

A Systems Approach into Unnecessary Admissions and Readmissions in Emergency Departments

Unnecessary admissions and readmissions have become a recurring problem in the Emergency Departments of hospitals across the United States. This research study provides a multi-level stakeholder-centered view to identify contributors to the problem. Interviews were conducted with relevant stakeholders at different levels of the hierarchy of a large healthcare system. The Systems Engineering Initiative for Patient Safety (SEIPS) framework was used to identify relevant technology-, people-, environment-, and organization-based contributors, and to connect such contributors to potential solutions based on stakeholders' perspectives. The findings revealed ten potential contributors for unnecessary admission and readmission, including culture, patient and physician education, resources constraints, and environment and locality-based issues, among other relevant issues.

INTRODUCTION

In recent years, high patient volume, with crowding due to unnecessary admissions and readmissions, has become a significant issue in Emergency Departments (EDs) across the United States (Jencks, 2010). This problem has resulted in operational inefficiencies and financial constraints in the ED, primarily caused by the re-direction of valuable resources in providing medical care that was likely unnecessary or could have been provided in another healthcare setting. Therefore, understanding the characteristics and components of admission to the ED is important for health systems, and for providing appropriate care for patients who present to the ED. Particularly, identifying the factors that contribute to repeated visits will help devise mitigation strategies to reduce unnecessary admissions and readmissions.

Previous research in this topic includes studies regarding the identification of contributors to unnecessary admissions and readmissions to EDs, with a focus on specific and non-specific patient diagnosis, and towards studying a targeted patient population (e.g., Booth & Hux, 2003). Researchers have also studied and identified strategies that have been used to successfully reduce hospital readmissions (e.g., Kash et al., 2017). Few research studies have used qualitative interviews as their data collection method, and those who have focused only on collecting perspectives from physicians at the community-based providers and ED levels of the health system hierarchy (e.g., Longman et al., 2011).

This research study provides a systems approach to the problem of unnecessary admissions and readmissions in EDs, with a valuable multi-level stakeholder-centered view. This approach allows analysis of the problem in depth and breadth, by identifying issues not only from the top senior leadership level perspective but also from the perspective of healthcare professionals at the sharp end of the system, where the admission decision-making is made. Human Factors and Systems Engineering methods, such as Qualitative Data Analysis (QDA) and the Systems Engineering Initiative for Patient Safety (SEIPS) model (Carayon et al., 2006), have been applied with the objective of: (1) understanding different multi-level stakeholder perspectives in a major health system environment, (2) identifying contributors to unnecessary care in general and patient readmission in particular, (3) connecting the identified contributors to

the problem with a set of potential solutions based on stakeholders' perspectives, (4) listing relevant technology-, people-, environment-, and organization-based contributors to the problem, and (5) investigating systems-approach interventions to improve patient access to appropriate levels of care while avoiding unnecessary ED visits.

METHOD

The health system that served as the setting for the data collection process is located in the northeastern region of the United States, is composed of a chain of hospitals, and is one of the region's largest employers and healthcare providers. A systems approach has been adopted to collect perspectives at the different levels of the system hierarchy and obtain data of the root unnecessary admission and readmission problems. Therefore, the research team interviewed twelve stakeholders at three levels of the system hierarchy: (1) Senior leadership level (4 interviews), (2) Hospital level (4 interviews), and (3) ED level (4 interviews). The pool of interviews included the participation of presidents and senior vice-presidents of the hospitals within the healthcare system, system administrators, administrators from a third-party contractor, chiefs of nursing and emergency department, nurses, and physicians. The interviews were divided in two rounds, and the development of a system hierarchy diagram assisted in the identification of the stakeholders to interview, assuring that perspectives of the problem were being collected across the system hierarchy. The data collection method used unstructured interpretative interviews related to participant experiences and opinions.

