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**The innovative journey of a wound management system for sustainability**Betty P C Khong<sup>1</sup>, Lee Leng Noey<sup>1</sup>, Apolino Ilagan Dawang<sup>2</sup> and Hoi Shu Yin<sup>1</sup><sup>1</sup>Tan Tock Seng Hospital Pte. Ltd., Singapore<sup>2</sup>Integrated Health Information Systems Pte. Ltd., Singapore

**Statement of the Problem:** Information technology systems have been capitalized in healthcare to support evidence-based practices. An innovative Wound Management System (WMS) was developed with a Clinical Decision Support System (CDSS) embedded with decision-tree algorithms.

**Methods:** A mixed method with pre- and post-evaluation designs was utilized. Usability testing and formative evaluations were conducted on the WMS and its treatment modalities. The initial modular, ontological framework faced difficulties in its adoption by nurses. Thereafter, an exploratory descriptive study was conducted to understand the nurses' decision in adopting the CDSS after initiation. Subsequent enhancement cycles focused on improving the architecture of the WMS to fulfill quality and operational requirements.

**Findings:** The WMS ontology consisted of (1) the information-processing unit with an input for data capture and image uploading, an output that recommends patient-specific treatment(s) prioritized according to efficacy, cost and product availability, as well as automatic billing of wound treatment; (2) the knowledge base that maintains codified treatment logics and the reasoning engine that integrates the data input with treatment knowledge; and (3) the simple data analytic element that mines progression of wound healing, tracks dressings for change, studies treatment compliance, summarizes patients' wound outlooks and reports billing reconciliation. The usability testing has ensured deployments of the successful system and enhancements in approximately 90% of the inpatient nursing units. The formative evaluations concluded with an overall agreement exceeding 90% between the subject matter experts and the CDSS. The qualitative study informed enhancements to meet nurses' decision-making patterns that influence their adoption.

**Conclusion:** The WMS, thought to be the first of its kind in Asia, has seamlessly integrates with Singapore's cluster-wide electronic medical record system. This disruptive innovation underwent multiple iterative enhancements to ensure its accessibility and adoption as it serves as a real-time, evidence-based solution and point-of-reference for wound management.

**Biography**

Betty P C Khong is a Senior Nurse Manager with more than 13 years of nursing experiences specifically working in the outpatient settings and 12 years as an Administrator. As a Nurse, she has been actively involved in quality improvement (both clinical and operations) projects as well as innovative projects such as development and implementation of a wound management system and development and prototyping of a novel wound applications to digitalize measurement of wound dimension. She also focuses on researching topics related to pressure ulcer (knowledge of nurses, interface pressures between prophylaxis dressings and object surfaces and prevalence study), nurses' mental model and their decisions in adopting the Clinical Decision Support System (CDSS) and the phenomena of second victims. She serves on the Committee to the Singapore Nursing Association (Nursing Informatics) and the Board of Directors for Upsilon Eta Chapter, a subsidiary of Sigma Theta Tau International Honor Society of Nursing, Singapore.

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