Increasing Patient Satisfaction and Nursing Productivity Through Implementation of an Automated Nursing Discharge Summary

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ABSTRACT

At New England Deaconess Hospital (NEDH), identifying nursing diagnoses and collaborative problems treated during the patient's hospitalization and saving this information as part of the computerized core clinical data base is essential to a professional practice model for the delivery of nursing care. Providing the patient with concise, easy-to-read discharge instructions and referral agencies with consistent information about the patient's functional status and directions for patient care are important components of delivering high quality patient care. ODISY (the On-line Deaconess Information System) facilitates an automated nursing discharge summary function in addition to an automated medical discharge summary, interdepartmental communication via order entry and results reporting, and other user designed functions that support patient care.

Utilization of this function strengthens the multidisciplinary discharge care planning process, increases patient satisfaction, facilitates the identification of nursing diagnoses and collaborative problems treated by nurses and physicians, saves a significant amount of nursing time in the preparation of discharge information, and enables the hospital to meet Joint Commission on Accreditation of Health Care Organizations (JCAHO) standards and state regulations for discharge planning.

INTRODUCTION

Nursing today is faced with a mandate to maximize the time nurses spend in providing patient care and to minimize the time spent on tasks that do not require professional nursing expertise. We are in an era in which ever increasing nursing salaries are making nurse *affordability* a driving force equal to or even greater than nurse *availability*. We are looking toward a future in which the demographics of an aging population will ultimately produce a health care labor shortage that will continue to drive nursing salaries to even higher levels. The absolute necessity of redefining the way delivery of care by the higher paid nurse is organized and managed is a fact of life today in health care. Further, the move at the national level toward a statistical method for measuring and controlling quality in health care will lead to greater accountability [1] for the care delivered and the outcomes of that care. This points out the critical need for nurses to provide some type of problem list such as nursing diagnoses and collaborative problems that can be linked to ICD codes and DRG's to enable identification of aggregate data. [2]

Well-designed computer functions can increase nurses' productivity by simplifying some of the information management tasks that consume a large part of their time. Eleven years ago, in 1980, in Nursing: A Social Policy Statement, the American Nurses' Association encouraged nurses to respond to society's concerns, including new knowledge and technology. [3] In 1986, the American Nurses' Association resolved to encourage and support nurses in the development of Nursing Information Systems. [4] More recently, in 1988, the Secretary's Commission on Nursing recommended an exploration of computer technology "as a means of better supporting nurses and other health professionals" (1988b, p. 24). [5] JCAHO Nursing Care Standards support the desirability of providing nurses with computer technology for meeting patient care needs and providing efficient utilization of nursing resources. [6] The 1991 JCAHO Nursing Care Standards also encourage comprehensive, specifically targeted, and integrated nursing documentation. Further, both regulatory and competitive imperatives for quality monitoring necessitate computer support for peer review activities and evaluation of care. [7]

Direct patient care -- nursing care -- is the major product of the hospital; yet patient care on the patient care unit has less support from automated information systems than do most other hospital departments. As professional nursing

care becomes a scarcer and even more expensive commodity, the significance of computer support increases from a labor saving productivity perspective. [8]

NEW ENGLAND DEACONESS HOSPITAL

New England Deaconess Hospital (NEDH) is a 431 bed academic tertiary acute care institution located in Boston. In fiscal year 1990, the Deaconess had approximately 13,000 discharges; 11% or 1,300 of these discharges required interagency referral(s) for home care services.

Information management tasks consume a large part of the nurse's time. At New England Deaconess Hospital, nurses were spending as long as 30 to 60 minutes to manually complete an interagency referral for a complex patient; in addition, manual completion of a one page two-part Patient Home Instructions form took another 15 to 30 minutes, and a properly written progress note summarizing the patient's status upon discharge took another 15 minutes. Thus, preparing discharge information for a complex patient could take from one to two hours of nursing time.

A review of the chart copies of discharge forms and progress notes completed for Deaconess patients discharged over a period of two months confirmed the belief that the quality of the information provided to the patients and referring agencies was poor and inconsistent and the majority of nursing discharge summary notes were limited to stating that the patient was discharged from the hospital. Although the expectation was that the quality and consistency of the information would correlate with the skill and experience of the nurse who prepared the forms and wrote the discharge note, this was not necessarily the case. Information was handwritten and difficult to decipher; legibility of information was poor at best and frequently illegible so that the patient's record did not effectively document what information had been given to the patient or the referral agency.

Documented reasons for unplanned over-time showed that preparation of patient care referrals was a frequent reason for unplanned over-time hours paid to staff nurses. Also, newly promulgated Department of Public Health Discharge Planning Regulations included requirements that reinforced the need for consistency in discharge care planning and the need to provide advance written notice to the patient regarding the plan. Finally, the lack of coordination of the patient's discharge among the health care team was creating difficulties in the timely identification of available beds for new admissions.

