Using Information Technology to Enhance Nursing Practice: A Study

What is nursing informatics?
Nursing informatics is a multi disciplinary science in which a core discipline, nursing, interacts with three components, computer science, information science and cognitive science.

A nursing informatics system is an integrated, computer-based system that provides the information nurses need for the delivery of nursing care. CLINT is the Clinical Informatics Network used in this study. Its purpose is to enable the practice and teaching of evidence based health care and it provides health professionals, including nurses, with appropriate tools to support clinical decision making.

What were the goals of the study?
The goals were to assess nurses’ information needs, anticipated and actual use of a comprehensive informatics system, application of online information to patient care, and satisfaction with electronic information resources. An enabling goal was to enhance an existing work-site informatics system with additional resources requested by the nurses.

How was the study conducted?
The sample consisted of 39 nurses (19 working full time, 8 regular part time and 12 casual part time) on a 35 bed medical clinical teaching unit in an urban teaching hospital. The study used both qualitative methods (focus groups and interviews) and quantitative methods (online questionnaires and system usage). Qualitative methods were used: to determine the nature of nurses' clinical information needs; to identify factors influencing clinical use of information technology; to determine strategies to promote evidence-based nursing practice; to determine the nurses' satisfaction with the clinical informatics system, and how information and knowledge were transferred to practice. Quantitative methods were used to determine the information management needs of the nurses, to evaluate the educational interventions and the nurses' use of the informatics system, and application to practice.

RESULTS

What were the clinical information needs of the nurses?
Nurses expressed a need for up-to-date reference resources and texts and for training in computer use and information management.

What were the interventions and strategies used?
The interventions included: (1) the introduction of a user friendly, accessible clinical informatics system for nurses, (2) the development and implementation of computer data bases and the purchase of commercially available software packages to meet the specific, identified information needs of the nurses and, (3) the development and implementation of educational strategies to promote evidence-based nursing practice, including peer mentorship, development of learning resources, application to practice, management support, and service-education collaboration.

How was CLINT used?
The hospital informatics system (IHIS), Netscape, drug information and basic texts were the most frequently used data bases. Patterns of use changed as nurses became familiar with the system and began to integrate it into their practice.
**What are the practice implications?**

Nurses need and will use current, relevant information that is accessible in their work site for clinical decision making. Nurses reported that CLINT improved nursing practice by providing information relevant to specific clinical situations. It was considered an important resource for patient education. CLINT also helped nurses to keep up with nursing education and professional development. It increased job satisfaction and was a resource for nurses cooperating to solve clinical problems.

Essential components of a sustainable nursing informatics system include learning resources, training and a supportive environment. Peer mentorship, management support and service-education collaboration were identified as important implementation strategies.

**Recommendations**

- If the information needs of nurses in the work setting are to be met, nurses, themselves must participate in the design, development and testing of clinical informatics systems and programs.
- Computerized information resources/programs must be developed to meet the increasingly sophisticated information needs of nurses.
- Computer terminals should be situated in central locations so that they are easily accessible to nurses.
- Ongoing institutional support and commitment to development is needed to encourage changes in practice and promote the continued professional development of nurses.
- Adequate education in information management should be provided to nurses including training in each application.
- Systems change constantly and clinical decision making requires nurses and their colleagues to access new knowledge and to combine information in new ways. Access to informatics experts by nurses is essential in order to develop and update their skills.
- Good technical support, including sufficient computers located centrally on the units, prompt service and good communication about equipment status, system changes and new applications is essential if a system is to be used effectively.
- Software publishers should be encouraged to publish software appropriate to nurses’ needs.
- Further study is required to facilitate the implementation and maintenance of informatics systems for nurses and other health professionals, to determine the use of clinical information systems in evidence based practice and to identify related patient outcomes.

**Where can I get more information?**

For further information about this study, please contact the Nursing Effectiveness, Utilization, and Outcomes Research Unit, HSC-2J Reception, McMaster University, 1200 Main St. W., Hamilton, ON, Canada, L8N 3Z5. Phone (905) 525-9140 x 22380, Fax (905) 570-0667. URL http://hiru.mcmaster.ca/PWNP

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