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Constructing an Interdepartmental Information Integration System for Discharge Planning Services

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Abstract

Discharge planning involves providing appropriate healthcare, assistive devices, and support systems through the collaborative discussion and planning among hospital staff and clients' family members. With seamless transition of patient care as the goal, an intelligent information platform, i.e. an interdepartmental information integration system for discharge planning services, was established. This system is connected with operating systems and clinical care workflows to connect the patient with long-term or home care medical resources. We aimed to provide an ideal healthcare model focusing on staff diligence, patient comfort, and family confidence throughout discharge, thereby achieving the healthcare targets of intelligent care and high-quality nursing.

Keywords:

Discharge Planning; Interdepartmental; ISBAR method (Introduction, Situation, Background, Assessment, Recommendation).

Introduction

Recently, due to population aging, increase in chronic illnesses, health insurance payment policies, and the promotion of the Long-Term Care 2.0 plan, discharge planning services have played an increasingly important role in healthcare. This service is an important bridge connecting patients to the society in the process of reintegration, involving emergency responses to follow-up care to provide appropriate and sustained care. With the patient's health as the focus, discharge planning also prepares patients and families for the following stages of care and treatment. Using the case management method, in the early stages of admission, we assessed the patients' current and post-discharge needs, followed by detailed planning and providing of relevant medical resources for enquiries to prepare patients and families for a safe and successful discharge or referral to another appropriate care facility [1].

The American Hospital Association (1983) defines discharge planning as a concentrated, coordinated, and technologically-integrated process to ensure the continued care of the patient after being discharged through coordination among healthcare professionals, patients, and family members[2].Discharge planning services involves assessments by medical teams and coordinating and communicating with community resources for referrals. This allows the patient to improve their quality of life by providing them with holistic, proximal, and sustained high-quality healthcare for promoting faster recovery, reducing the length of hospitalization, prompt discharge, maintaining family integrity, and reducing the cost of healthcare. The patients' transition from hospital to community combines the resources of the hospital, home, and long-term care centers, providing patients with more complete and continued high quality discharge planning services. With the combined efforts of the medical teams, discharge planning must be coordinated with the patients and their families during admission and successfully discharged from the medical institution to their homes, for a comfortable hospital stay and discharge [3].

In 2005, Taipei City Hospital established and promoted a discharge planning service providing home care and telephone support for discharged patients to monitor potential relapses and track their recovery processes and quality of life after returning home. In 2015, to promote better medical care for citizens, the hospital extensively promoted the discharge planning service model by screening high-risk groups during admission, in preparing patients to return home peacefully or successfully transferring them to other care facilities through systematic and organized problem-solving methods. In 2016, the hospital developed a detailed strategy for discharge planning involving an integrated home care plan and patient-focused, integrated, coordinated, and sustained healthcare and medical care, with the family as the unit and community as the category of implementation, thereby improving the efficiency of social resource use and reducing the readmission rate. Simultaneously, positive patient-caregiver interactions are promoted through the implementation of detailed discharge planning. Combined with integrated plans for home care, this allows for the maximization of benefits from discharge planning, achieving the goal of the "Five Whole" care (Figure 1).

An intelligent information platform can be constructed to support the workflow of discharge planning, from patient screening and assessment, interdepartmental consultations, home connection, and long-term care. These areas can be connected to an operating system via a smart device, closely integrating discharge planning with the clinical workflow, reducing the reliance on manual written media and the time for communication, thereby improving healthcare quality, which further demonstrates the value of medical care [4]. Our hospital aims to develop a "seamless connection of medical care" in Asia, applying P4 Medicine to connect patients with long-term care or home care resources. This includes the prevention of suffering by patients, family members, or staff (Prevention); the effective planning of referrals (Predictive); the personalization of healthcare needs (Personalized); and the involvement of multiple departments, patients, and family in healthcare (Participatory).

Methods

- Establishing an Interdepartmental Taskforce

1. Nursing Team: Consisted of the hospital's Nursing Information Supervisor, members of the lateral discharge planning team, and members of the nursing information team. This team is responsible for the development of discharge planning operational workflow, the enhancement of the discharge planning screening table, meeting nursing information needs, etc.
2. Information Team: This team consists of the information project manager responsible for developing the nursing information system and the information technician.
3. Medical Team: This team consists of members of the Center of Interdisciplinary Medical Development of the College of Humanities, including pharmacists, nutritionists, physiatrists, social workers, hospice staff, etc. Meetings are regularly held to prepare for the development of the information system.

