

Implementation of the Acute Care Clinic Easy Scheduling System at the Brooke Army Medical Center

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ABSTRACT

Introduction:

Emergency departments (EDs) have continued to struggle with overcrowding, causing delays in patient care and increasing stress on the medical staff and resources. This was further illustrated during the recent coronavirus disease 2019 pandemic, where we saw large unpredictable surges to the ED as hospitals tried to meet the medical needs of patients while trying to minimize the spread of coronavirus disease. A previous study from the Department of Emergency at the Brooke Army Medical Center (BAMC) found that nearly half of the patients presenting to the ED could have been managed in a primary care setting. We sought to pilot an alternate appointment scheduling system, Acute Care Clinic Easy Scheduling System, to allow patients to see and book available appointments while waiting in the ED waiting room.

Materials and Methods:

Our appointment display system was created through collaboration with the BAMC Information Management Division. A Tableau data interface connects to the Composite Health Care System to view available primary appointments across the San Antonio Military Health Care System. These are displayed in real-time on multiple TV screens outside the ED and in the ED waiting room. Patients were provided signage that provides a way to call or use a World Wide Web–based interface to immediately schedule the open appointments within the next 48 hours. Patients voluntarily opted to use this system and may opt to leave the ED if another appointment became available within an acceptable time frame to them.

Results:

This section is not applicable to this article.

Conclusions:

Expansion of the Acute Care Clinic Easy Scheduling System within the Military Health Care System may (1) help reduce ED crowding, (2) improve access to care through a live-tracking system that patients can review and select from, and (3) reduce the number of unfilled primary care appointments. The system in place in the BAMC ED serves as a template for other MTFs to use.

INTRODUCTION

Background

Emergency departments (ED) in the United States continue to struggle with overcrowding, often delaying patient care and increasing stress on the medical staff.¹ These increases in general along with the coronavirus disease 2019 (COVID-19) pandemic undermined our health and tested our hospital system, putting increased pressure on staff and resources.^{2–4} Overcrowding has been defined as “the situation in which the

ED function is impeded primarily because of the excessive number of patients waiting to be seen, undergoing assessment and treatment or waiting for departure, compared to the physical or staffing capacity of the ED.”^{5,6} This was further illustrated during the recent COVID-19 pandemic in which we saw large, often unpredictable fluctuations in visits to the ED as the Military Health Care System (MHS) struggled to address medical needs while balancing against minimizing the spread of COVID.⁷ Previous studies have shown nearly half of patients presenting to the ED could be managed in an alternative, primary care setting.^{8,9} A previous study by some of these same authors had similar findings in the same ED at the Brooke Army Medical Center (BAMC).¹⁰ Civilian EDs have a unique obligation to serve all patients in need without considering their ability to pay.^{11–13} However, all of the requirements of the Emergency Medicine Transfer and Active Labor Act do not necessarily apply to the MHS. Moreover, we have a unique, nearly closed, streamlined medical system that captures and retains the patients across the spectrum of care. Additionally, the MHS has an ongoing challenge with filling available appointments to ensure that available resources are being maximized. Approximately 10% of primary care appointments within the San

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Antonio MHS (SAMHS) go unfilled which represents an opportunity for diversion of non-emergent ED visits from the ED to those empty appointments. This would reduce ED crowding while minimizing the loss of revenue with unfilled appointments.

Phase 1 of this Defense Health Agency (DHA)-funded project was performed in the BAMC ED. The BAMC is the largest hospital system in the DoD, the only level 1 trauma center, and serves the SAMHS. In this, we conducted a retrospective review of patients within our electronic medical record system from September 2019 to August 2020. During the 12-month period, we examined data on 72,205 patient charts. Our results showed that over half (59%) of patients were determined to be potentially manageable in a primary care setting.¹⁰

During phase 2 of this project, we sought to determine patient perceptions for choosing to use the ED. We administered surveys to patients that signed into the BAMC as an emergency severity index of 4 or 5 (nonurgent). The emergency severity index represents the acuity triage levels with 1 being the highest level of triage (e.g., major trauma and cardiopulmonary resuscitation) and 5 being the lowest (e.g., medication refill). We then linked their survey data to their ED visit, including interventions, diagnoses, diagnostics, and disposition, by way of electronic medical record follow-up. We defined their visit to be nonurgent and primary care eligible if they were discharged home and received no computed tomography imaging, ultrasound, magnetic resonance imaging, IV medications, or intramuscular controlled substances. During the 2-month period, we collected data on 208 participants out of 252 people offered a survey (82.5%). Most patients were deemed primary care eligible (92%). When assessing why they came, the inability to get a timely appointment ($n = 73$) and self-reported urgency ($n = 58$) were the most common reasons. Most would have used primary care if they had a next-morning appointment available ($n = 86$).¹⁴

