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Influence of An Evidence-based Information Tool on Physician Behavior

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Introduction

The successful diffusion of information technology into organizations is dependent on many factors ranging from the task-technology fit (Goodhue and Thompson 1995), to its perceived usefulness (Davis et al. 1989), to managing the diffusion process (Tornatzky and Fleischer 1990), to such contextual factors as organizational and user characteristics (Kwon and Zmud 1987). Yet another approach is through action research that engages participants directly in designing, implementing and evaluating the system as part of reflection, learning and self-improvement (Badham et al. 1995, Timka et al. 1995). Its underlying belief is that users, through understanding and controlling their socio-technical environment, can effectively transform existing perceptions and practices as part of organizational change. The role of the researcher becomes that of a collaborator, a facilitator and a change agent. An action research project is currently underway to enhance the clinical practice of caregivers through the use of a newly developed evidence-based electronic information tool called JANUS. This paper describes one aspect of this study that focuses on influencing physician behaviors in their acceptance and use of such tools.

Description of Research

Background.

The vast amount of medical literature generated each year through research has made it increasingly difficult for caregivers to retrieve information that is considered valid and relevant evidence for use in the clinical setting. To cope with this situation, electronic information tools such as GratefulMed have been developed to simplify the retrieval process, and systematic review of literature is being conducted by such organizations as the Cochrane Collaboration to promote evidence-based practice (Haynes et al. 1995). This is with the belief that caregivers can benefit immensely from systematic retrieval, appraisal and use of latest research findings as the basis for their clinical decisions. One recently developed information tool called JANUS is used to disseminate evidence-based medical literature via the Internet to front-line caregivers where the information is most needed (Penn and Maclure 1995). This study examines the use of JANUS as one such evidence-based information tools to influence physician behaviors as reflected through their change in practice patterns over time.

Research Themes.

Action research involves the direct participation of users in framing the problem, deciding on the type of intervention feasible to improve the situation, and to reflect on their action for learning and refinement in an iterative fashion (Checkland 1991). In the clinical setting, a common problem presently exists with senior physicians in being able to teach residents effective clinical reasoning skills based on the latest evidence in medical literature. Questions are often raised in teaching rounds on the differential diagnosis for a given problem, appropriateness of a particular treatment, and prognosis of a patient given a certain set of circumstances such as risk factors and underlying illnesses. Unfortunately, in some instances such knowledge is not readily available or known for certain, thus requiring one to search through relevant literature for the answers. The lack of a powerful and easy-to-use tool to retrieve information can mean the loss of valuable learning opportunities since the retention of such circumstance is short. In this study, the two senior physicians responsible for teaching medical residents at a university hospital have been instrumental in using an action research approach to introduce JANUS to the residents and to explore its effects on their behaviors. The general research themes being pursued are whether this type of information tool can enhance the clinical reasoning skills of residents; and if so, can such improvement be reflected

through their practice patterns observed over time. Furthermore, can one generalize such behaviors as a new type of infomedical model for problem-solving based on just-in-time evidence-based knowledge as distinct from the traditional so-called inventory approach primarily through memory, experience, supplemented by peer consultation?

Study Methods.

An action research approach using both qualitative and quantitative methods with a longitudinal view is the basic study design adopted. This involves the use of a collaborative research design, multiple data collection methods, statistical analysis, subjective interpretation, triangulation of findings, and an ongoing feedback process for reflection, learning and improvement. The research setting is that of a university teaching hospital, with the subjects being physicians enrolled in a medical residency training program. The residents are interviewed for their perceptions of the tool before training, two weeks afterwards, and upon completing their rotation. The residents are observed during and after rounds for their practice behaviors and their patterns of system usage. These findings are compared against the system log file for the recorded usage pattern for consistency. The training sessions conducted by the two senior physicians are also recorded to establish the intended infomedical model of clinical reasoning. This intended model is compared against the resulting practice patterns of the residents for accuracy, learning and refinement. Factors and processes that lead to acceptance and use of the tool will be identified. The findings will be generalized to explain the overall effects of evidence-based information tools on physician behaviors.

Preliminary Findings

Results.

So far, nine interviews have been conducted with six medical residents before and shortly after their JANUS training. Six training/demonstration sessions by the two senior physicians have also been recorded. Analysis of the transcripts revealed that the residents were enthusiastic about using such an information tool to help with their practice, believing that it would improve their problem-solving skills. Three of the residents admitted to their lack of proficiency in using computers that they would like to overcome. The senior physicians were fairly consistent in teaching the residents to use the information tool, but the topics did not cover the breadth and depth of evidence-based decision making and critical appraisal when compared with the methods reported in literature. Actual usage of the tool has not yet been compared at present but one resident did complain the lack of access to the computers on the nursing unit. Over time, the physicians have requested additional features to be included as part of the tool to increase its functionality such as drug information, suggesting they have actually used the tool in their practice.

Reflections.

Despite widespread beliefs that physicians are resistant to using computers in their practice, our findings suggest they are receptive to such information tools as JANUS that can bring evidence-based decision making to the bedside. In fact, all of the physicians interviewed believe the tool can enhance practice by focusing one's attention to frame questions in a way that can link to supporting literature. The senior physicians also believe the ability to apply evidence to practice can increase one's authorship by testing the validity of the literature directly at the bedside, promoting immediate feedback as part of effective learning.

Project Status.

This study is expected to continue for at least one year, with a new group of four to five residents rotating through the program every two to three months. These residents will be trained to use the information tool, interviewed for their perceptions and monitored for their change in practice patterns during their rotation. The results will be analyzed and reflected on an ongoing basis for learning and improvement to the tool.

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