Emergency Medicine: Open Access
ISSN: 2165-7548

Wu et al., Emerg Med (Los Angel) 2016, 6:3
DOI: 10.4172/2165-7548.1000319

Research Article Open Access

Improvements in Medical Care after Implementation of a Holistic Care Unit at a Medical Center in Taiwan

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Received date: January 20, 2016; **Accepted date:** April 25, 2016; **Published date:** May 02, 2016

Abstract

Objective: A medical center in Taiwan established a Holistic Care Unit (HCU) in the emergency department (ED) to care for emergency patients while they wait for admission. Its goal was to prevent patient conditions from worsening, shorten the ED length of stay for admission, reduce complaints and disputes, and raise the quality of care.

Design: If emergency physicians suggested that a patient be admitted, the patient was then transferred to the HCU. The 24-hour work day for the HCU was split into three eight-hour shifts during which on-duty physicians continued any unfinished treatments or follow-ups and accepted new patients.

Results: The HCU's intervention in the ED and coordination with inpatient care significantly reduced the rate of access block from 55.29% to 50.01% ($p<0.01$). In addition, the ED length of stay for admission was significantly decreased from 17.06 hours to 14.13 hours ($p=0.018$). The percentage of patients whose condition improved while waiting for admission to the ED and who could then be released after treatment by the HCU rose from 1.3% to 4.3%.

Conclusions: The HCU at this medical center is the first of its kind to combine emergency and inpatient care in Taiwan. Overcrowding was improved after establishment of the HCU at our hospital.

Keywords: Holistic care unit; ED length of stay; Patient satisfaction; Overcrowding

Introduction

Since Taiwan's inception of National Health Insurance in 1995, the number of small regional hospitals has notably decreased as patients are able to cover the costs of visiting medical centers through insurance. This has resulted in overcrowding in hospitals, which has, in turn, led to the expansion of emergency departments (EDs). Although observation rooms have many benefits, including improving patient care and cost effectiveness [1], the expansion of EDs does not appear to have sufficiently improved overcrowding [2]. This is especially true in winter, when the prevalence of influenza is at its peak [3,4]. Hospital overcrowding and readmissions have put a heavy burden on health care personnel, which, in turn, affects the quality of health care [3,5-8].

In Taiwan, there are approximately 1200 ED physicians who must oversee treatment for 24 million people [9]. With the surge in ED patients and the concomitant rise in patient demands, traditional doctors have become increasingly unable to meet patients' expectations. Disputes often occur when patients wait too long for admission or their condition worsens as they wait [10,11]. The increasing number of violent events in EDs and work-related stress has greatly contributed to the recent shortage of emergency physicians [12].

Approximately 75% of hospitals across the US have implemented the hospitalist system (HOS) since its initiation in 1996 [13,14]. The advantage of this system is the excellent use of attending physicians' professional knowledge and clinical experience in direct patient care. Their diagnostic, treatment, medication, explanation, and communication skills are all more rapid, accurate, and effective than those of resident doctors [15]. For patients, this not only reduces the length of hospitalization and mortality rate, but also decreases medical expenditures and repeated costs [16,17]. In 2009, National Taiwan University Hospital (NTUH) became the first hospital in Taiwan to implement an HOS system, having attending physicians treat patients with multiple comorbidities until their release. The initial efforts of this system have resulted in higher rates of patient and family satisfaction and shorter hospital stays [18,19]. In this study, in contrast, a type of HOS named the Holistic Care Unit (HCU) was established in the ED of a medical center for patients waiting for admission into the ED. Because the length of stay for admission is longer in overcrowded EDs, the goal of this HCU was to treat these patients in a manner similar to an HOS system established in a ward.

In the current system used in medical centers in Taiwan, attending physicians' duties include inpatient care, outpatient care, advanced examinations, or surgeries. Hence, most inpatient care is provided by residents directly. In August 2012, a medical center in Taiwan took the initiative to implement an HOS system, gathering attending physicians from each subspecialty into one department titled the Holistic Care Unit (HCU). The HCU applies attending physicians' specialties and skills in caring for ED patients while they wait for admission to reduce complaints and disputes, increase patients' feeling of safety, and raise the quality of care.

Methods

The HCU team consists of attending physicians from different subspecialties (cardiology, gastroenterology, infectious disease, intensive care, nephrology, neurology, oncology and pulmonology). Each specialist cooperates and provides recommendations for general illnesses. There are also advanced practice nurses and case managers in charge of integrating all aspects of patient care and follow-up.

The ED at the medical center sees approximately 12000 people each month, and 2500 of those must wait to be admitted. Thus, the HCU was established within the ED observation area. If emergency physicians suggested that a patient be admitted, the patient was then transferred to the HCU. The HCU targets ED patients waiting to be admitted (excluding those waiting for pediatrics). Consultations are also given for surgery patients. A 24-hour work day is split into three eight-hour shifts: the day shift (08:00-16:00), during which physicians make scheduled visitations and arranged examinations and treatments, and the night (16:00-24:00) and midnight shifts (24:00-08:00), during which on-duty physicians continue any unfinished treatments or follow-ups and accept new patients. For critical patients, the HCU provides a combination of emergency care and pre-hospitalization treatment; non-critical patients may be released if their condition stabilizes, leaving a bed open for another patient. The case manager then follows up on post-discharge patients within 24 hours via telephone and arranges any necessary appointments.

