

Drug utilisation in a neonatal intensive care unit of a swiss university hospital

David Palmero^{1,3}, Ermindo R. Di Paolo¹, Jean-François Tolsa², André Pannatier^{1,3}

Departments of ¹Pharmacy and ²Neonatology, University Hospital Centre, Lausanne, Switzerland

³School of pharmaceutical Sciences, University of Geneva, Switzerland

Background and Objective

Medication errors in hospitals may occur at any step of the medication process including prescription, transcription, preparation and administration, and may originate from any of the actors involved. Neonatal intensive care units (NICU) take care of fragile patients in whom errors could have dramatic and life-long consequences. Our objective was to assess the frequency and nature of medication errors in the NICU of a university hospital in order to propose measures for improvement.

Design

The design was that of an observational prospective study over 4 consecutive months. All neonates receiving ≥ 3 drugs were included. For each patient, observations during the different stages were compiled in a computer formulary and compared with the literature.

Setting

The 11-bed NICU of our university hospital.

Main outcome measures

- Frequency and nature of medication errors in prescription, transcription, preparation and administration.
- Drugs affected by errors.

Results

83 neonates were included. 505 prescriptions and transcriptions, 447 preparations and 464 administrations were analyzed.

220 medication errors were observed: 102 (46.4%) during prescription, 25 (11.4%) during transcription, 19 (8.6%) during preparation and 73 (33.2%) during administration.

Uncomplete/ambiguous orders (24; 23.5%) were the most common errors observed during prescription, followed by wrong name (21; 20.6%), wrong dose (17; 16.7%) and omission (15; 14.7%) (Figure 1). Wrong time (33; 45.2%) and wrong administration technique (31; 42.5%) were the most important medication errors during administration (Figure 2).

According to the ATC classification, systemic antibacterials (53; 24.1%) were the most implicated, followed by perfusion solutions (40; 18.2%), respiratory system products (30; 13.6%), and mineral supplements and antithrombotic agents (20; 9.1%) (Figure 3).

