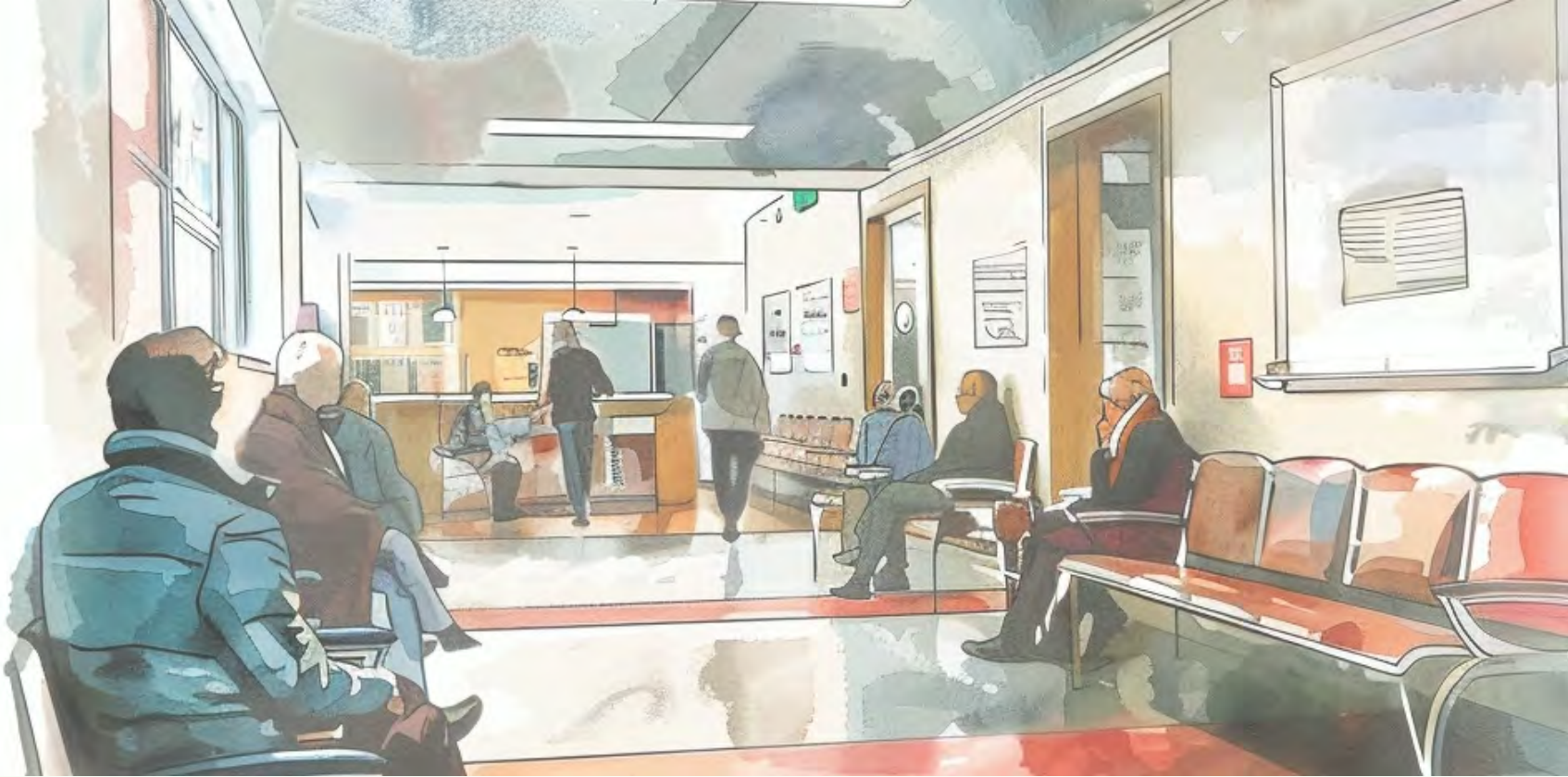


Can I See the Doctor? I Have an Emergency!



study CONTENTS

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intro | SYNOPSIS

BACKGROUND

Emergency departments are the most vital component of a hospital, expected to provide on-time access for patients with serious illness or injuries. Unlike urgent care, they operate 24/7 with expert healthcare providers ready to examine & treat all specialties.

Most patients depend on EDs during non-business hours or when their primary care provider is overbooked with expected wait times that can extend for a month.