Shift meetings including the HCU team doctors, on-duty doctors, emergency physicians, nursing specialists, and case managers are held every morning. For more effective relaying of information between shifts, a computerized color-coding system denotes the severity of each patient's condition. Red indicates a critical condition that requires each doctor to brief the next on-duty physician. Yellow indicates a serious condition where briefing is only necessary for unstable patients. Green indicates a stable condition where briefing is only necessary for patients who have begun treatment. These shift meetings encourage communication between the HCU and ED physicians, decreasing the uncertainty of diagnosis and increasing confidence in treatment.

The study period lasted from August 2011 to July 2013, both before and after the establishment of the HCU. The ED length of stay for a patient was calculated based on when the patient reached the door of our ED until the patient was admitted to a ward or the ICU. If an initial decision was made by the emergency physicians to admit a patient but the patient could subsequently be discharged after treatment in the HCU, that patient's condition was defined as "improved".

Access block refers to a situation in which patients in the ED requiring inpatient care are unable to gain access to a hospital bed within a reasonable time frame (specifically, more than eight hours of total time in the ED) [20-22]. In Australia, access block is a major cause of overcrowding in EDs [23]. Relatedly, Shih et al. [6] reported that, in 1996, some patients were held in the ED of one medical center in northern Taiwan for more than 72 hours.

The percentages of ED length of stay for admission lasting more than 24, 48, and 72 hours, and rates of access block were compared and analyzed using independent samples t-tests and chi-square tests. A p value of less than 0.05 was considered to be statistically significant.

Results

Pre- and post-HCU comparisons showed that the average ED length of stay for admission was significantly decreased from 17.06 hours to 14.13 hours (p=0.018). In addition, the mean ED length of stay for admission, discharge or transfer was decreased from 7.04 hours to 6.25 hours (p<0.01). The percentage of patients waiting for more than 24 hours decreased from 4.95% to 3.9% (p<0.01), the percentage waiting more than 48 hours decreased from 2.32% to 1.67% (p<0.01), and the percentage waiting more than 72 hours decreased from 0.47% to 0.33% (p<0.01), effectively improving overcrowding conditions. The percentage of patients whose condition improved while is waiting for admission and who could then be released after treatment by the HCU rose from 1.3% to 4.3%.

A case manager follows up with patients via telephone within 24 hours after release to lessen any anxieties and check on the patient's condition. The rate of follow-up increased from 75.7% to 89.4% and the rate of return appointments increased from 62.5% to 90.0%, indicating patients' recognition of and compliance with the HCU doctors' advice. In addition, the number of malpractice cases after the HCU was established also declined from 23 to 14 compared to the previous year (p=0.056). The rate of transfer to the intensive care unit 6 hours after hospitalization decreased from 0.36% to 0.24% (-33.3%, p=0.49), and transfer 24 hours after admission decreased from 0.78% to 0.60% (-23%, p=0.095), but without statistical significance. Thus, the trend was that early medical and integrated care mitigated deterioration of critically ill patients.

26623 patients were successfully admitted to a ward or intensive care unit from our ED from August 2011 to July 2012, and 23790 patients were successfully admitted from August 2012 to July 2013. The rate of access block decreased from 55.29% to 50.01% (p<0.01) after the HCU was established.

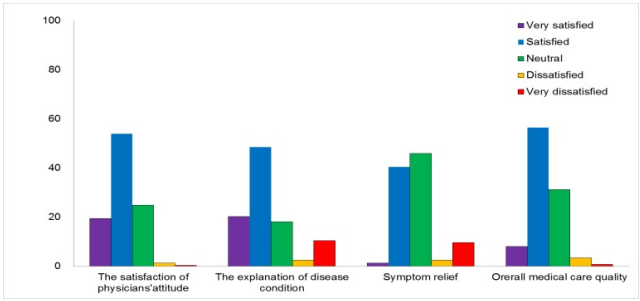

Figure 1: The percentage of patients and/or caregivers satisfaction with regards to physician attitude, explanation of disease conditions, symptom relief, and overall medical care quality with questionnaires (Dec 2012 to Apr 2013, sample size = 427), after the HCU had been established.

Questionnaires regarding medical treatment, doctor competency and care and overall quality using a 5-point Likert scale for rating the degree of satisfaction (1=very satisfied, 2=satisfied, 3=neutral, 4=dissatisfied, 5=very dissatisfied) were also distributed to 427 patients waiting to be admitted. Approximately 70% of respondents were making their first-ever visit to the ED. The satisfaction rates towards physician attitudes, detailed explanation of the patient's disease status, ability to provide symptomatic relief, and overall quality of care were 99.1%, 92.8%, 92.0%, and 95.3%, respectively. In our analysis, a long waiting period was the leading cause (8%) of dissatisfaction, followed by a lack of waiting space (3.5%) and long waiting time in our analysis (1.2%), indicating that there is still room for improvement (Figure 1).

