

Embedding Clinical Indicators into Nursing Documentation

Jennifer Allan Browne^a, Barbara G Covington^b

^aDepartment of Nursing Informatics, Methodist Healthcare System, TX, USA

^bInformation & Learning Technologies, University of Maryland School of Nursing, MD, USA

Abstract

The Methodist Healthcare System of San Antonio audits completeness and accuracy of nursing assessments. Between 1996 and 2001, regardless of software enhancements and education, completeness of risk assessments hovered at 80% or less. Accuracy of risk scores were in question due to paste functionality. In review, it became apparent that many risk assessment indicators were already an intrinsic part of nursing systems assessment. This project embedded weighted indicators invisibly within systems assessment. Risk scores then automatically calculate and display. This approach decreased documentation queries and increased accuracy of risk assessments. Results were validated using concurrent manual review. Skin assessment demonstrated a 97% accuracy rate with 100% completeness of documentation. Fall assessment resulted in a 2.5% miss rate and 100% completeness of record. 100% of high risk patients identified had appropriate care plan problems. Recommendations are to further explore embedded indicators in software design. The study demonstrated a) decrease in nursing documentation queries b) increase in completeness of record c) increase in accuracy of record and d) increase in accuracy of care plan.

Keywords:

Nursing, Risk Assessment, Clinical Risk Indicators, Embedded Indicators, Computerized Documentation, Patient Assessment, Fall Assessment, Skin Risk Assessment.

Introduction

The Methodist Healthcare System (MHS) of San Antonio, TX is made up of 7 acute care facilities with total inpatient beds numbering approximately 1250. MHS has utilized a computerized documentation system since 1994 [1]. The computerized approach has permitted routine automation of audit reports to review completeness and accuracy of nursing documentation. Between 1996 and 2001, audits revealed that documentation of high risk nursing assessments on admission, such as MRSA/VRE screening were at 80% or less. Completeness of ongoing risk assessments, such as high risk fall and high risk skin breakdown were as low as 50%. Accuracy of risk assessments were also in question due to missed reassessment, "pasted" responses from previous assessments and partial completion. Various techniques to improve documentation failed. These included staff education, automatic and timed drop down boxes and on-line reminder messages.

The events at Methodist were not unique to this one location.

Literature supports that early identification of high risk problems and ensuing intervention can avert incidents. For example, two of the largest risk liabilities for hospitals, falls and skin breakdown can be prevented with timely intervention.

Horizon Medical Technologies reports that the most common occurring adverse event in healthcare facilities annually is patient falls and that each year thousands are injured from those falls [2]. Further, injury is the fifth leading cause of death in older adults, and most of these fatal injuries are related to falls [3]. According to Fillit and Picariello, the prevalence of pressure ulcers in acute care facilities is approximately 10%. Prevention can be accomplished by early identification and intervention [4]. As a result of our chart audits, MHS undertook an aggressive documentation redesign. The goal was to improve the identification and intervention for multiple types of high risk patients.

Chart Review

In chart review, three trends became apparent. First, complete nursing systems assessments (shift assessments) were documented no less than every 12 hours, with a 97.8% completion rate in all nursing units. Second, high risk assessments were a separate task, either found at the end of shift assessments, or as a stand alone intervention. Finally, most of the risk assessment questions were duplicated somewhere in the shift assessment.

Objectives

Nurses were consistently charting shift assessments. A trial was undertaken to embed weighted indicators into specific query responses, creating automated risk calculations upon completion of the assessment.

The identified issues related to nursing risk assessments were:

- Duplicate queries in nursing documentation.
- Incomplete or absent initial and ongoing risk assessments.
- Questionable accuracy of documentation (due to recall of previous response)
- Incomplete nursing care plans
- Poor risk assessment follow-up when patients moved from an outpatient status to inpatient status.

