World Patient Safety Day

Safe Medicine Administration

Caring for the pediatric population

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To Err is Human: Building a Safer Health System

- Approximately 1.5-million preventable adverse drug events (ADEs) occur annually.
- Medication-related errors (a subset of medical error) are a significant cause of morbidity and mortality.
- Responsible for one out of every 131 outpatient deaths, and one out of 854 inpatient deaths.

Institute of Medicine (US) Committee on Quality of Health Care in America. To Err is Human: Building a Safer Health System. Kohn LT, Corrigan JM, Donaldson MS, editors. Washington (DC): National Academies Press (US); 2000.

Identifying medication errors in the neonatal intensive care unit and paediatric wards using a medication error checklist at a tertiary academic hospital in Gauteng, South Africa

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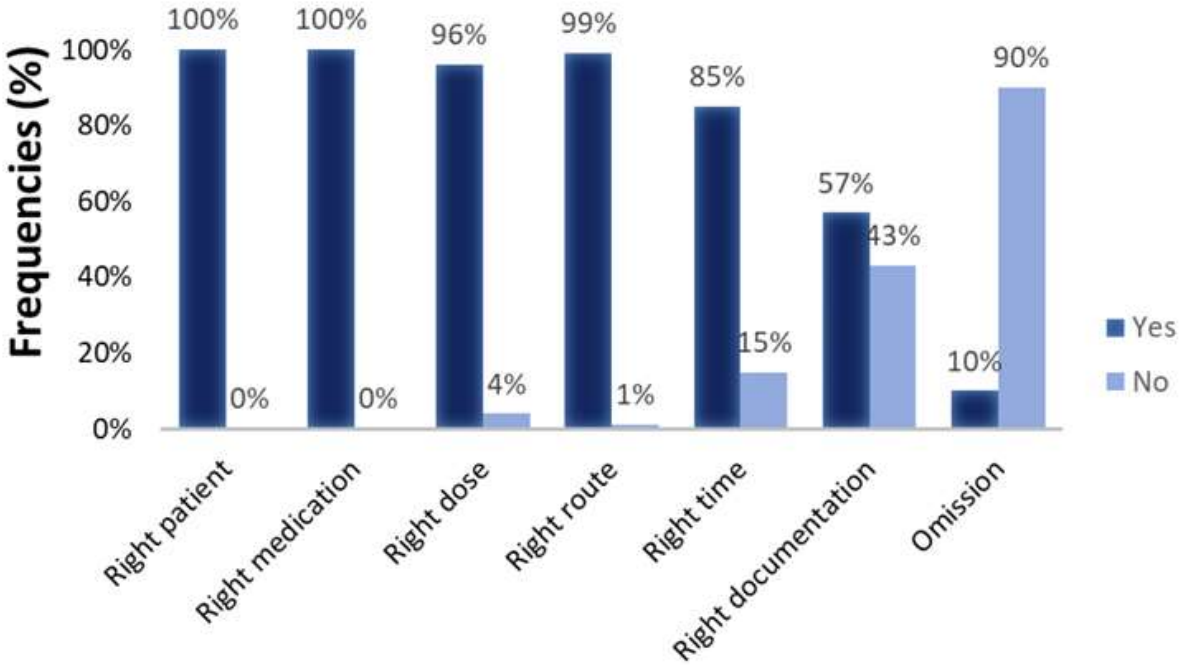
Background. Paediatric patients are particularly prone to medication errors as they are classified as the most fragile population in a hospital setting. Paediatric medication errors in the South African healthcare setting are comparatively understudied.
Objectives. To determine the incidence of medication errors in neonatal and paediatric inpatients, investigate the origin of medication errors that occurred and describe and categorise the types of medication errors made in both the neonatal intensive care unit (NICU) and paediatric wards.
Methods. The study followed a prospective, quantitative design with a descriptive approach. A prospective record review of inpatients' medication charts was undertaken to determine what was prescribed by the physician, dispensed by the pharmacy and administered by the nurses. The researcher also directly observed the preparation and administration techniques as performed by the nurses. A medication error checklist was used to collect the data.
Results. A total of 663 medication errors were detected in 227 patients over the study period of 16 weeks, of which 177 (78%) patients had one or more error(s). There were 338 (51%) administration errors and 309 (47%) prescribing errors. Incorrect dosing was the most frequent type of error (34%), followed by omission of medication (18.5%) and medication given at the incorrect time (12%). The causes of these medication errors were mostly due to miscalculation (26%), failure to monitor (15%) and procedures not followed (15%). Anti-infectives (43%) and analgesics (25%) had the most errors. In 118 (67%) patients the errors resulted in no harm to the patient, whereas in 59 (33%) patients the medication error resulted in some level of harm.
Conclusion. The incidence of medication errors in the NICU and paediatric wards at the teaching hospital was higher than values reported elsewhere globally. Most errors occur during prescribing and administration of medication. Dosing errors are a common problem in paediatrics. Therefore, a formalised system to record these errors should be introduced alongside regular discussions on preventive measures among the multidisciplinary team.

