

Errors in medicines preparation and administration in Vietnamese hospitals

H.T. Nguyen^{1, 2}, T.D. Nguyen¹, E.R. van den Heuvel³, F.M. Haaijer-Ruskamp⁴, K. Taxis²

1. Department of Clinical Pharmacy, University of Medicine and Pharmacy at Ho Chi Minh city, Vietnam
2. Department of Pharmacotherapy and Pharmaceutical Care, University of Groningen, The Netherlands

3. Department of Epidemiology, University Medical Center Groningen, the Netherlands
4. Department of Clinical Pharmacology, University Medical Center Groningen, The Netherlands

INTRODUCTION

Errors in the medication use process, prescribing, transcribing, dispensing, preparing and administering, are common. Little is known about preparation and administration errors in developing countries, including in Vietnam. In this study, we determined the prevalence, type and severity of medication preparation and administration errors in two Vietnamese hospitals and identified associated factors.

METHODS

This is a prospective study using an observation-based approach. Four trained pharmacy students observed all drug preparations and administrations during 12 hours per day on 7 consecutive days on each ward. Potential clinical relevance of errors was judged by experts using a validated method. The study was carried out on six wards of two public hospitals in a large city in Vietnam.

RESULTS

In total, 2122 out of 5635 medications were erroneous. Error rate was 37.7% (95% confidence interval 36.4-38.9%). Among those, 388 medications with 2 errors, and 21 with 3 errors. Severity was judged to be moderate in the majority of the cases (87.8%), followed by severe (8.8%), and minor errors (3.4%). Ward, drug round, ATC class, complexity of preparation, and administration route were error-related factors (Table 1).

Table 1. Factors contributing to errors (Generalized linear model)

Factor	P value
Hospital	0.82
Ward	0.00
Observer	0.00
Day of week	0.09
Drug round	0.00
ATC class	0.00
Administration route	0.00
Complexity	0.00
Nurse's experience	0.61

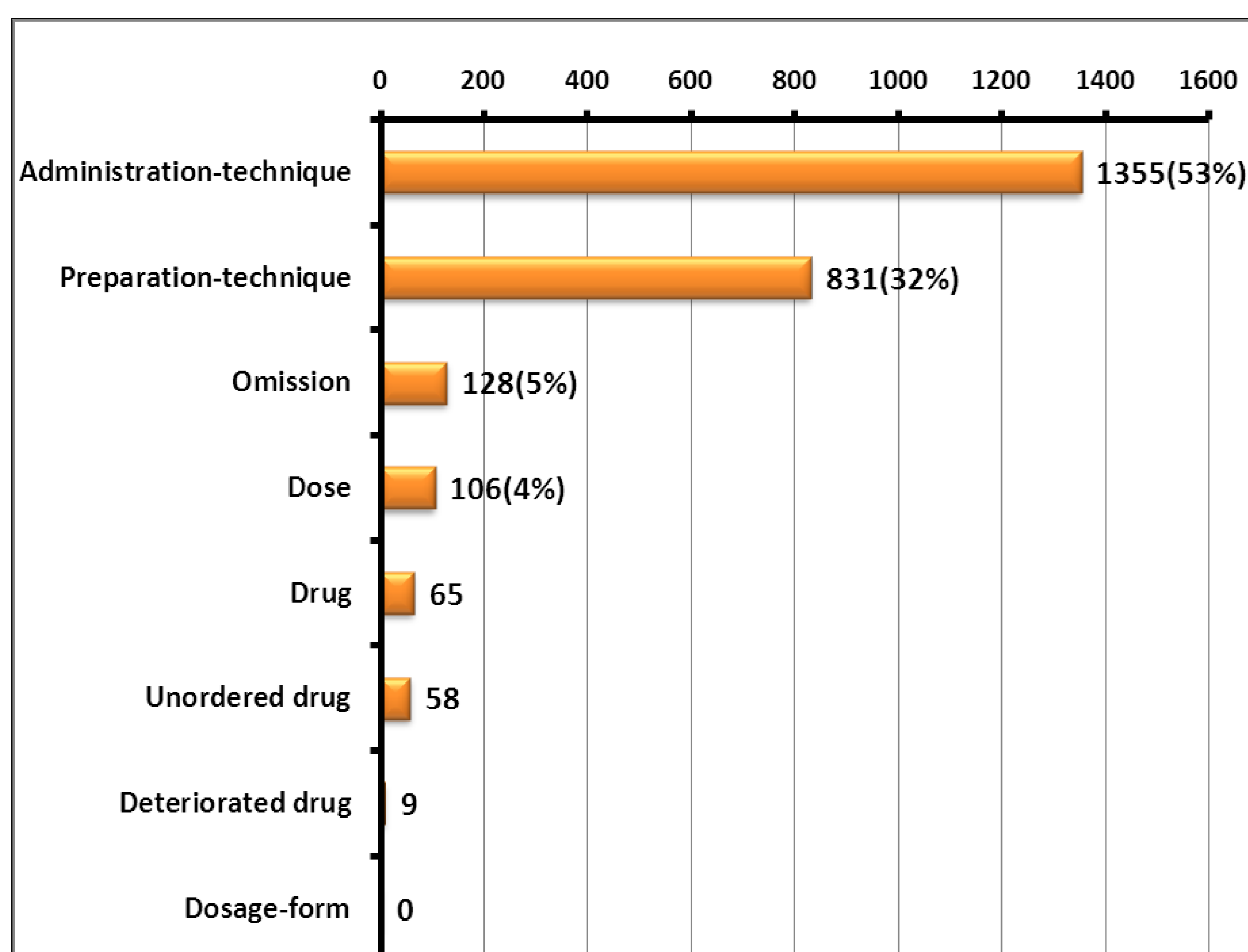


Figure 1. Error type frequencies
(n = 2552 errors out of 2122 medications)