The objectives of the embedded indicator project were to:

- Decrease duplicative queries from nursing assessments.
- Increase documentation compliance with initial and ongoing risk assessments.
- Demonstrate accuracy of initial and ongoing risk assessments
- Improve the accuracy of nursing care plans as they pertained to identified risks.
- Develop a seamless process whereby all patients moving to an inpatient status would be reassessed for specific risks.

Approach

Risk assessment and shared queries were compared. Six examples are found in Table 1:

Table 1: Shared Queries

Shift Assessment	High Risk MRSA	High Risk Fall
Pressure Ulcer	Pressure Ulcer	Neurological
Wound	Wound	Incontinence
Tracheostomy	Tracheostomy	Mobility
Neurological	Tubes (GI)	Activity
Incontinence		IV/ Lines
Mobility		
Activity		
Tubes/ IV/ Lines		
High Risk Skin	H. Risk Nutrition	H. Risk Referrals
Pressure Ulcer	Pressure Ulcer	Pressure Ulcer
Neurological	Wound	Wound
Incontinence	Tracheostomy	Tracheostomy
Mobility	Neurological	Neurological
Activity		Mobility

It was identified that the majority of risk assessment questions were shared by one or more assessments. All separate risk assessments were deleted from primary documentation. In total, 18 queries were deleted from current documentation and three queries were moved to the shift assessment. No queries were duplicated. Weights were assigned to query responses within the shift assessment a) by the specialty group overseeing design or b) by the copyrighted tool. For example, the Fall Committee assigned any neurological impairment a broad score of 2, whereas Norton Skin Risk Criteria was assigned based on the degree of neurological impairment [5]. Shift assessments have defined parameters for a “WNL” (within normal limits) assessment. In other words, if a system assessment has met the defined or normal parameters, no further documentation is required (blank is synonymous with WNL). As a result, the coding of weighted indicators also required the assignment of values to blank fields.

Parallel and Live Trials

Once coding was completed with high risk scores displaying automatically, a parallel test trial was undertaken to validate accurate scoring. All possible scenarios were recreated to validate scored results with the following high risk assessments: nutritional, fall, skin breakdown and MRSA/ VRE. Once coding was validated, nurse education was provided and the tool was installed in all adult inpatient units¹. Staggered studies were un-

dertaken to validate the accuracy of auto-calculated scores. Because each risk assessment had unique criteria, validation studies had to be designed on an individual basis. This article will review validation of high risk fall and high risk skin breakdown assessment.

Results

Fall Risk Validation

The MHS Fall Assessment Tool (ADAPT) is an evidence-based design that was developed to identify high risk fall patients and to individualize risk category and patient intervention [6]. Two aspects of the newly implemented fall identification program were evaluated: the frequency of patients identified as at risk for falls and the accuracy of documentation in actual fall cases. To evaluate frequency of high risk fall identification, 6402 inpatient and observation records were reviewed. Evaluation occurred on all adult medical-surgical units, intensive care, rehabilitation and psychiatric units. On average, 38% of patients were identified as at risk for fall. This review identified that the predominant fall risk categories (type of fall likely to occur) were related to activity and post medication.

Validation was then performed by reviewing actual falls in the Methodist Healthcare System for the first quarter of 2003. Of 168 records reviewed, 153 (91%) were identified at high fall risk. Unanticipated falls numbered 11 (6.5%) and would not have been identified with any fall risk tool. Only 4 (2.5%) records represented high risk fall patients not identified by the tool. This was attributed to the sensitivity of the tool, not the embedded indicators. (Figure 1).

