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Effective dissemination of clinical practice guidelines over Internet

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Abstract

Objectives: To develop a computer model to represent, store, and disseminate clinical practice guidelines (CPGs). We address several problems related to such computer-based representations, including: (1) checking inconsistencies; (2) cost of dissemination; (3) updating to accommodate new medical knowledge; (4) local adaptation to different clinical settings; (5) feedback to developers; and (6) connection to other sources of information, such as medical records or multimedia systems.

Methods: We have created a specification language to represent CPGs graphically as flowcharts, and various C++ and JAVA-based computer tools for multimedia display and edition of electronically stored CPGs. The flowcharts have 4 kinds of nodes: Action, Clinical State, Decision and Advice. Our model integrates a standard proposed by the Society for Medical Decision Making and CPG representations developed by groups from the Agency for Health Care Policy and Research (AHCPR) and RAND. CPGs can be stored in a computer server using various commercial databases. Users can retrieve these guidelines over the World Wide Web using any Java-compliant browser.

Results: Users can navigate through the algorithm, with different browsing, abstracting and zooming techniques, and contract or expand nodes. They can access descriptive text, tables, pictures, video and sound, linked to the flowchart boxes. Algorithms can be authored and locally modified, changing nodes, arcs, contents, and multimedia links, to adapt to specific clinical circumstances. We have used AHCPR´s heart failure guideline to evaluate the performance of our tools.

Conclusions: Our approach facilitates translation of CPGs from paper to computer-based flowchart representations, solving some of the traditional problems mentioned above. Using this approach, guidelines and protocols can be integrated into medical information systems. Thus, they can be used to reduce variability in medical practice, increase quality of care, and reduce costs. Our model can be easily adapted to other technologies such as appropriateness criteria and critical pathways.

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