A Qualitative Data Analysis (QDA) was conducted using a grounded theory approach with the purpose of understanding inductive and deductive results from the inquiry (Corbin & Strauss, 2008). The QDA efforts involved several stages. The first stage, known as initial coding, included the identification of a thematic framework. The initial coding was followed by a second stage of focus coding, where specific pieces of data in relation to different themes were identified. A mapping stage (third stage) followed with the purpose of identifying patterns within the themes. Then, an interpretation stage (fourth stage) was held to interpret the patterns and determine associations within the concepts, providing explanation for the data. The MAXQDA-12 Software was used to analyze the interviews as

it provides an efficient visualization process. A single coder worked in the analysis, using the transcripts of the interviews.

The analysis was then complemented with the application of the Systems Engineering Initiative for Patient Safety (SEIPS) model of work system and patient safety (Carayon et al., 2006). The SEIPS model provided a framework to connect the identified contributors of unnecessary avoidable admissions and readmissions to five common elements of a work system: (1) people, (2) tasks, (3) tools and technologies, (4) environment, and (5) organizational conditions. Findings from the analysis are summarized next.

RESULTS

The main initial codes deduced from the interviews are: (1) common conditions leading to admissions, (2) definitions for readmissions, (3) readmission issues, and (4) tools and methods to reduce admissions. The two most relevant codes based on the problem are “readmission issues” and “tools and methods to reduce admissions.” Focus codes based on the initial coding were retrieved from the QDA. The individual codes identified from the focus coding are presented below. An explanation for each focus code is provided, and examples of extracts from the interviews, supporting each of the codes, are presented.

Focus Codes for Readmission Issues

Behavioral health determinants. Behavioral factors play an important role in readmissions as patients that might otherwise need no medical assistance or could be treated in alternative healthcare settings visit the ED for needs other than medical reasons.

“We started with about ten patients that had probably a combined, on average, ED visits around anywhere from twenty-five ED visits in a year. Some had as many as thirty or forty, so, coming almost every week. And for all of the patients that we looked at, the underlying reason was related to social determinants of health (electricity, transportation, copays).”

Cultural issues. The litigious environment in the locality, physicians’ independent practice-oriented mindset, and physicians’ approach to patient care, are examples of the identified cultural issues that contribute to unnecessary admissions.

“In this environment, when someone comes in with the worst headache of their life, I have to CT your head, even though there’s nothing that tells me I should. Other places in the country they wouldn’t. In other countries, they clearly wouldn’t. We don’t have a tolerance. We want to do everything we can, in the shortest time period we can to rule out every possibility. I think that’s cultural.”

Patient education. Findings suggest that the lack of patient understanding regarding what medical situations require a visit to the ED and what medical situations can be addressed at home or should be assessed by visiting a primary physician, contributes to unnecessary visits to the ED.

“Yeah, that’s another big component. If the patient understands when to come back, you can discharge them. I know that’s an issue at every ER.”

Hierarchy and structure in the healthcare system. In the healthcare system under study, the ED is staffed by an emergency medicine group that has an exclusive single group contract, resulting in less flexibility, less interaction with the in-system physicians, and lack of standardization. This leads to system communication, integration, and coordination issues.

“This group has been together now almost 15 years; however they culturally work independently. They know none of our ER doctors. They work at one campus; none of them flex. They have underinvested in standardization of care and other elements. They’re getting better, but historically they weren’t there.”

Guidelines for physicians. The healthcare system has guidelines for certain conditions, such as, heart failure (CHF) and chest pains, but not for use in admission decisions. Interviewed physicians suggested the need for admission guidelines for the top ten diagnoses, as well as legal protection for healthcare workers following the guidelines. However, these guidelines will not substitute for the use of physicians’ own professional judgment.

“Well, in our EDs, we don’t have guidelines. We have one guideline that we built over the last month for CHF patients. But in a lot of EDs, I believe that there are best practice guidelines that are used and adopted based on the types and volume of the patients you get.”

Approach to admissions within the healthcare system. The healthcare system has a conservative risk-averse approach to admissions, mainly due to the litigious environment and the perception that admitting a patient seems to be easier than arranging transition care or home care for patients.

