

SEMANTIC WEB-BASED ASSESSMENTS FOR HEALTH CARE ORGANIZATIONS

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ABSTRACT

Health care managers must assess and assure that their medical and administrative staffs follow best practice guidelines, clearly understand standardized procedures and are knowledgeable of safety policies that improve patient and care provider satisfaction. Traditionally, individual on-site managers are tasked with creating training programs for their staff and maintaining records to show that staff members are current in their skills, knowledge and abilities; however, assessment procedures remain ad hoc. Developing, implementing and maintaining interoperable assessment information systems are becoming increasingly critical for both medical and legal purposes. Medical facilities are challenged to provide data-driven quality assessments to satisfy auditing requirements of Medicare & Medicaid services and accrediting organizations. Legal theories argue that if managers are not actively meeting these challenges and reducing risks to both patients and staff, then they can be found liable for acts of negligence.

Advances in knowledge based systems and ontological engineering offer new tools to improve assessment processes within health care organizations. Assessment ontology formally captures and explicitly represents concepts that are often implicit in organizations quality assurance activities. Ontology combined with a rule-based information systems can help health care managers develop and improve assessment processes. Ontology provides semantic building blocks directing systems to produce outputs representing interoperable assessment services. For example, system outputs may reflect plans that standardize and direct automated processes for monitoring, communicating, and sharing assessment results.

This research explores a support system for a health care organization that coordinates assessment activities among multiple geographic facilities, government entities, health-care administrators, nurses, physicians, pharmacists, psychiatrists, and other professional and paraprofessional staff. We collaborate with health care managers as they develop their assessment ontology and capture rules to coordinate distributed activities. We develop a semantic web-based system to provide instructional materials, and measure staff competencies to improve assessments. Actively participating in the system's development and studying its resulting assessment activities allows us to test the hypotheses that a formal ontology combined with a knowledge-based system may help health care managers better manage assessments.