What role does the clinical pharmacist play in the neonatal intensive care unit?

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Abstract
Pharmacy has evolved over several centuries from the traditional role of dispensing and compounding a physician's order, to include modern day services, such as patient care. The underlying philosophy of clinical pharmacy is pharmaceutical care. This is a patient-centred approach which addresses all possible pharmaceutical interventions in the context of a fully integrated multidisciplinary plan of care. The most effective pharmaceutical care is achieved when pharmacists become part of the clinical team caring for patients. Clinical pharmacists are not currently part of ward staff in South Africa, as seen in the USA or the UK. This may be because of human resources and an inadequate number of trained clinical pharmacists. This has an impact on the effectiveness of the pharmacist, as he or she should be based in the wards so as to become an effective member of the healthcare team. A high-impact unit that would benefit greatly from pharmaceutical care is the neonatal intensive care unit, which has been shown to be highly vulnerable to medication errors, and in which a clinical pharmacist could play a role in decreasing medication errors.

Introduction
Pharmacy has evolved over several centuries from the traditional role of dispensing and compounding medicine, to more patient-centred activities, such as patient care. Pharmaceutical care came into prominence in pharmacy circles in the early 1990s. The term was coined in the USA by Hepler and Strand, who defined pharmaceutical care as “the responsible provision of medication therapy for the purpose of achieving definite outcomes which improve the patient’s quality of life.” In 1997, Strand redefined pharmaceutical care as being “a practise in which the practitioner takes responsibility for a patient’s drug-related needs and holds him- or herself accountable for meeting these needs.” The definition has changed from the pharmacist being responsible for the provision of medication, to taking responsibility for a patient’s drug-related needs. This patient-centred approach is used to address all possible pharmaceutical interventions in the context of a fully integrated multidisciplinary plan of care. The most effective pharmaceutical care can be achieved when clinical pharmacists render pharmaceutical care and become part of the clinical team caring for patients.

The advantage of a clinical pharmacist is that he or she is able to optimise the medication management of individual patients by providing pharmaceutical care, develop policies and operational guidelines for critical care areas, and owing to being ideally placed in the ward, influence prescribing patterns. It is necessary that the provided care meets the specific health needs of patients if the structured provision of pharmaceutical care is to have an impact on patient outcomes. Currently, it is uncommon for clinical pharmacists in South Africa to be part of ward staff, as seen in the USA or the UK. This may be owing to a shortage of human resources. There is a general lack of evidence as to the efficacy and safety of pharmacotherapeutic interventions with regard to medication for neonates, as well as a paucity of neonate-specific formulations. This is of concern, as their immature organs are more sensitive to any type of intervention, and errors can have an impact on growth or result in other permanent impairment. When neonates were compared to older patients, it was found that there was a difference in the treatment outcome. Neonates have more limited internal reserves than adults with which to buffer errors. For example, the cardiovascular system of a premature baby may be unable to cope with even a small error in the dosage of an inotropic agent. Adverse drug effects have also been found to be more common in neonates than in adults.

Studies have shown that hospitalised neonates are three times more likely to experience a medication error than hospitalised adults. These errors are mostly due to a lack of knowledge, inadequate training and an absence of awareness. A large number of studies have identified dosage errors as being the most common. Medication errors are an avoidable cause of iatrogenic injury to the neonate, and strategies that aim to prevent them have
been investigated. Computerised physician order entries and increased input from clinical pharmacists were the most common interventions that were found to improve medication safety in the neonatal intensive care unit (NICU). Rendering pharmaceutical care to neonates is thus important in decreasing the change of medication errors occurring in respect of neonates.

The role of the pharmacist in the neonatal intensive care unit

A major role of the clinical pharmacist in the NICU should be to prevent medication errors from occurring with regard to neonates. Therapy should be tailored to the needs of the individual patient, ensuring that the dose and dosing interval is appropriate in all cases, according to weight. Factors that hinder the achievement of therapy need to be investigated.

Encountered problems include the administration of medication without indication, medical conditions that are still untreated and require medication, doses that were missed, prescription charts that were full, outstanding safety monitoring (such as outstanding laboratory results) and drug-induced adverse events.

The pharmacist must move into wards where medications are prescribed and administered, and make relevant interventions to be effective in the healthcare team. Doctors’ ward rounds are a good training ground for ward pharmacists, and an effective way of building up communication, although time-consuming. In a study that was carried out in the Netherlands, prescribing errors were reduced from 19.05% to 6.25%. However, this required halftime or even full-time commitment of the clinical pharmacist to the intensive care unit patient care team. This can take up to 40 hours per week. Low staff levels of pharmacists, suboptimal use of technical support staff and lack of training of pharmacists in this area results in low pharmacist presence in the wards in a clinical capacity. In the current climate, the pharmacist should choose to focus on training for specific functions, e.g. patient care. Once familiarised with these functions, less time would be required to achieve the same outcomes.

Additional responsibilities pertain to the ordering of parenteral nutrition, patient education, and research into the efficacy and safety of medications that are administered to neonates. In a study that was undertaken by Schellack and Gous, both doctors and nurses felt that there was need for a clinical pharmacist in the NICU after having been exposed to the activities of a clinical pharmacist in the unit.

Conclusion

It has been shown that the clinical pharmacist can make a significant contribution to improving the appropriate use of medication, as well as the detection and prevention of potential medication errors which occur in respect of neonates, in the NICU. The neonatal pharmacist should attend daily clinical care rounds as a member of the healthcare team, and provide a specialised pharmacotherapeutic neonatal assessment.

References

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