“The [location] market is notorious for this, as a highly litigious market, which for years did not have a venue rule, jury members in [location] are highly plaintiff-centric. Doctors got used to being sued, and so the mindset of our ER docs is very defensive medicine oriented, both in how they admit and also how they test and utilize service.”

Environment and locality-based issues. Hospitals in the system located in affluent areas receive a higher push from the patients to be admitted. Hospitals in less affluent areas are usually overcrowded and have time pressure. Hospitals with a predominantly elderly population also tend to confront high admission rate problems.

“...the other set of dynamic is more privilege, greater sense of pressure, more highly educated, they know what their issues are clinically and patients feel that it is the hospital’s responsibility to admit a family member.”

Physician education. Lack of physician education (e.g., regarding home care options and the steps to follow to arrange the services with care coordinators) contributes to unnecessary admissions and readmissions.

“And the other thing about home care is not everybody understands it or understands it capability. And depending on their own experiences, may or may not want to use it, because they don’t have control. In some ways, it’s like, ‘I’m going to admit this patient, because then I know what’s going to happen to them.’ But admitting them is not the best thing. Keep them home is better than anything, and home care does so many things. I really think it’s a knowledge deficit that they don’t know what’s available.”

Resource constraints. Lack of care coordination resources, such as nurse case managers and social workers, leads to lack of timely follow-up with primary care physicians, and ultimately to readmissions.

“One thing I always struggle with is that we could have more resources that are available in the ER to setup follow-up care. Social work. Case management. That’s a big thing in getting people home. I’m taking care of ten patients. I can’t do all that. If there’s no resources available to help me discharge, in some cases patients end up being admitted.”

Standardize practice. The hospital-centric environment causes doctors to be aligned to their individual hospitals and not the system. The EDs operate differently at each campus, without standardization or a standard pathway for treatment.

“...we have four historically hospital-centric environments where the doctors are primarily aligned to their campus and their program and not to the system. And the mindset and the prevailing culture is still independent practice-oriented and not at all systematic or standardized or programmatically-aligned.”

Focus Codes for Tools and Methods

Clinical accountability units. One of the methods to reduce readmissions, according to the interviewees, is the integration of clinical accountability units, which should include a shared leadership model at the campus level micro-system along with a leadership model for the platform, zone, and program levels to improve standardization.

“We have our own version of what we call clinical accountability units. We think of them as having three components. They’re programmatically based. Or they’re zone/regional based. Or they’re platform based - we call them clinical platform work groups.”

Action plan for conditions. The development of official action plans for some of the avoidable admission cases at the hospitals, such as action plans for asthma and diabetes education for patients, for example, were also attested in the interviews.

“I’ve shown them the asthma action plan, so it’s in our toolbox now. When they interact with patients with asthma, they already have started promoting asthma action plans and conversations with doctors. On diabetes, there’s a lot of opportunity to educate patients on better management of their diabetes.”

PCPs/ambulatory catch system. Interviewees identified the need for efforts in implementing care coordination programs with primary care physicians (PCP) and local clinics in the area. Additionally, respondents identified the need for an ambulatory system to catch patients that need assistance before admissions in the ED. This could include employing telemedicine, addressing behavioral health determinants, and reinforcing home-visits programs.

“Our outpatient catchers, using a pitcher-catcher analogy: if I’m an unstable patient at home, or in an urgent care center, or in the ED, and would like to avoid a hospitalization because I have that much health literacy and I want to have the resources to do what I need to do - our ambulatory catchers have not been designed.”

Unscheduled care system. Interviewees suggested the creation of a new urgent care center as an alternative to the ED, in addition to increasing care coordination resources in the ED to take care of unscheduled care patients.

“With primary care docs and referring doctors - the historic model is not to do telehealth - but it’s you get an on-call doctor or your doctor and you’re still told go to the ED. We do not have well designed unscheduled care vehicles yet - we’re building them, but again we’re late to the party so to speak compared to other regions in the country.”