Discussion

The majority of EDs in Europe and the US tend to refuse patients with minor illnesses; however, in Taiwan, ailments such as the common cold or fever are commonly considered serious enough to warrant a visit to a doctor. One reason for this is that patients in Taiwan pay only a small amount of medical expenses under the National Health Insurance program, and even the cost of medical expenses in EDs is only slightly more expensive than those in outpatient departments. Hence, patients who are not critical often visit EDs for rapid diagnosis and rapid treatment in Taiwan. There have been multiple news reports where patients have been requested by hospitals to cancel their appointments which had resulted in confrontations. The reasons for overcrowding in EDs in Taiwan differ from those for EDs in Europe and the US. In the short run, it may prove difficult to refuse treatment for patients with minor illnesses and hospitals in Taiwan as beginning this practice may cause confrontations with patients and the media.

Similar to the integrated care ward at NTUH, this medical center established the HCU in the ED in accordance with patient behavior and needs in order to combine emergency and inpatient care. Preliminary analysis shows the HCU improved overcrowding, shortened hospitalization times, and reduced the mortality rate among patients waiting for admission while providing more immediate care for patients unable to be promptly admitted.

The National Emergency Department Overcrowding Scale (NEDOCS) was established to evaluate the severity of overcrowding [24]. Unfortunately, more than one hundred thousand people visit our ED every year, and in spite of the HCU's establishment, the NEDOCS rating of our ED is still at the level of severely or dangerously overcrowded most of time. Hence, it is difficult to use the NEDOCS to evaluate the degree of ED overcrowding in Taiwan.

Being situated in the ED, the HCU has had an immense influence on follow-up care. Several management characteristics of the HCU are as follows: 1. Reasonable working hours. No more than 20 eight- to nine-hour shifts per month prevents burnout and stress. 2. Teams are comprised of attending physicians from each subspecialty, providing mutual support to reduce consultations, improving treatment effectiveness, and preventing unnecessary re-admission. 3. Daily meetings with on-duty doctors, the HCU team, ED physicians, nurses, and case managers to discuss patient conditions realize inter-team cooperation. 4. Using colors to distinguish disease severity during patient briefings (red: critical, yellow: unstable, and green: stable) alerts physicians and simplifies the shift rotation process. 5. Close work lives and clinical treatments between the HCU team and ED doctors allow them to share experiences and treatment resources, and develop cooperation and a learning environment.

After establishment of the HCU, the care of patients waiting for admission in the observation room was transferred to physicians of internal medicine. Because most patients waiting for admission in our observation room had a disease covered by internal medicine, physicians of internal medicine were most suitable for treating these patients. For example, esophagogastroduodenoscopy examinations would quickly be performed for gastrointestinal bleeding in the ED. Proper medication was also prescribed rapidly. Thus, even if placement in a ward was unavailable, treatments would quickly be started. Hence, the length of stay for admission was shortened.

Limitations

As the implementation of a HOS system at this medical Centre is still recent, there are also several practical faults to overcome: 1. The complexity of the patients' conditions is difficult to predict; therefore, care is often time-consuming. 2. The HCU team was comprised of internists whose specialty lied outside surgical consultations. 3. The number of patients awaiting admission is hard to predict which at times led to staff shortages.

Regardless of these advantages and disadvantages, the establishment of the HCU and provision of direct care by attending physicians benefits the patients and ensures patient safety. Although this study enrolled a large number of patients (>200000), it was performed at a single medical centre in Taiwan. In addition, the study period was only two years. However, we are the first medical center to establish an HCU to improve overcrowding in an ED in Taiwan. So far, however, overcrowding in EDs remains a serious problem in Taiwan. As similar units are also being considered at other medical centers in Taiwan, a nationwide long-term study should be considered to evaluate the outcomes of holistic care units.

Conclusions

Experiences from other countries have shown that the HOS system can raise patient satisfaction and reduce unnecessary medical expenditures. Analysis of the medical center found that HOS can shorten wait times, cut down overcrowding, and reduce the mortality rate while waiting for admission. Results have also shown an improvement in the quality of health care, length of hospital stay, readmission rate, and medical disputes. For patients, direct care by experienced, professional, and precise attending physicians can shorten hospitalization, wait times, and ED length of stay prevent deterioration of illnesses and complaints, and improve patient satisfaction. The utility of an HOS system is more flexible when assigning medical personnel, especially in preventing doctor burn out. Whether this type of system can be implemented in Taiwan with reasonable cost and allocation of resources and personnel has yet to be seen.

The HCU at this medical Centre is the first of its kind to combine emergency and inpatient care. The experience of this medical center can serve as a reference for other hospitals with issues involving long wait times and overcrowding.

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