338 (51%) administration errors

“Rights” of medication administration



Nadine Puzicha. 2019. Determining Medication Prescription and Administration Errors in a Paediatric Oncology Ward in Gauteng. Submitted in fulfilment of the requirements for the degree MNurs (Clinical) in Health Sciences. University of Pretoria.

Medication errors

> “Any preventable event that may cause or lead to **inappropriate medication use** or **patient harm** while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labelling, packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use.”

National Coordinating Council for Medication Error Reporting and Prevention. What is a medication error? [Accessed 3 September 2022]. https://www.nccmerp.org/

Types of Medication Errors

- Wrong dose
- Wrong choice
- Wrong medicine
- Known allergy
- Missed dose
- Wrong time
- Wrong frequency
- Wrong technique
- Medicine interactions
- Wrong route
- Extra dose
- Failure to act on tests
- Equipment failure
- Inadequate monitoring
- Preparation error

Factors associated with Medication Errors

- Medications with similar names or similar packaging.
- Medications that are not commonly used or prescribed.
- Commonly used medications to which many patients are allergic (e.g., antibiotics, opiates, and nonsteroidal anti-inflammatory drugs).
- Medications that require testing to ensure therapeutic levels are maintained (lithium, warfarin, sodium valproate).

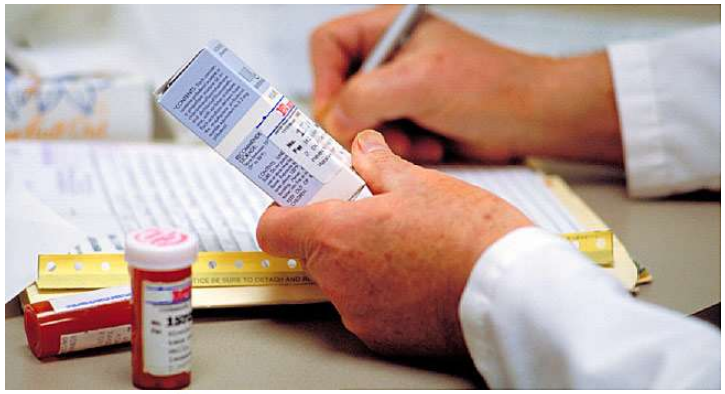
7 Rights of Medication Administration

- ✓ The right patient
- ✓ The right medication and formulation
- ✓ The right dose
- ✓ **The right route/administration**
- ✓ The right time
- ✓ The right reason
- ✓ The right documentation

Error prone situations

- Prescribing or ordering
- Transcribing/dispensing, and delivering
- Medication administration





Paediatric Medicine Administration

> 40% of caregivers make errors when administering liquid medication to children

Medication Errors in Children

- Children are **dependent** on caregivers to administer medicine.
- Administration of oral liquid medication at **correct dosages** - crucial in achieving **therapeutic effect.**
- **Treatment failures - inaccurate administration** instead of **incorrect choice** of medicine.
- **Poor communication** between healthcare providers and caregivers.
- Incorrect **storage** of medication.

Causes of Administration Errors

- Inaccuracy of household utensils - teaspoons and tablespoons.
- Small dosing amounts.
- Easily confused between millilitre and teaspoon units.
- Unaware that full course of antibiotics must be completed.
- Lack of information provided by dispensers.

Outcomes associated with Medication Errors

Overdosing:

- nausea,
- vomiting,
- diarrhoea,
- internal bleeding,
- coma.

Underdosing:

- prolonged illness and symptoms,
- unnecessary visits to the doctor.

Therapeutic failure:

- Antibiotic resistance

Solutions for Safe Administration

- Standardised utensils
- Oral syringes and medicine measures
- Millilitre (ml) unit compared to Teaspoon/Tablespoon units

Simple tips for safe dosing

01. **Know the dose**

Read all the information on the medicine label and follow the directions. Do not give a child medicine more often or in greater amounts than is stated on the package

02. **Measure the right amount**

Always measure your child's dose using the dosing device (oral syringe or dosing cup) that comes with the medicine.

03. **Use the right tool**

If you do not have a dosing device, ask your pharmacist for one. Do not use household spoons to give medicines to children.

pharmacy

MDPI

Review

Pharmacists' Approach to Optimise Safe Medication Use in Paediatric Patients

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Abstract: Paediatric patients are unique, yet challenging patients to care for by pharmacists. Paediatric medicine use requires special consideration. Pharmacists play an important role in educating and counselling patients, carers, and healthcare workers. Further, pharmacists have the necessary knowledge and skills to optimise safe medicine use in paediatric patients. This article provides basic principles for safe practices in paediatric medicine by following the nine rights of medication administration.

THANK YOU

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