Standardize handbook/standardize pathways. Findings from the interviews suggest the development of a handbook to standardize environmental, health and safety (EHS) care to improve outpatient care, which in turn connects with transition care, behavioral health determinants and care coordination.

“When I talk about those ambulatory sensitive conditions, the thought is that if they had good outpatient treatment, they wouldn’t need to go to the emergency room or be admitted to the hospital. [Healthcare System Name] has developed a handbook to try to standardized EHS care.”

Checklists. Checklists help in the standardization of care across all hospitals. Interviewees noted that the current electronic health record system presented challenges to incorporate checklists.

“Yeah. We used what AHRQ had related to addressing complex patients. And it was a simple checklist around, around their needs. And then, and then we also mapped that onto, what wasn’t, which was challenging, what we had in NextGen to capture kind of our ongoing. But NextGen was not good for it. So now I’m trying to figure out how we can do it in EPIC.”

Home visits. Findings from the interviews support the establishment of home visit programs easily available to patients to reduce unnecessary admissions and readmissions.

“We have a home care company and there are other companies that offer services that, if we could figure out a way to do a better job of making sure those services were avail-

able easily, we could set them up, we could have good resources there you know in a different way would be helpful.”

SEIPS Framework

The feedback loop structure of the SEIPS model (Carayon et al., 2006), which connects processes and outcomes to the work system, helped to map the potential contributors to unnecessary admissions and readmissions identified from the QDA to five main work system components (see Figure 1). The Person component was subdivided into three subcomponents: Providers, Patients and Management/Leaders. The Organization component, which was the component with the greatest number of elements given the nature of the problem and the stakeholders interviewed, was subdivided into six subcomponents: Care Coordination, Resources Allocation, Information Management, Culture, Law and Regulations, and Infrastructure. The Environment component consisted of only one identified element related to physical space constraints in the ED. The Technology and Tools component included elements related to the unavailability and need for decision-support tools and metrics. No elements related to the Tasks component were identified from the interviews, therefore, that component was not included in the model.

CONCLUSIONS

Identified contributors to unnecessary admission and readmission issues were connected to a set of potential solutions based on stakeholders' perspectives. One or more contributors can be addressed by the same solution, but those solutions might depend upon other solutions to work efficiently. First, there is a need to define the concept of unnecessary readmissions and its target population. Having a common understanding of the concept is vital in order to measure and classify these readmissions, adjust interventions, reduce unnecessary workload to the hospital, and identify genuine cases that might need readmission. Additionally, interventions must be established pre-discharge, during the transition time the patient is in the ED, and post-discharge, in order to decrease the chance of an unnecessary readmission.

Pre-discharge interventions include discharge planning, patient education, and timely and effective care coordination efforts. For example, findings from research studies suggest that filling out patient medication prior to discharge contributes to reduced readmissions (Hiteshew et al., 2012; Kenyon et al., 2015). Interventions bridging the transition include integrating transition coaches, providing continuity of care, and standardizing the discharge procedures in the ED. Engaging patients in the discharge process, with knowledge transfer from caregiver to patient, is important for patient activation for transition from discharge to ambulatory follow-up (Hansen et al., 2011). Post-discharge interventions may include timely follow-up, care coordination with the primary physician, implementation of telemedicine systems, establishment of patient hotlines, and reinforcement of the home visits programs. Research shows that bundle interventions such as post-discharge follow-up calls and Patient-Centered Data Input (PCDI) can reduce readmissions

by anywhere between 3.6% and 28% (Coleman et al., 2006; Koehler et al., 2009; Naylor et al., 1994).

If implemented, these potential solutions would lead the efforts in creating healthcare support systems to decrease unnecessary visits to EDs, in addition to contributing in the potential design of systems to improve triaging before the patient enters the ED. However, even with these interventions, it must be recognized that a majority of unplanned readmissions might not be avoidable, reflecting the needs of a highly dependent and medically unstable patient population.