ED overcrowding has a costly effect on our hospital system. The overuse of the ED leads to increases in length of stay and patients leaving without being seen, both leading to losses in revenue and decreased patient satisfaction. More importantly, losses in resources, including materials and staffing, both contribute to unnecessary ineffectiveness and delays in care.⁵ The pandemic forced our health care system to shift resources. Hospitals, doctor's offices, and all medical facilities were overrun with patients: running out of tests, supplies, beds, and even staffing.¹⁵ Many trauma centers closed their ICU floors because of overcapacity.

Goal of This Phase

We sought to build our previous work¹⁰ and develop a method for patients presenting to the ED to fill unused same- or next-day primary care appointments in lieu of an emergency visit using a real-time tracking system.

MATERIALS AND METHODS

System Methodology

To create our appointment display system, we collaborated with our Information Management Division. The Composite Health Care System and the Armed Forces Health Longitudinal Technology Application are the methods for tracking appointments within the SAMHS as of the writing of this manuscript—Military Health System Genesis was not yet implemented at the BAMC at the time of this project launch. The Armed Forces Health Longitudinal Technology Application is the electronic health care record used by health care providers in the DoD, and it supports over 150,000 providers and more than 9.4 million beneficiaries, providing for over 500 hospitals and clinics. The Composite Health Care System sends the available appointments into a SQL server database every 6 hours and displays available appointments for the next 48 hours. Tableau™ software interfaces by way of a custom-built interface turning the available appointments into a kiosk image (Fig. 1). A service account is used to log into a small form factor personal computer that is located behind each television. The television is configured to show the Acute Care Clinic Easy Scheduling System (ACCESS) display system outside the ED and in the ED waiting room (Fig. 2). There is a number provided on the screen for the consult appointment management office that can be called to schedule the appointments where patients can instantly schedule an available appointment. Alternatively, they can use the online scheduling interface on the TRICARE website to obtain the appointment. They are not required to see their assigned primary care provider and can access any short-notice appointment for their urgent visit. If you are interested in implementing this system, please contact the corresponding author.

Ethics

We submitted our project description to the Regional Health Command—Central regulatory office for a research determination. The regulatory office determined that our project met institutional requirements as performance improvement, and thus institutional review board oversight was not required.

RESULTS

This section is not applicable to this article.

DISCUSSION

We want to ensure patients get the right health care in the most appropriate setting. Overcrowding and overuse of the ED reduce the efficiency of patient care. Diverting nonurgent patients from the ED will lead to cost savings, as the ED is a high-cost patient care environment because of continuous around-the-clock staffing and the availability of diagnostics.^{13,16,17} Decreasing overuse of the ED will lead to

