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Building Care Delivery Systems for Patient Value: Adding Nursing to Evidence-Based Practice

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Abstract

Healthcare organizations in every country are exploring how to develop clinical best practices to guide delivery of safe, effective and appropriate health care as rapidly as possible. This paper reports on the innovative work of a major collaborative evidence-based practice (EBP) research initiative that adds nursing knowledge into team care protocols for the full life cycle of specific health conditions, e.g. congestive heart failure and nurses' clinical adoption of these new tools and practices.

Keywords:

nursing knowledge, best practices, evidence-based practices, nursing standard terminology; nursing data sets, data infrastructure, patient value

Introduction

Numerous efforts have been made to fill the quality chasm stemming from wide variations in practice patterns and access to healthcare providers. There have been intense efforts to develop and apply the best possible science to inform healthcare delivery [1-3]. Surprisingly, even though nurses are considered "knowledge workers," much of what nurses contribute to the care process and outcomes of care is not visible. This invisibility also extends to the data captured and stored in local, regional and national EHR systems [4]. In 2002, Aurora Health Care, Inc., a large Wisconsin-based integrated health system, prepared to implement plan of care clinical documentation across its delivery system. Aurora encountered a near total absence of evidence-based nursing content available to use within its clinical information systems (CIS). The research project reported here emerged from discussions on how best to address that void [5]. The scope included the redesign of care protocols to cross the full care continuum using evidence-based content for the care team. The decision was made to adopt a rigorous research methodology to generate best practice content in view of the many barriers that impede healthcare professionals in obtaining and applying best evidence. These barriers include a lack of clinician competency for literature searches, study evaluation and implementation, unfavorable attitudes toward EBP, and less supportive external environments [6].

Methods

The methodology used addresses the following three research aims:

1. to discover and generate the evidence-based nursing knowledge related to major clinical conditions
2. to define a framework for representing that knowledge to clinicians to use in clinical practice
3. to provide structured data using standard nursing terminologies for quality measurement, outcomes and research

The team started the knowledge generation process by working with clinical nurse experts to "name" and rank the "phenomenon of concern" that most commonly occurred in the care of their patients with major health conditions. Once identified, the research team used a systematic search and critical appraisal process to discover, synthesize, and organize the knowledge content to align with the nursing process. The second step in this process is the translation of the synthesized content into nursing knowledge for clinician application at the point of care into the work flow, decision support rules engine. The nursing knowledge is embedded in the assessment documentation content, decision support rules engine and into pre-built plans of care.

The EBP content was divided into two types of nursing knowledge for representation within the CIS - referential and actionable knowledge. Referential knowledge can be accessed as a point of information by any team member through a reference knowledge database that provides descriptions of the given problem, interventions Actionable knowledge refers to the actions that are programmed into the clinical rules engine for the system in response to the given documented value or result. Thus, the actionable knowledge is available at a screen level linked to a given procedure, topic or data element.

Concept representation

Since the ability to communicate, transfer and compare nursing data is essential to meeting the aims of this collaborative project, a dedicated terminology task group was built into project activities from inception. This team has focused specially on concept representation and the application of terminology standards to the nursing data embedded under the categories of assessment, diagnosis, interventions and outcomes. The terminology task group used international standards to guide the concept representation work, including (a) International Organization for Standardization ISO 18104:2003 Health Informatics – Integration of a reference terminology model for nursing [7], (b) International Classification for Nursing Practice (ICNP®) [8], and (c) Systematized Nomenclature of Medicine Clinical Terms (SNOMED-CT) [9].

Results and findings

To date 15 nursing "phenomenon of concern" have been developed into EBP recommendations for assessments, problem identification, plans of care, and outcomes evaluation. An initial pilot test was conducted at a 72-bed acute care site and focused on one phenomenon - Activity Tolerance. The pilot evaluation aimed to assess the extent to which the embedded knowledge pertaining to Activity Tolerance was utilized by nurses at the point of care. The sample of 773 adult patients (age 18) admitted from July 1 to October 31 2006 was used for this preliminary analysis. All the subjects projected for the analysis were medical patients and admitted for emergent services (72%) with a mean length of stay of 5 days (SD =4.6). The majority of patients were female (57%). Mean age of subjects was 59.3 years (SD = 19).

Table 1 - Summary of Nurse-Sensitive Outcomes

- **Activity level tolerated appropriate to level required in discharged setting (85.3%)**
  - **Met: 61.3%, Not Met: 24%, Missing: 14.7%**
- **Functional status maintained or improved relative to baseline ADL Index score (84.7%)**
  - **Met: 64.2%, Not Met: 20.5%, Missing: 15.3%**

Basic Descriptive Correlations: Activity Intolerance

Medical Patients (*n* = 773)	Mean Age	Mean Functional Score	Mean LOS	Readmission (Mean days)
Patients w/o Activity Intolerance (n = 494)	53.7 ± 18	11.17 ± 1.7 (*n* = 29)	3.8 ± 2.4	10.1% (*n* = 50) (34.8 ± 30.8)
Patients with Activity Intolerance (n = 279)	69.2 ± 16.8	6.1 ± 3.6 (*n* = 133)	6.0 ± 3.6	19.4% (*n* = 54) (27.7 ± 24)

Table 1 shows the significant differences in age, functional activity score, length of stay and readmission rates for those medical patients without activity intolerance (n=494) and those medical patients assessed as having activity intolerance (n=279). Nurses' documentation indicated that functional goals were documented as "met" in a little over 60 percent of the time with missing documented values for about 20 percent of discharged patients. The poorer health indicators for the patient group assessed as having activity intolerance also shows almost double the readmission rate as compared to the patient group without activity intolerance. We will continue to track these outcomes as our analyses evolve and we expand our integration of evidence based nursing in all aspects of nursing operations and culture.

Table 2 presents our approach to the descriptive analyses for nurses' compliance to the evidence-based recommendations within the ACW conceptual framework: general assessment,

focused assessment, nursing intervention, and outcome measurement. Focused assessments were to be performed if further assessments were necessary for a patient based on the findings of the initial general assessment. For example, if a nurse identifies that a patient needed "assistance" for Activity of Daily Living (ADL) prior to the admission, a decision support rule is triggered by the system. Additional assessment factors are then presented for the nurse to examine the level of functional status of the patient.

Table 2 - Nurses' compliance to the evidence-based recommendations related to activity tolerance

Care Component	Percentage of Compliance
Patient Assessment (General)	(*n* = 773)
• ADL's prior to admission	86%
• ADL activity	99%
Functional Assessment (Focused)	(*n* = 279)
• ADL Bathing	48%
• ADL Continence	48%
• ADL Dressing	48%
• ADL Feeding	48%
• ADL Toileting	48%
• ADL Transferring	48%
• ADL Index Score	48%
Plan of Interventions Established	(*n* = 773) 89%
Outcome Measurement	(*n* = 773)
• Activity level tolerated appropriate to level required in discharged setting	85%
• Functional status maintained or improved relative to baseline ADL Index score	85%

These findings show that the nurses were doing initial assessments at nearly 100 percent but completed follow-up assessments at only 48 percent of the time. In addition, while nurses took the next step of activating interventions and documenting against outcome measures at a rate of 85 percent compliance, they predominantly choose to work from a common universal plan of care rather than the specific problem plan of care. Use of the universal plan of care reflected the care approach prior to implementing the EBN plans of care. Thus, we view these behaviors as indications of incomplete clinical adoption by nurses. In summary, lessons learned regarding nurses' clinical adoption indicate a need to reengage with the next rollout phase and give a more concentrated focus on the people and processes portion of the implementation over the technology.

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