Figure 1. Errors at prescription stage

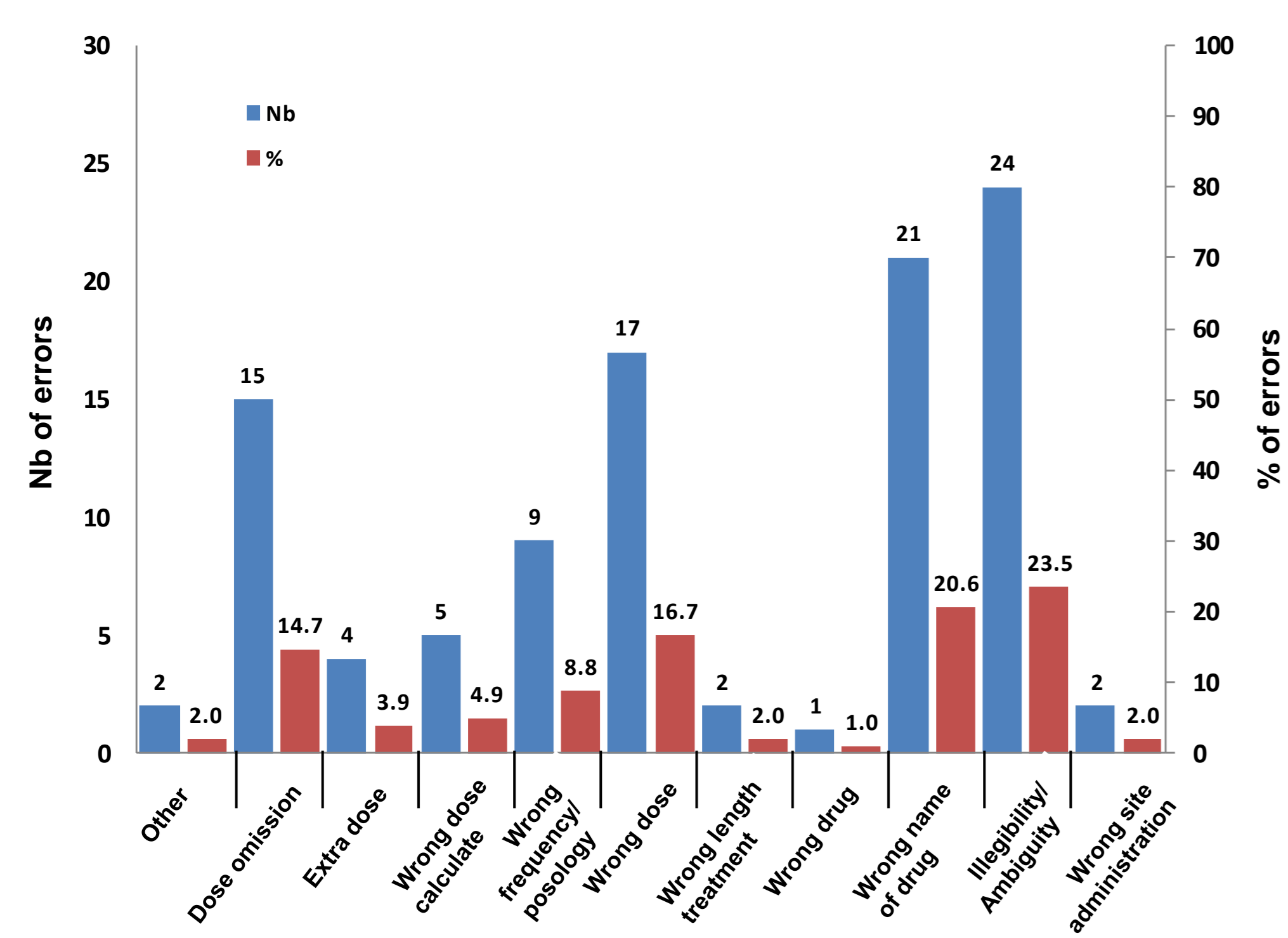


Figure 2. Errors at administration stage

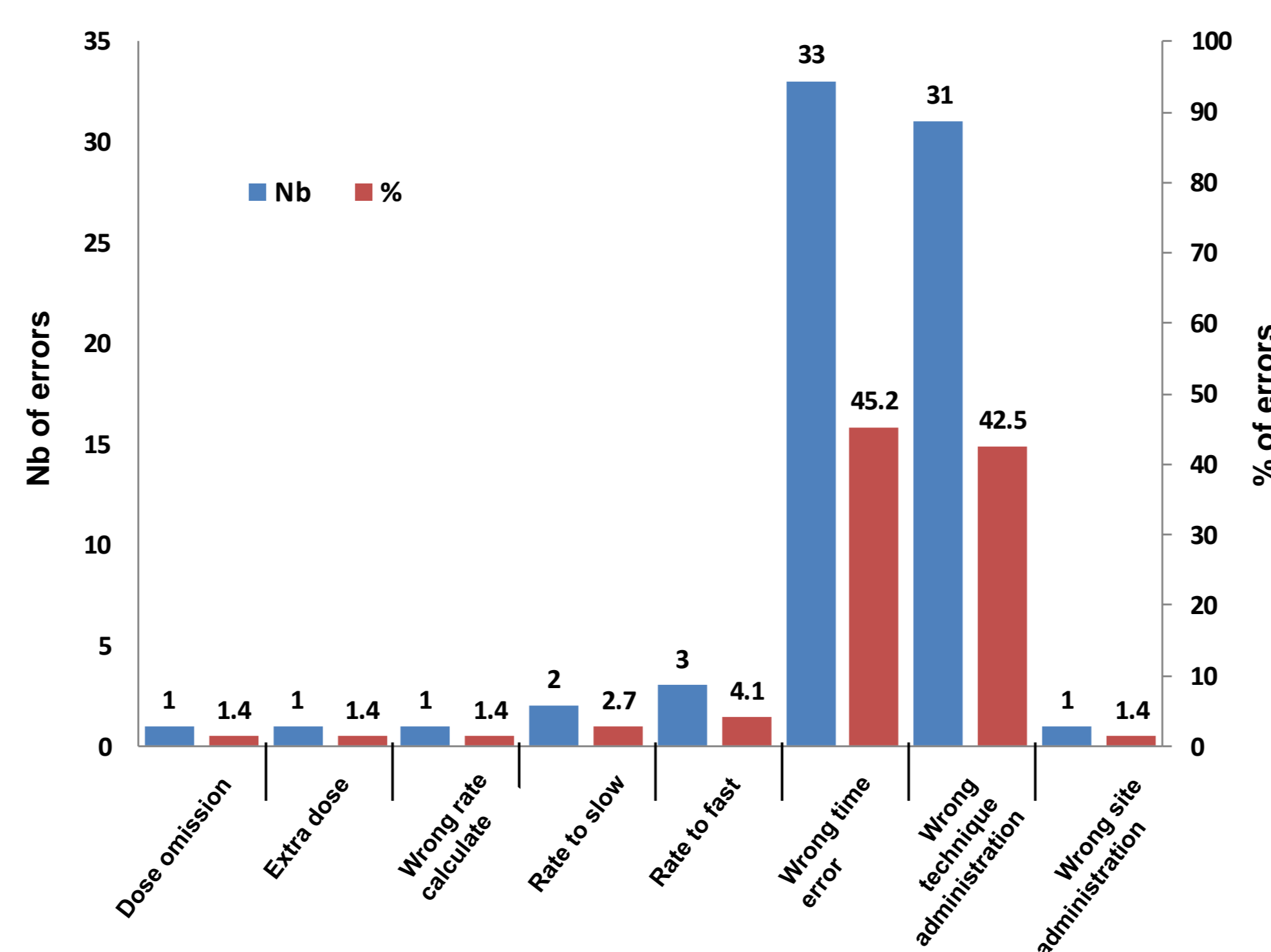
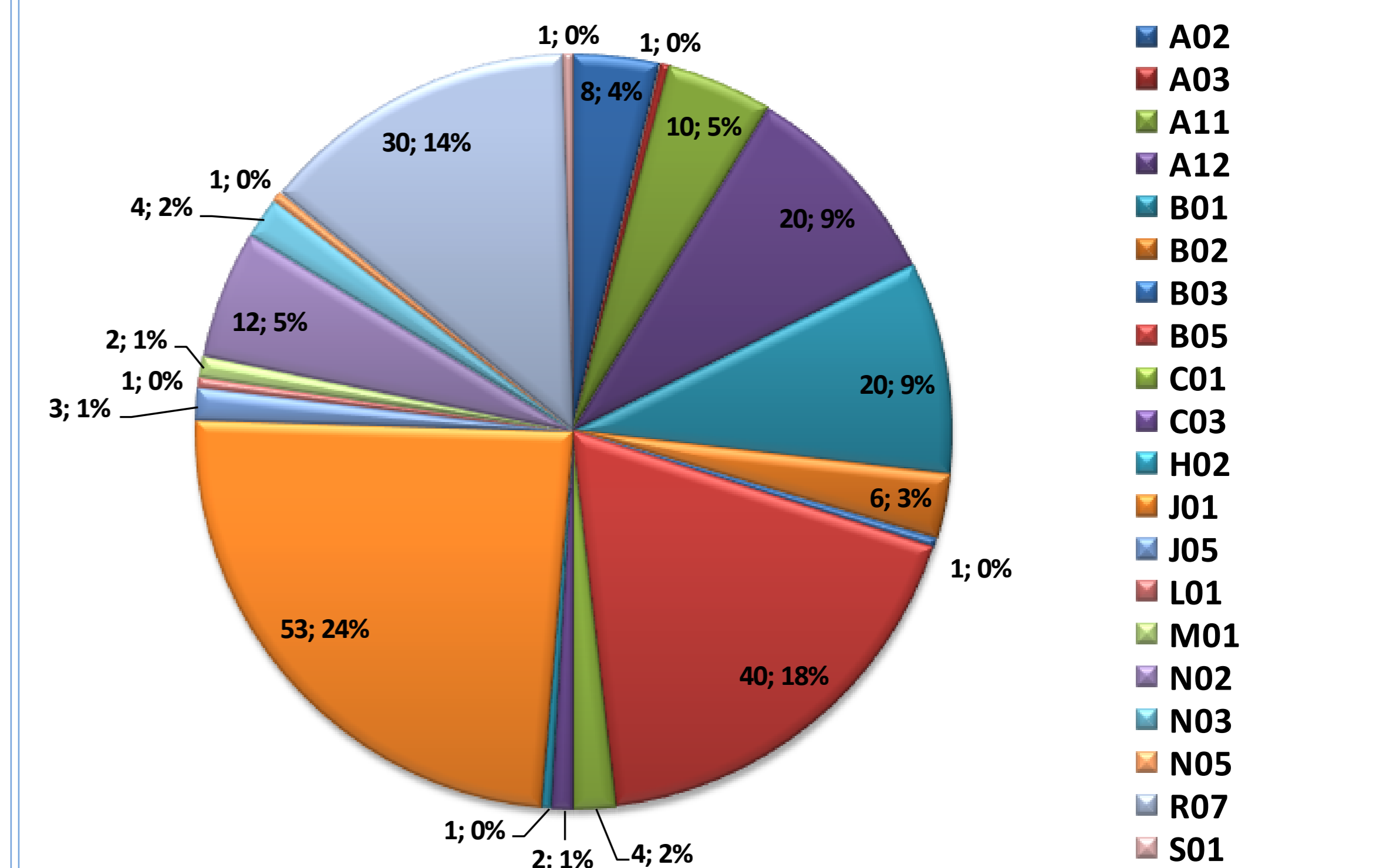


Figure 3. Drugs implicated in errors by ATC classes



Conclusion

Proposed recommendations :

- Better teaching of neonatal prescription to medical interns;
- Improved prescription form to avoid omissions and ambiguities;
- Development of a neonatal drug formulary including prescription, preparation and administration modalities to reduce errors;
- Presence of a clinical pharmacist in the NICU.