Editorial Comments JAMIA

# Informatics: The Infrastructure for Quality Assessment and Quality Improvement

The post-conference following the Fifth International Nursing Informatics Symposium was entitled "Informatics: The Infrastructure for Quality Assessment and Improvement in Nursing."[1] The historical precedents for compiling and reviewing outcomes data, for attempting to discover the causes of variation, and for improving care based on this information can be attributed to Florence Nightingale and Ernest A. Codman. Nightingale's call for statistics that concentrated on recovery (not on death) and Codman's typology of causes of poor patient outcomes are considered precursors to today's emphasis on clinical data use for quality and outcomes measurement. Important linkages between specific interventions or errors and outcomes have been described by Codman:

> And just as Nightingale and Codman viewed outcomes information as a means to an end—improvement of outcomes and quality of care, the lesson of much of their work is that it is not sufficient simply to know rates of events. One must know why these events occurred. The purpose of risk adjustment is to isolate one potential cause (i.e., patients' characteristics) that inherently increases risk.[2]

The discussion at the post-conference focused generally on using clinical data for quality assessment and improvement and for measuring outcomes of care, and was not restricted to nursing data. The post-conference abstract, authored by Henry, captures the essence of the discussion:

> Historically, quality assessment has focused on the structure, process, and outcomes of health care for internal quality assurance purposes and for external accreditation. In the current health care environment of rapidly escalating costs and high patient acuity, and as increased demands for information about the quality of care emanate from consumers, third-party payers, and governments, an informatics infrastructure is critical to quality assessment and improvement in health care.
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> There are three essential elements for this infrastructure. First, standardized vocabularies that describe patient problems and characteristics, health care interventions, patient outcomes, and intensity of care/resources are required. Vocabularies must include outcomes such as functional status, patient satisfaction, and quality of life, in addition to the traditional outcome measures of length of stay, mortality, and complications. Second, computer-based methods are needed to examine the linkages among patient problems and patient characteristics, health care interventions, patient outcomes, and intensity of care/resources, and to analyze variation in practice. These include risk-adjustment models to control for the process standardization measures such as clinical practice guidelines, care plans, and critical paths to examine the relationships between the processes and outcomes of care. Finally, an integrated clinical information management environment in which the data required for quality assessment and improvement are both collected and returned to the provider during the routine process of patient care is paramount.
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> Informatics is imperative for assessing the quality of care provided and analyzing the appropriateness and effectiveness of nursing interventions across settings and populations.

To achieve a broader dissemination of these ideas, six of the papers that were presented as background for the post-conference have been expanded for publication in *JAMIA* (three appeared in the May/June issue and three appear in this issue). These papers both reflect and inform contemporary thinking in health informatics. The importance of patient data and the naming of clinical phenomena pervades the vocabulary and lexicon initiatives prevalent around the country, and is echoed in the papers by Henry[3]

and Zielstorff.[4] Consideration of the manner in which information systems facilitate clinical practice emerges in the papers by Holzemer and Reilly[5] and Hoy and Hyslop.[6] The emergence of the roles of formal mathematical models within informatics application is evident in Brennan's[7] exploration of normative decision theory and Petryshen, O'Brien-Pallas, and Shamian's[8] treatment of severity adjustment and risk adjustment.

The legacy of a focused set of papers exploring informatics issues in the context of quality assessment in nursing is the formalization of frameworks, models, and policy recommendations to guide the development of systems and the conduct of research. The papers call attention to the special concerns of one health discipline, nursing, illustrating the nature of data and proposing an infrastructure suited to ensuring that quality nursing care is provided in a manner that is sensitive to patient preferences. The absence of papers addressing technologic advances such as telecommunication, imaging technologies, and workstations stands not so much as a deficit, but rather as a call to informatics colleagues to take on the challenges of developing tools and systems to assist clinicians and agencies with accountability of care.

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