In summary, nurses were spending a significant amount of time and effort in providing documentation that did not achieve its intended purpose. Therefore, the Department of Nursing welcomed the opportunity to participate in the development of a nursing application for the ODISY Discharge Summary function.

The major objectives for the project were to:

* Increase patient satisfaction and compliance with discharge instructions by providing a structure that would result in consistent and easily read documents.

* Strengthen the nurse's role in multidisciplinary discharge care planning and reflect a professional level of practice in documentation related to discharge care planning.

* Increase nursing productivity and eliminate paid overtime hours for preparation of patient care referrals.

* Identify and save nursing data in the core clinical data base for clinical review and analysis.

SYSTEM ENVIRONMENT

At NEDH, the PCS/ADS based applications of ODISY operate on an IBM 4381 with a locally distributed network of 350 cathode ray terminals (CRT's) and terminal printers. Major components of the hospital system include ADT (admission, discharge, transfer), order entry from the patient care units for major services including pharmacy, results reporting, and medical records coding and abstracting. There are interfaces with the Community Health Computing (CHC) laboratory system, the SurgiServer (Serving Software, Inc.) operating room system, the Pyxis MedStation system, the Hewlett-Packard electrocardiography reading and interpretation system, and the ACT/PC (Applied Computer Technology for Patient Care) Argus 2000 critical care system. ODISY applications, including the

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Discharge Summary/Patient Care Referral, provide both light pen and key entry selection. ODISY has been widely used by the nursing staff, physicians, respiratory therapists, physical and occupational therapists, and support department personnel beginning in 1982 when the first applications and the first nursing station were brought on-line. More recently, in 1989, social workers and hospital personnel in outpatient areas have also become users of the system.

PROGRAM DESIGN

The ODISY Discharge Summary/Patient Care Referral is a PCS/ADS based application developed entirely in house at NEDH. The product was developed over a period of two to two and one-half years by a team of physician and nurse users, the Information Systems program manager, and a programmer. The system was created using the same software architecture and programming techniques as the hospital's pre-existing patient care system. Creation of the system involved the purchase of little or no new hardware and utilized approximately two person-years of design and programming time.

The application was written entirely within the confines of the existing hospital information system. Registration, financial and demographic data, quality assurance and medical records coding, medical orders and laboratory, radiology, and other results flow through the same system and are available to be designated for capture in the clinical data base which is created by the discharge process. [9]

Ideally, input by nurses begins following the admission assessment of the patient; however, input is not required until the day before the patient's anticipated discharge. The nurse selects the patient for whom the summary will be done; this displays the nurse function screen from which Discharge Care Plan/Interagency Referral is probed and an index screen is displayed. From the index screen, the nurse may choose to complete the data entry flow at one time or in sections. The majority of data entry by the nurse is by light pen selection with minimal keyboard entry.

Patient/Nursing Data: This screen displays the patient's demographic information, admitting diagnosis, allergies, language if not English, date anointed, primary nurse, weight, and height. The nurse is prompted to review and update the patient's weight and height if necessary, and key in the patient care unit telephone number and Y (yes) or N (no) to indicate if patient and family are aware of the patient's diagnosis.

Patient's Functional Health Status: This section includes a series of screens which address Mobility (the nurse is prompted to probe independent, level 1, 2, 3, or 4); Uncompensated Sensory-Perceptual Deficits, Disabilities Devices, Prostheses (appropriate items are probed from a pre-formatted screen); Self-Care Status (I (independent), level 1, 2, 3, or 4 is keyed in for Bathing-Hygiene, Dressing-Grooming, Feeding, and Toileting); Elimination: Bowel (Y (Yes) or N (No) is keyed in to indicate if patient is incontinent, has a colostomy or ileostomy, or requires an enema. If an enema is required, the system prompts for the date of the last enema to be keyed in); and Elimination: Urinary (Y or N is keyed in to indicate if patient is incontinent, has an ileal loop or catheter. If the patient has a catheter, the system prompts for the type and the date inserted or last changed.) Future plans include the possibility of enlarging this section to address additional functional health areas.

Nursing Diagnoses and Collaborative Problems: Diagnoses and problems treated during hospitalization are keyed in and then displayed to the nurse with a prompt to key in the status of each (R (resolved), I (improved), or U (unresolved). Soon this section will include pre-formatted screens that list the nursing diagnoses and collaborative problems/potential complications commonly seen in Deaconess patients.

Discharge Medications: This is a display only screen and displays the discharge medications as entered by the physician in the medical discharge summary.