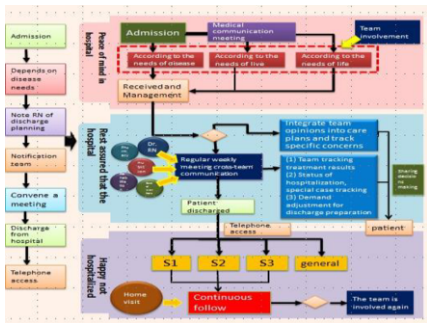

Figure 1- Core Values of Discharge Planning Services

- Constructing discharge planning workflow and assessment forms

The hospital's discharge planning service workflow is supervised jointly by the discharge nurse and community head nurse of the lateral discharge planning committee. They are also responsible for reviewing and updating the discharge planning assessment form. After numerous meetings, discussions, and much research, the assessment form was divided into three formats: for adults, children, and mental health patients

The screening for the workflow of discharge planning was initially completed within 24 hours of a patient's admission into the hospital by primary care nursing staff (including six categories of Activities of Daily Living (ADL) Assessment, social support, skin condition, tubing management needs, urine and defecation control, and discharge placement). Patients with an assessment score ≧5 were required to report to specialist discharge planning staff. Within 3 days, a team of specialists conducted a needs assessment visit and service enquiry (including the physician, nurse, nutritionist, pharmacist, physiatrist, social worker, physiotherapist, occupational therapist, and discharge nurse). An interdepartmental discharge planning meeting was held to discuss the necessary points of coordination prior to the patient's discharge and a discharge plan, including resource mobilization, preparation of aids was developed. If necessary, a discharge planning meeting was held with the family for facilitating a comfortable and peaceful discharge for the patient and the family. Discharge planning specialists then confirmed the consultation results with each department, conducted follow-up operations, and support placement services into community resources. Key staff conducted a telephone interview, and discharge planning service staff conducted a second follow-up assessment within one month of discharge.

If patients' assessment score was ＜5 but they had special needs, including (1) retaining of tubing; (2)requiring placement into long-term care services; (3) having a physical or mental disability with an ADL Assessment score ≧2; (4) needing transitional services; (5)being in line with Post-Acute Care; (6)being hospitalized for more than 14 days; and (7) requiring consultation for palliative hospice care, they were required to report to discharge planning specialists for assessment and placement services. Discharge planning for high-risk cases of the entire hospital was conducted by discharge planning specialists responsible for follow-up and recovery assistance. The specialists proactively consulted the primary physician to understand the patient's needs for transitional services and necessary assistance with placements.

System Structure and Design

Constructing an "Interdepartmental Discharge Planning Service Information Integration System" involves 3 phases: the systemization of NIS discharge screening, the intelligence of the interdepartmental information platform, and integration with community long-term care information systems. Based on the discharge planning system workflow, an integrated design of information structures was conducted, involving group discussions among teams of nursing information, discharge planning, and interdepartmental specialists (nutritionist, pharmacist, physiatrist, social worker, physiotherapist, occupational therapist, respiratory therapist, and psychiatrist), data collection, interviews, and analyses were discussed in group meetings. A completed information platform that was planned and developed based on user needs can allow for convenient and timely access to information by the teams, thus allowing for the provision of a patient-centered, high quality, and valuable discharge planning service.

Through the discussions of the interdepartmental team, the principal axes for the Interdepartmental Information Platform were determined as discharge planning screening/assessment, discharge planning needs assessment, interdepartmental coordination, drafting discharge plans, referral resource networks, and discharge follow-ups. The development of this system would mediate between the Hospital Information System (HIS) and Nursing Information System (NIS), with the system information flow delineated in Figure 2.

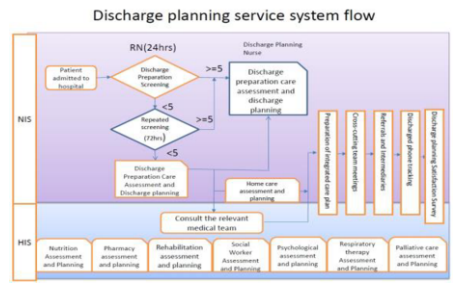

Figure 2- Process of the Discharge Planning Service System

The NIS discharge planning screening platform adopts a graphic interface, allowing nurses to easily and conveniently operate the screening system. Screening results >5 are automatically forwarded to discharge planning specialists, which are highlighted with red text. Important screening criteria provided by various departments are included in the screening form, allowing for a complete assessment of various categories, holistic understanding of the patient's condition, and individualized and timely service. Cases highlighted by check marks in the screening are immediately sent to the system platform of the relevant department and returned to the interdepartmental information platform after assessment is completed by interdepartmental colleagues.

