., & Whitehead, D. (2013). Identifying research ideas, questions, statements and hypotheses. In Z. Scheider, D. Whitehead, G. LoBiondo-Wood & J. Haber (Eds.), Nursing and midwifery research methods and appraisal for evidence-based practice (pp.63-64). Sydney, Australia: Mosby.