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Shortage of Beds: A Local Solution for a Global Concern. A Traffic Light System

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Abstract

Bed shortage is a growing world problem and affects health care endangering patient safety, increasing length of stay, costs and morbimortality rates. The objective of this paper is describe a local solution centered on nurses and clerks work on intrahospital patients' transfer. Hospital Italiano of Buenos Aires gives on line support to the hospital census of 650 beds. There are 3000 inpatients admissions per month, with approximately 9500 transfers. This is possible due to an integrated Electronic Medical Record and ADT System (Admission, Discharge, and Transfer). In spite of transferring patients on line , with low beds availability setting, nurses depend and rely on telephone calls, wasting time on arranging a transfer in extreme situations, occupy beds without checking the Admitting Coordinator causing problems to others actors whom were waiting for that bed. As a solution to this problem the ADT System will be improved with a traffic light system with a bed waiting list, in which bed ordering from ICU and operating rooms are prioritized, with a bed differentiated display on the Nurse Control Chart establishing an asynchronic but effective communication.

Keywords:

bed occupancy, admitting department, hospital, patient transfer, inpatients

Introduction

Shortage of beds is a problem that affects all hospital system decreasing productivity and efficiency. This situation is a direct consequence of patient-flow problems[1]: in a hospital environment, a patient is admitted to the hospital, transferred and discharged when leaving the hospital.[2]

Trustworthy and on time updated the information where inpatients are as knowing availability of non occupied beds, is a critical aspect in daily hospital resources management. Since bed occupation information is not always well documented on information systems , the lack of correlation results in several complications such as cancellation of the admission of patients due to not having an accurate number of vacant beds[3] or employ human resources in nonessential functions like nurses calling to different hospital areas looking for non occupied beds [4]

Low availability of beds occurs during seasonal peaks, in this case reliable information of hospital census becomes critical [5], as well as to avoid bottle necks on passage of patients from one ward to another, commonly observed in the intensive care unit (ICU) and anesthetic recovery rooms

The objective of this paper is to propose a solution to this point being centered on nurses and clerks working on inpatients transfer.

Materials and methods

Setting

Hospital Italiano of Buenos Aires is a Hospital with 650 beds allocated in levels such as, general in-patients areas, intermediate and intensive care units. There are 3000 inpatient monthly admissions, with approximately 9500 transfers.

Hospital Italiano has been integrating several informatics systems in clinical layer with an Electronic Medical Record (EMR) that runs on web platform. The nurses work on a Nurse Control Chart (NCC) in which they organize human resources for each inpatient area and follow their assigned patients. In the field of Admission and Discharges patients, a software for their management was developed and called ADT system (Admission, Discharge, Transfer) This application made it possible to health care providers (nurses, doctors), stretcher-bearers (orderlies) and Admitting Department staff to make maintenance of Hospital census on line. But with the Online Census, bed occupancy information management was ameliorated but we realized that although all of the transfers were done through the system, disagreements with real bed occupation continued. A description of the issue is explained below and different situations will be described.

Two settings are related to intrahospital patient transfer:

- Appropriate beds availability: meaning there is an appropriate obtainable amount of beds.
- Low beds availability: means that there is not an appropriate obtainable amount of beds.

When the nurse needs to transfer a patient with appropriate beds availability, she chooses and allocates a vacant bed on

the EMR for this patient. If the transfer of the patient requires a stretcher bearer she asks for him through the system. When the patient leaves the bed, a housemaid prepares this room for the next patient. ***With low beds availability*** she **has to telephone** the Admitting Coordinator asking for a non occupied bed. When it is accomplished, a **Synchronic Communication between Nurse-Coordinator** occurs. If there are not "ready for use" beds, the Admitting Coordinator reserves ones.

These activities have these disadvantages: dependency on telephone call that not always can be achieved, causing delays, in extreme situations, nurses occupy beds without the Coordinators reply causing problems to others actors whom were waiting for that bed; in addition, it must consider wasted time on the arrangement of this transfer.

Considering these situations, and for **optimizing resources,** improvements are developed. The changes include : reorganization of the inpatients section on the system and introduction of "traffic light" concept with a Bed waiting list so as to increase the availability of beds.

Results

Modification developed on the ADT System, EMR and Nurse Control Chart (NCC)

The improvements on ADT system will be: inclusion of *Bed Manager* for the Admitting Manager, addition of *Stretcher Bearer Manager* for Stretcher Bearer Coordinator and inclusion of *Housemaid Manager* for Housemaids.

Hospital map will be redefined on ADT system as *Non Centralized Units* (ICU and operating rooms) and *Centralized Units* (Adult, Pediatric and Geriatric Areas) Inpatient areas from our Hospital were reorganized and combined in Sectors Admitting Units (SAU), and each of one is coordinated by an Admitting Manager using a *Bed Manager*. Admitting Manager with Bed Manager can have a quick view of inpatient episodes with discharges in progress, save beds for scheduled admissions for the following days is enlisted and the reservation can be done in accordance with each patient, administrate non-scheduled Admission (emergencies) and save beds for intrahospital transfer. Depending on number of occupied beds (higher than 85%) SAU Admitting Manager sets up on Red or Green for each SAU on the system.

When nurses need to transfer a patient to a SAU "in Red" (low availability) asks for a bed through the EMR. The solicitation is automatically enlisted in the Admitting Manager waiting list while the nurse continues working on their activities establishing an **Asynchronic communication between Nurse-Admitting Managers.** The system prioritizes ICU and operating rooms. When a bed is granted by the Admitting Manager, the system indicates an active reservation on the Nurse Control Chart: color bed changes *and* shows patients beds in four different colors. Depending on this color nurses can quickly identify who of their assigned patients have a pending transfer or is being discharged. Nurse continues with the transfer, with a reserved bed. A reserved bed has an expiration time, it has to be accepted within 3 hours by the nurse or the reservation is lost.

Discussion

Bed shortage is a growing world problem and affects health care endangering patient safety, increasing length of stay, costs and morbimortality rates. [1] As a solution to this problem a traffic light system with waiting list and asynchronic communication is presented. This work was merely descriptive and we consider it as limitation of this paper. This is an only an approach and our intention is compare how long every actor involved on Patient Flow spends on his work and how long every actor, mainly nurses, would save with changes introduced, as to show the efficacy of our implementation. We estimate that allocate beds and transfer patient task would be performed faster, and on the other hand , with a low beds availability setting, the improvements applied would give an opportunity for better bed management.

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