Suggestions by various teams can be viewed in the interdepartmental information platform and assessment of the patients' overall physical, emotional, and social health was conducted using the ISBAR method. Interdepartmental meetings are held to discuss medication, nutrition, rehabilitation, living condition, medical aids, and topics that are relevant to the individual case. Specialists then reached a systematic conclusion and displayed a summary of nursing needs as a nursing history record, providing a reference for further care provision.

Apart from connecting to the various departments' system structures, the discharge planning information system also constructed an "Interdepartmental Communication Meeting Record Operations" system, which records details of meeting minutes and team members involved. The post-discharge follow-up system includes the closing schedule and care provision

records that can be referenced in telephone follow-ups, which better integrates the system with long-term care systems and home care services to provide continued support.

Innovation/System Characteristics

- Smart Monitoring System

  Using a patient checklist table to display patient data allows the investigating department to view the relevant responses from other departments in tables, allowing access to the assessment contents across departments. The use of red, yellow, and green highlights to display the various responses by each department allows for a clear mode of identification. Departments that have already responded are displayed in green text, those without a response within 72 hours are displayed in yellow text, and those that did not respond after 72 hours are displayed in red. The interface clearly displays the response rate of each department, which also directly connects the interface to various recommendations and notes. This integrated conference mode can effectively improve the completeness and efficacy and provide data analysis, which can also serve as a basis for operational improvement (Figure 3).

- Interface Design for Team Resource Collaboration Modes

  The interdepartmental communication platform is constructed as per ISBAR to provide systematic and structured information relay. The platform uses Introduction (I): patients' basic information; Situation (S): discharge planning screening form; Background (B): various specialist consultations and screenings; Assessment (A): Professional assessments; and Recommendation (R): professional discharge planning/suggestion design, to connect different departments through information.

  After receiving the notice for consultation notes, each team enters the department systems to review relevant data and examine the patient, and then replies with their own recommendations through the system. The data are then directly transferred into the interdepartmental platform's ISBAR interface, where staff from different departments can reference each relevant recommendation through this platform and provide patients with holistic healthcare information. By providing teams with the information as reference prior to conducting interdepartmental meetings, the efficiency of meetings is improved, and the patient's needs are better understood, such that individualized and holistic medical care could be administered.

Results

Discharge planning service is the bridge between emergency medical treatment and follow-up care. Through adequate preparations prior to their discharge and continued follow-ups post discharge, the patient is able to return to community life, reducing the risk of returning to the emergency room and the rate of readmission. By connecting hospitalized patients to continued transitional or long-term care, healthcare, prevention, and medical care are integrated, coordinated, and sustained within the community. This effectively utilizes community resources, further realizing the philosophy of "Five Whole" healthcare.

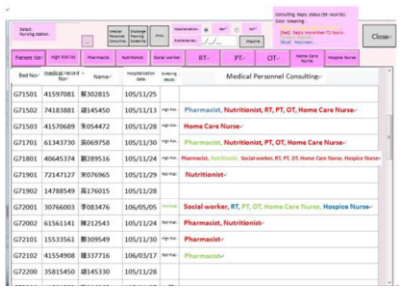

Figure 3- Combined Clinical Medical Care Information System

Our hospital actively pursues development of the informatization of discharge planning services, to ensure timely interdepartmental communication and maintain high-quality discharge planning services. The development of an interdepartmental discharge planning service information integration platform realizes the core value of patient-centeredness. It provides individualized and consistent healthcare to patients. From screening, assessment, and smart consultation system, to the interdepartmental communication platform, discharge planning meetings and recording, the discharge planning service workflow informatizes its operations, reducing the waste and inefficiency of operations using physical paper formats. This allows for greater transfer of information among specialist teams and timely reception of consultation results from other specialist teams,thus facilitating communication with maximum efficiency.This system provides a streamlined, high-quality care while increasing the professional value of healthcare providers and further promoting the value of teamwork in a professional setting.

Acknowledgements

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