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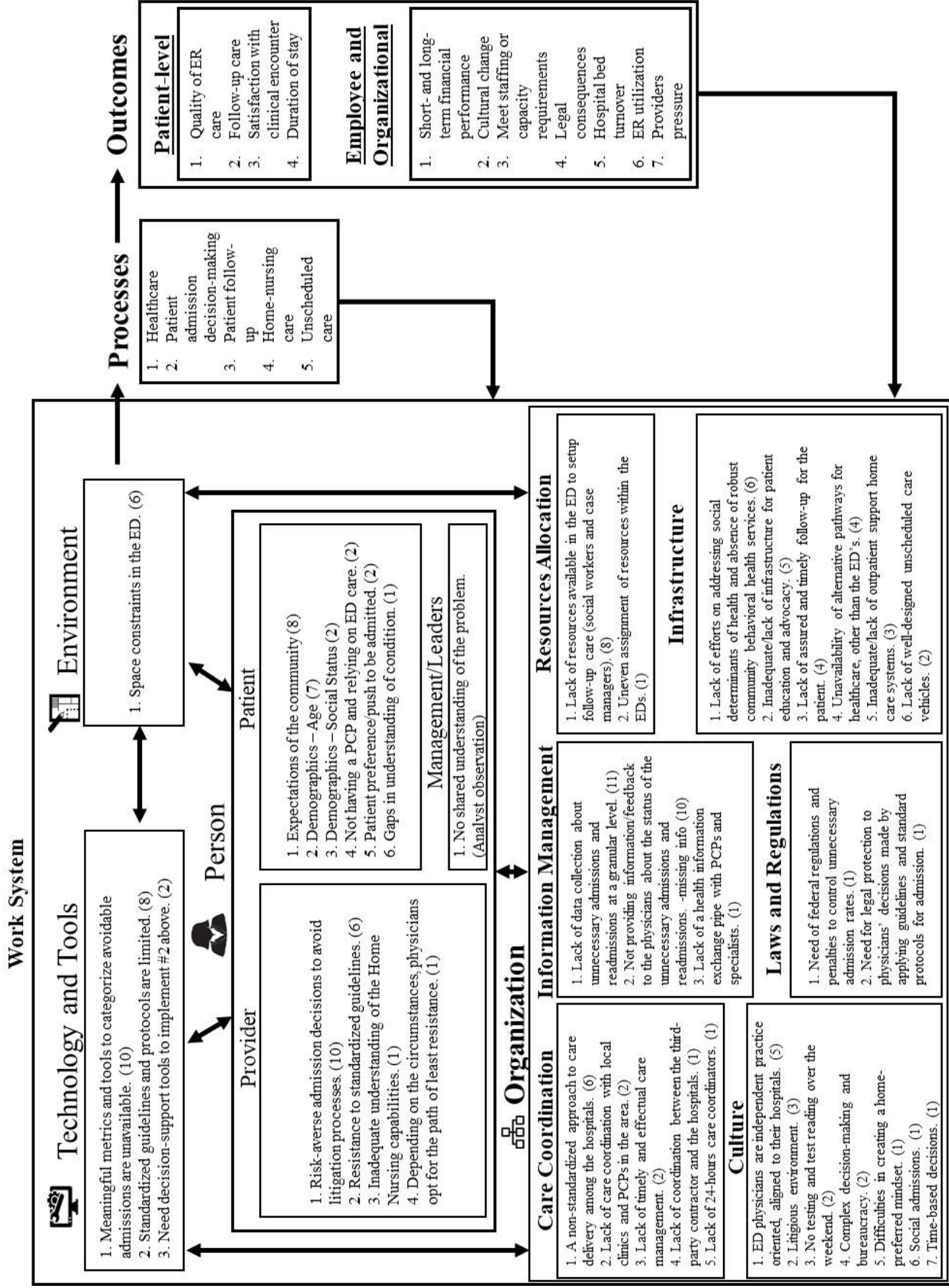


Figure 1. SEIPS Model – Contributors to unnecessary avoidable admissions and readmission (code frequency in parenthesis)