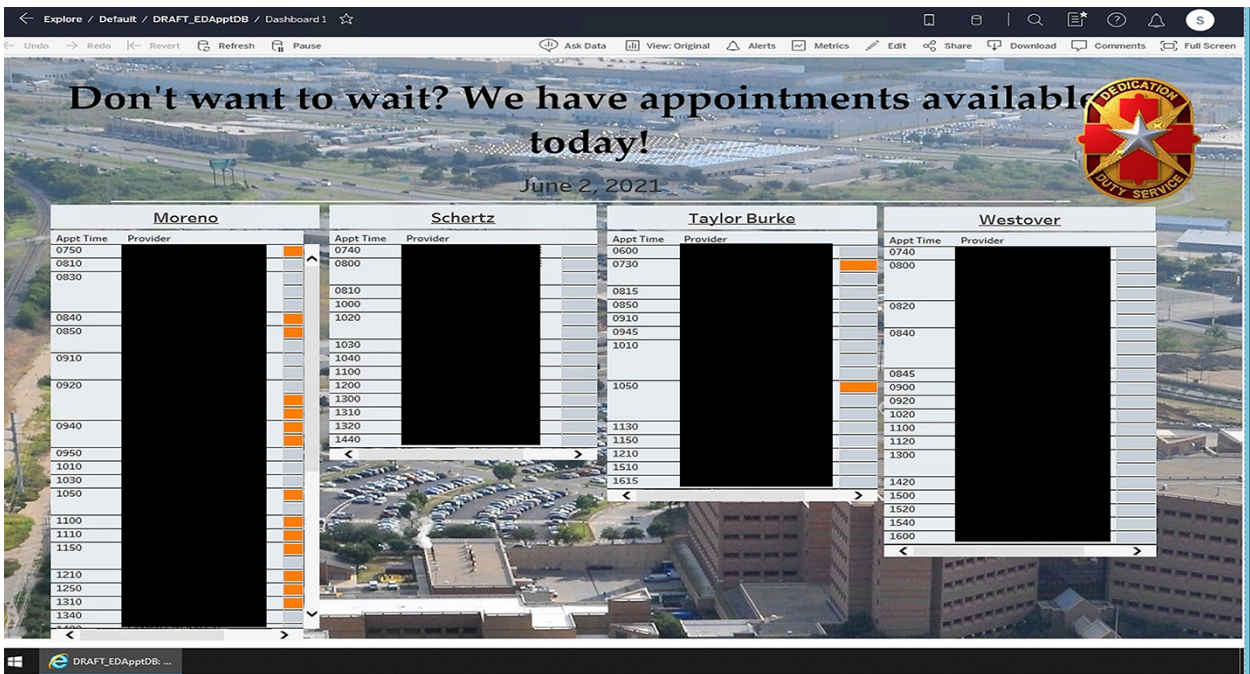


FIGURE 1. Sample display of the rotating tracking system in our emergency department.



FIGURE 2. Sample display of the system outside of our emergency department.

positive impacts on both EDs and patients. Non-emergent complaints can be seen at a scheduled time in a primary care setting as compared to the unpredictable time frame in

which they will be seen in the ED which often times may exceed 6 hours.⁷ The ED does not see patients in the order they arrived, but rather by acuity. This method, although it ensures that true emergencies are seen more quickly, often frustrates patients as they may not have a thorough understanding of what defines the level of urgency. Moreover, the appointment will cost significantly less than going to the ED as the staffing requirements are much more predictable. EDs require a level of staff ready to manage surges with little predictability currently.⁷ Wide dissemination throughout the DHA communication channels and promulgation in the scientific literature could help expand the use of our system through the enterprise.

A negative impact of overcrowding was widely seen during the COVID-19 pandemic. Hospitals were over capacity; medical staff was overworked, resources were dwindling, and EDs were more overcrowded than ever before.^{18,19} Non-emergent surgeries were canceled. The ICU floors were full. For the first time in this generation, hospitals were over-run as most hospitals lacked sufficient surge capacity for this level of volume increases. Access to health care had been severely limited, healthy people needed to stay home. Telehealth or virtual appointments were no longer an alternative option but a necessity. If nonurgent patients needed care, most were told to make a virtual appointment. Physicians could refill medications, observe symptoms without being exposed, and offer medical diagnoses over the phone or computer. Virtual appointments decreased the strain on our medical system, but still patients with nonurgent issues continued to go to the ED as the number of virtual appointments was limited and often not available on short notice for urgent issues.

Previous attempts at reducing nonurgent use have been unsuccessful. We used the information gathered in previous phases to pilot an alternate appointment scheduling system.^{10,14} Previous studies have shown that ED overcrowding is a worldwide issue.^{8,9} Phase 2 of this study involved interviewing patients to the ED, 35% of patients stated that their reasoning for reporting to the ED was the inability to get a timely appointment. We coordinated our efforts with hospital leadership and primary care facilities, as well as the ED at the BAMC. Our final product was approved by our public affairs office before the “go live” date. Our system at the BAMC is nicknamed the ACCESS. It is displayed on the televisions in the ED waiting room at the BAMC and displays available primary care appointments for 48-hour periods. We hypothesize that the ACCESS will reduce nonurgent use of the ED and will allow the unfilled primary care appointments to be seen and taken by patients with nonurgent needs. Our system could be more widely implemented within the MHS across multiple centers. Now that we have implemented at the largest MTF within the DoD, the expansion of this template system can now be used at smaller MTFs that have even less surge capacity than the BAMC. The ACCESS interface could also be reformatted and configured for viewing on World Wide Web browsers and mobile devices. Furthermore, we believe that future considerations for building a user-friendly app for the phones would be able to integrate into this system. Diverting nonurgent patients from the ED will likely lead to cost savings and more efficient use of resource utilization.¹⁷ In order to disseminate information, we will present the publications to the command for distribution list approval.

CONCLUSIONS

We hypothesize that the expansion of the ACCESS within the MHS would (1) help reduce ED crowding, (2) improve access to care through a live-tracking system that patients can review and select from, and (3) reduce the number of unfilled primary care appointments. The system in place in the BAMC ED serves as a template for other MTFs to use.

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None declared.

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CONFLICT OF INTEREST STATEMENT

None declared.

ETHICS

The Regional Health Command-Central regulatory office reviewed our project proposal and determined it met institutional requirements as a

performance improvement project not requiring institutional review board oversight.

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