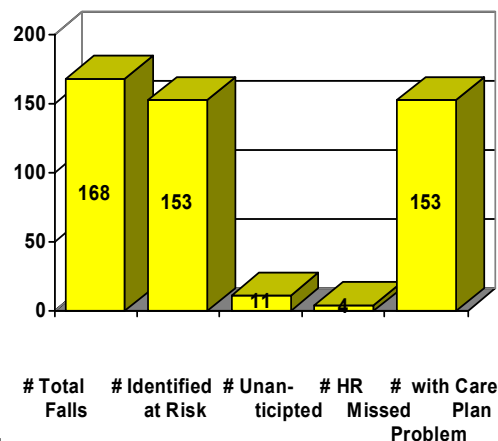


Figure 1 - High Risk Fall Validation (HR= High Risk)

The computerized charting system automatically adds problems to the plan of care when a high risk score is calculated. The significant finding was that of the 153 records that identified a high risk score, 100% of the records had the appropriate care plan problem in place. It was also noted that 100% of all records re-

1. All ICU's, Intermediate ICU's, Telemetry, Med-Surg, Oncology, Orthopedics, Transplant, Psychiatric Units, Bone Marrow Transplant, Neurology and Gynecology.

viewed had a complete fall risk assessment completed no less than every 12 hours

Norton Validation Studies 2002: All Hospitals

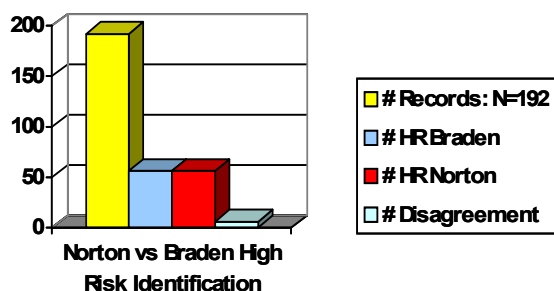


Figure 2 - Comparison of Norton vs Braden in Identification of Patients at Risk for Skin Breakdown

High Risk Skin Breakdown Validation

Manual simultaneous validation was required for high risk skin assessment scores. The Braden High Risk Tool had been in use from 1996 through 2001 [5]. Data prior to the study, collected January through April 2001, demonstrated a 90% rate of completion of Braden initial assessments [5]. Completion of ongoing skin risk assessment was less than 25%. The criterion for high risk skin assessment frequency was no less than once every three days.

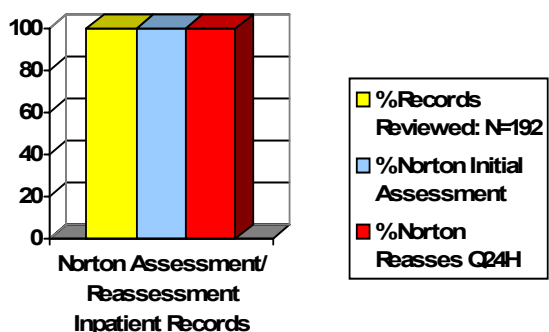


Figure 3 - Completeness of High Risk Skin Documentation

The Norton High Risk Tool was embedded into clinical documentation [5]. Norton was selected primarily because the tool itself better matched nursing shift assessment questions. Auto-calculated scores were validated on the 7a-3p shift in adult inpatient units.¹ A report was run to display all patients on the unit and the Norton score they had received that morning [5]. The same nurse who completed each shift assessment then completed a Braden assessment on paper [5]. The Braden score was manually totaled and compared to the auto-calculated Norton [5].

Of 192 records, a total of six records were in disagreement for a 3% variance in high risk identification. Both the Braden and

Norton Scale identified 56 records (29%) at high risk for skin breakdown. (Fig 2) Of the 192 records, 100% had an initial assessment and 100% had reassessments performed (criteria was no less than once every 24 hours). Every patient noted as “at risk for skin breakdown” had the appropriate problem on the plan of care. (Fig 3).

Both the Norton and Braden tools were equally effective in identification of patients at high-risk for breakdown. There is a 3% collective discrepancy (97% agreement) with a 98.5% accuracy rate for both tools.

Discussion

This article reviews validation of two specific high risk categories. MHS also embeds indicators for case management and palliative care referrals, newborn and obstetrical nutrition screening and for follow up nutritional screening with patients who have extended lengths of stays. In informal interview with staff RN’s eight months after implementation, broad acceptance of the embedded tools was noted. Nursing perception was that there were fewer questions to answer in the shift assessment. Nurses also reported higher confidence in score totals.

