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Design of a Data Management System for Pharmaceutical Stock Management at Public Primary Healthcare Clinics in the Northwest Province, South Africa

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Abstract

The vast majority of South Africans depend on public government-funded healthcare. Public healthcare services in South Africa face many challenges related to amongst others, waiting time, inadequate resources and funding constraints. Furthermore, the availability of the correct pharmaceutical stock at primary healthcare clinics is often problematic with excessive amounts of stock reaching its expiry date at these clinics. This research focuses on four primary healthcare clinics in the Potchefstroom area in South Africa that are supplied with pharmaceuticals by the Tlokwe sub-district distribution pharmacy. We find that pharmaceutical supplies at these clinics are often out-of-stock or expired due to a multitude of factors including the absence of a data management system. In order to solve this problem, we present a data management system for pharmaceutical stock at a primary healthcare clinic that does not require extensive software or hardware layout and is also easy to use for healthcare practitioners. The solution is designed based on industrial engineering principles that critically analyze the system requirements to ensure that the solution is suitable for the unique primary healthcare clinic environment. Our research further elaborates on the additional factors that influence pharmaceutical stock mismanagement at primary healthcare clinics. Finally, we provide results on a pilot run of the implementation of our solution which paves the way for further implementation at other primary healthcare clinics.

Keywords

Data, Management, Pharmaceutical, Stock Management, public, health care , clinic

Biographies

Chinead McGeer is a recent graduate industrial engineer who obtained her qualification from the North-West University (NWU) in South Africa. With a strong foundation in process optimization, supply chain management and project management, Ms. McGeer has a special interest in industrial engineering projects in the healthcare industry. She is a keen entrepreneur who aims to use her qualifications to the improvement of customer experiences.

Maria van Zyl-Cillié is a lecturer at the school of industrial engineering at the North-West University (NWU) in South Africa. Me. Van Zyl-Cillié obtained her industrial-electronic engineering degree from the University of Stellenbosch, South Africa. She also holds a master's degree in engineering management from the University of Pretoria, South Africa. She is currently a PhD candidate at the University of Twente in the Netherlands. Her research focus includes operations research and management applied to healthcare and other industries. Her publications appear in journals such as Health Systems and the South African Journal of Industrial Engineering as well as conference proceedings at the Portland International Conference on Management of Engineering and Technology (PICMET)