Discharge Diet/Fluid Restriction: Currently the nurse keys in this information; in the future, the patient's diet order will be automatically displayed with the ability for update. Also, additional facets of the patient's nutritional and metabolic status will be addressed.

Follow-Up Appointments/Mode of Transport Upon Discharge: The appropriate phrases describing the patient's mode of transport and appointment status is probed; if a follow-up appointment has been made, the system prompts for the date, time, and clinic or service.

Equipment/Supplies/Assistive Device(s) Needed Upon Discharge: Items are probed from a preformatted screen and displayed with a prompt to key in the status of each, i.e., S (sent home with patient), O (ordered to be delivered), P (prescription given), N (needed), R (reorder per instructions), or A (available at home). If a medical supply company is the ongoing source of supplies, company's name, address, and phone number are probed from a preformatted screen.

Patient Disposition: The nurse probes home (and specifies with or without home care services), long term care, other acute care or rehabilitation hospital. If the patient's disposition will require an interagency referral, the nurse keys in the name and address of the referral facility. If the patient requires home care services, the nurse probes the type(s) of services required and keys in any medically ordered treatments and frequencies.

Patient Instructions: From a preformatted screen, the nurse probes the preprinted instructions (paper copies available on the patient care unit) which will be given to the patient. If there are additional instructions or if there are no preprinted instructions, the nurse selects the flow for non-standard instructions and keys in instructions for treatments and self care, restrictions, conditions for which to notify the physician, and instructional books or pamphlets given to the patient. If the patient's disposition is to another health care facility, this section is omitted.

SYSTEM OUTPUT

The nurse's last step prior to production of the printed output is to key in the print date and an optional free text discharge note. Discharge forms are printed batch mode in Information Systems Operations between 2:00 and 4:00 a.m. daily. Nursing forms include a Patient Discharge Care Plan (two copies) and an Interagency Referral (three copies) or a Nursing Discharge Summary (if there is an interagency referral, the third copy of the referral serves as the nursing discharge summary). The nursing forms along with any prescriptions for discharge medications requested by the physician as part of the ODISY medical discharge summary function are sorted by patient care unit, placed in envelopes, and delivered to a central location to be picked up by nursing personnel. Forms may be reprinted as often as necessary by changing the designated print date. A daily report of patients for whom automated nursing discharge summaries have been done is provided to nursing administration and utilized by nurse managers to monitor use of the function by the nursing staff. In addition, a copy of this report is sent to the Admitting Department to provide information about probable discharges.

SYSTEM IMPLEMENTATION

The nursing application for the ODISY Discharge Summary function was implemented in November 1988 as part of the second pilot of the medical discharge summary and involved two patient care units. The pilot was scheduled to run for three months and during that time, the function was used for 200 patients. The original intent was to discontinue the pilot to make design and other modifications prior to full implementation; however, the nurses on the pilot units requested that they be allowed to continue using the function because they perceived there was a significant time savings and ease of preparation of patient discharge information and interagency referrals. Also, nurses from other units were aware of the use of the function on the pilot units and had asked to use the ODISY function. Nurses also reported positive reactions from patients in regard to their discharge care plans and discharge instructions. Therefore, the decision was made to continue the project on the pilot units and extend it to the remaining units as soon as staff had been trained in the use of the function. Modifications to the original function have been phased in and use of the function has continued to date.

Using the automated function, the nurse can produce a comprehensive nursing discharge summary for an uncomplicated patient who does not require referral in ten to 15 minutes and in 20 to 30 minutes for a complex patient who requires referral. Paid over-time for preparation of referral forms has been eliminated and quality assessment reviews have demonstrated significant

improvement in the quality of discharge information. The function is currently used for approximately 80% of all discharges. The limited ability to print summaries on demand has essentially precluded 100% utilization. However, future plans include the ability to produce discharge forms on demand.

SUMMARY

The implementation of the automated nursing discharge summary has provided benefits to patients, nurses, physicians, the hospital, and referral agencies. Patients benefit from receiving individualized discharge care plans and instructions in a format that is easier to read and comprehend. Nurses benefit from automated support which allows preparation of discharge information in much less time thus increasing the proportion of time available for direct care activities. Physicians, nurses, and other clinical care givers benefit from the integration of clinical data about the patient and the interdependence between the nursing and medical discharge summary functions encourages interdisciplinary discharge planning. The hospital benefits from more efficient utilization of beds based on receiving information regarding planned discharges.

Utilization of the automated discharge summary function by the nursing staff also has served to stimulate interest and raise the consciousness of the staff nurse in regard to the potential benefits of computer support for clinical care activities and requests for enhancements to the nursing discharge summary function are received on an ongoing basis.

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