

Paper Session D3: Diffusion of Evidence-Based Practice

Knowledge Elicitation Methods and Development of an Evidence-Based Knowledge Base for Clinical Decision Support

Teresa Panniers, PhD, RN, George Mason University, Fairfax, VA

Purpose: Decision Support Systems (DSS) are becoming instruments to support health care and to guide health care policy. The author will describe the development of an evidence-based knowledge for use in DSS to support clinical decision-making.

Theoretical Framework: Using Hoffman's theory from experimental psychology, the author takes on one of the most challenging aspects of building a decision support system (DSS), that is, the “bottleneck” of eliciting expert knowledge and translating this knowledge so that it can form the input to a decision support system.

Methods: This mixed-methods study (RO1-LM-06967) develops an evidence-based knowledge base for the clinical problem of determining feeding readiness in premature infants. The author uses ethnography to derive the private knowledge of an expert neonatal nurse practitioner (NNP) and a systematic review of the texts and journal articles to derive the public knowledge. These data are combined to develop the knowledge base depicted as a quantitative questionnaire. The setting for this research was a large, private metropolitan medical center in the mid-Atlantic region of the US with a 20 bed Level III+ NICU. Four national experts reviewed the knowledge base for content validity. The research took place between 1999 and 2006.

Results: The author will present highlights of the completed knowledge base that is comprised of a series of heuristic questions in the categories: a) history, b) clinical stability (with subcategories constituting a physiological systems approach), c) age, d) parental wishes, and e) environmental factors.

Conclusions and Implications: The author will describe how this evidenced-based knowledge base models the input for a DSS. This knowledge base addresses complex, clinical problems that are imperative to support nurses' and physicians' decision-making. Reference [1] Hoffman, RR. The problem of extracting the knowledge of experts from the perspective of experimental psychology. *AI Magazine* 1987; 8: 53-66.