Prescribing Patterns in a University teaching Hospital Emergency Department over 24 hours

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Introduction:

There is a range of medications prescribed in Emergency Departments worldwide on a daily basis, through multiple routes. As the Emergency Department (ED) is a high energy environment with multiple teams and personnel in the department at any given time, there is potential for error in prescribing medications. The issue of overcrowding also makes mistakes more likely to occur. Our retrospective study aimed to identify exactly how many medications were prescribed through each route in our ED over a typical 24 hour period. Overall, prescribing errors occur in 0.4-1.9% of all medication orders written and causes harm in about 1% of patients.(1) As previous studies of overall clinical practice have shown this margin for error, we wanted to quantify the potential volume of errors which could occur in a typical ED on a daily basis.

Methods Used:

Our IT system Maxims ® allowed us to identify which patients were present in the department on Wednesday 10th February 2016. We then reviewed ED records for these 236 patients , along with ward based Kardexes and Hospital medical records, to identify which medications were prescribed while patients were physically present in the department. To avoid duplicity we accounted for each time a medication was prescribed rather than dispensed.

Results - As outlined by figure 1:

From 236 patients seen in the ED:
125 patients were not prescribed any medications during this time:
Of the remaining 111 patients:

- **472 medications were prescribed in total**
- **270 medications were prescribed orally**
- **133 medications were prescribed intravenously**
- **34 medications were prescribed as nebulizers/inhalers**
- **20 medications were prescribed subcutanously**
- **6 medications were prescribed intramuscularly**
- **5 medications were prescribed topically**
- **4 medications were prescribed rectally**

Discussion:

Unsurprisingly, given the large proportion of elderly patients who attend our ED, there was a high level of polypharmacy among our patients. Features which may precipitate elderly patients presenting to the Emergency Department include: (2)

- Taking four or more medications
- Recent discharge from hospital
- Speciific medications such as:
  Warfarin, NSAIDs Digoxin

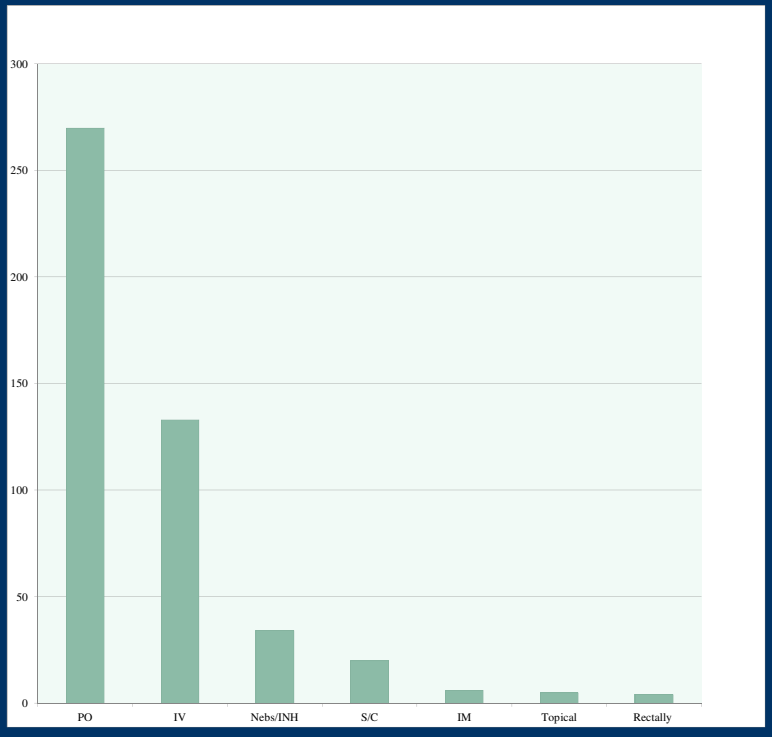

Figure 1

Conclusion:

The majority of medications were prescribed orally (57%), followed by intravenously (29%) with the lowest proportion prescribed rectally (0.008%). A study of medication errors over a 4 year period in a large paediatric hospital showed that the intravenous route of administration was where the highest number of errors occurred (56%). (3)
This highlights the importance of vigilance around the administration of intravenous medication. Given the overall estimated rate of prescribing errors with all medications, we conclude that there may be prescribing errors in between 2 and 9 medication orders per typical day in our ED, resulting in harm to 1 patient per day. These results make the case for a dedicated Clinical Pharmacist in the ED as outlined previously by Rollin et al. (4)

References:

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