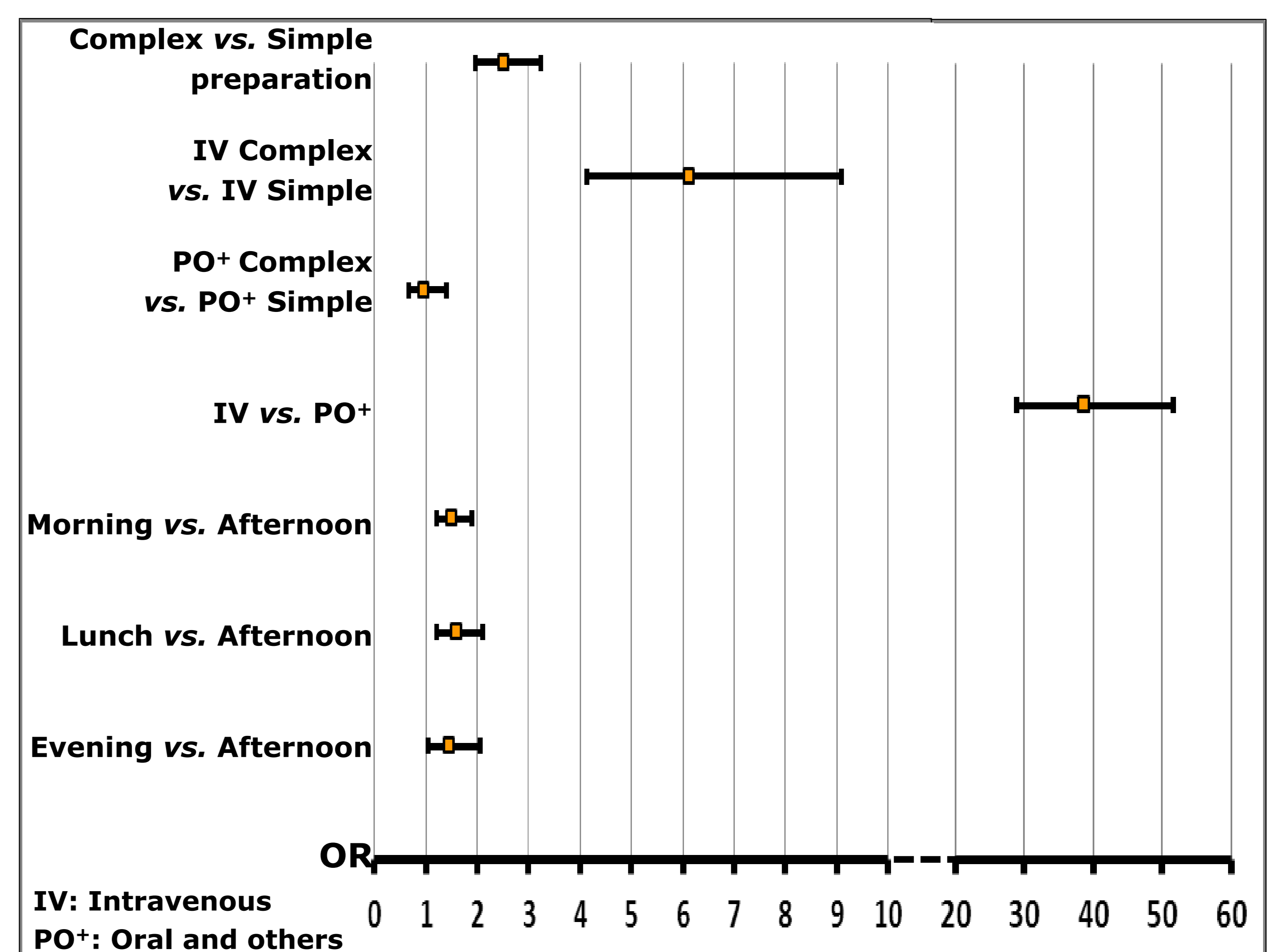


Figure 2. Difference in error occurrence by some factors
(Pairwise comparison - Generalized linear model)

CONCLUSIONS

Our results showed a relatively high error rate in comparison to other studies. In around a third of all medications potentially clinically relevant errors occurred. Wrong administration technique, wrong preparation technique, and omission were most commonly encountered. The highest risk of error was related to intravenous medications with complex preparation procedure. Afternoon was the safest drug round. Tailor-made interventions are needed to improve patient safety.