Because indicators were embedded into shift assessments, 100% of patients converting from an outpatient/ observation status to inpatient had a shift assessment (and therefore risk assessments) completed within 12 hours of conversion.² This allowed MHS to delete a required re-screening form from practice and policy and resulted in increased nursing satisfaction. In interview, nurses are unanimous in their preference of the auto-calculating tools versus the extra steps of stand-alone risk assessments.

An incidental finding that occurred as the result of this study was the identification of variant fall risk identifiers in different patient populations. For example, in the ICU areas it was noted that patients with serious neurological impairment may actually be at lower risk of falls. A patient with the same condition on an open unit with unsupervised periods, would in fact be at higher risk. It also became evident that all patients in rehabilitation units were at high risk for fall by virtue of their rehabilitation program. Fall risk protection in rehabilitation is an established standard of practice rather than a unique problem. Other areas that challenged the appropriateness of the fall tool were mental health, postpartum, and outpatient units. The use of embedded indicators will allow research in this area and individualization of indicators at the specialty unit level.

A second significant finding was the increased accuracy of high risk assessments without educational intervention to nursing staff. There was evidence that some nursing schools in the area did teach detailed skin assessment, but did not teach a tool for assessment of potential high risk skin breakdown. By embedding the high risk skin assessment into a shift assessment that nurses were already comfortable charting against, accuracy immediately increased without any educational intervention.

1. SICU, MICU, CCU, NCCU, ICCU, Telemetry, Intermediate Neurology, Oncology, Orthopedics, Chemical Dependency, Geri-Psych and Adult Psych.

2. Chart review for first quarter 2002

Recommendations

Recommendations from this study include:

1. Replication of this study at other hospitals in cooperation with the Methodist Healthcare System.
2. The research should be replicated using the latest information in the literature and the same type process. The process should search electronic databases to retrieve methodologically sound studies for systematic review and quality filtering to identify the most appropriate information for the development of an evidence based software program that could be embedded in other existing computerized documentation systems. Requirements for the evidence based software program should include: 1) that there is no increase in the nursing time required to extract the needed information or enter it into the system and 2) the program should allow for individualization of risk criteria at the hospital level. 3) Inter-rater reliability procedure(s) should be built in so that validation is not cumbersome or time consuming. An example would be embedded indicators to measure acuity.
3. The same processes should be used to develop indicators, scores and care plan problems for specialized areas.
4. Additional research should be done that addresses clinical documentation trends that might also be influencing current risk protection, such as the act of copying and pasting previous assessments without true reassessment.

Conclusion

In conclusion, all objectives of the embedded indicator study at the Methodist Healthcare System were met. Duplicative queries from nursing assessments decreased. Documentation compliance with initial and ongoing risk assessments increased. Accuracy of initial and ongoing risk assessments improved. The accuracy of nursing care plans as they pertained to identified risks improved. The seamless process is in place whereby 100% of all patients moving to an inpatient status are reassessed for specific risks.

With the ongoing nursing shortage and predicted increases in the elderly population, patient safety in hospitals will require significant attention to manage future risks. At the same time, the cost of doing business requires all hospitals to look for ways to work both smarter and faster. One option is to improve our existing charting systems through redesign. A focus on computer system and software redesigns that do not add workload for nursing personnel, provide built in quality monitoring and intervention recommendations, and streamline charting between different levels of care positively impacts both safety and education. The MHS embedded indicator study demonstrates smart use of information technology in an effort to decrease charting time, increase patient safety and standardize assessment data with minimal staff education.

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Address for correspondence

Jennifer Allan Browne, RN
Clinical Informatics Coordinator
Dept. of Nursing Informatics
Methodist Healthcare System
8109 Fredericksburg Rd
San Antonio, TX 78229
Ph: 210-575-0132
Fax: 210-575-0150
Email: Jennifer.allan@MHSHealth.com