For various reasons, some of which are described in this study, EDs are almost always overcrowded with increased wait times which result in less patient and staff satisfaction, and less timely and efficient care.

Several visits to the ED could be considered avoidable, those avoidable ED visits put a huge strain on the healthcare system by increasing overall annual cost and leading to ER overcrowding. Studies show that ED visits for nonurgent conditions that are treatable at retail clinics or urgent care facilities may lead to a projected saving of \$4.4 billion annually.¹

This study aims at researching ways to help with the urgent issue of ED long wait times and propose solutions and strategies that can be implemented.

WHAT'S TAKING SO LONG?

Emergency departments often experience high levels of overcrowding due to a combination of factors. Some of the significant reasons are:

Triage system: Patients are prioritized based on the severity of their condition. Those with life-threatening issues are seen immediately, while others must wait.

Overcrowding: Many EDs are overcrowded, especially in urban areas. This leads to longer wait times as staff must attend to more patients.

Resource Constraints: Shortages of medical personnel, including doctors and nurses, can create bottlenecks in the healthcare process.

Non-Emergency Cases: Some people visit the ED for non-urgent issues that could be handled in primary care, which can clog the system.

Administrative processes: Administrative tasks like registration, insurance verification, and paperwork can also contribute to wait times.

Diagnostic Test: Waiting for the test results or diagnostic imaging can extend the time you spend in the ED.

Emergencies Take Priority: New emergencies can occur at any time, causing staff to divert attention to critical cases.

CAN YOU HELP ME?

Current efforts to improve Emergency Department (ED) efficiency include:

Triage System Enhancement: Enhancing the triage process to prioritize the most critical cases for immediate attention.

Streamlining Registration: Introducing electronic registration and pre-registration procedures to minimize paperwork and reduce wait times.

Telemedicine Integration: Leveraging telemedicine for less severe cases, enabling remote assessments, and freeing up in-person resources for critical cases.

Fast-Track Programs: Developing expedited programs for minor injuries and illnesses to alleviate congestion in the primary ED.

Staffing Augmentation: Expanding the healthcare workforce to meet growing demands and optimize patient-to-staff ratios.

Process Optimization: Implementing Lean or Six Sigma methodologies to refine ED workflows, eliminate bottlenecks, and enhance efficiency.

Collaboration with Urgent Care Centers: Establishing close collaborations between hospitals and urgent care centers to divert non-emergent cases.

Predictive Analytics Utilization: Harnessing data and predictive analytics to anticipate patient surges and allocate resources proactively.

Technology Adoption: Embracing Electronic Health Records (EHRs) and other technologies to ensure rapid access to patient information.

Public Education: Raising awareness among the public about the appropriate ED usage and encouraging primary case for non-emergency medical needs

literature

REVIEW

current STATE

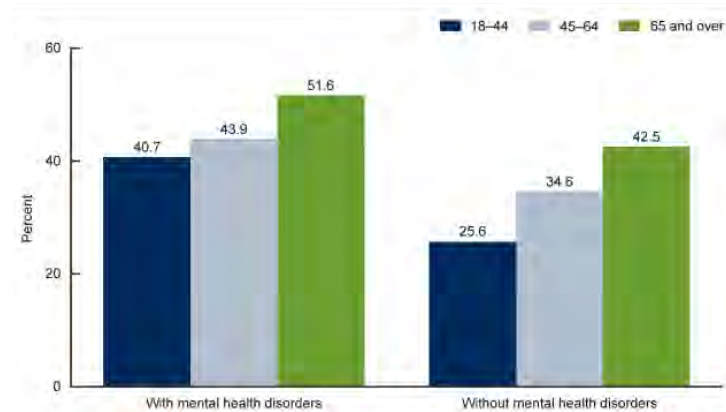
On a quarterly basis (every three months), emergency departments submit abstracted information from individual patient records which include data on the patient's ZIP code, birthdate, preferred language, service date, diagnoses, external cause of injury/morbidity, treatments/procedures, and expected source of payment [3]. This information is essential in understanding the main issues with the current emergency design and how faster turnaround times can be accommodated.

The time spent in the emergency department from arrival to discharge along with the percentage of adults visits lasting 4 hrs or more for patients with & without mental disorder was depicted in the adjacent page [3]. The visualization on the next page depicts both counts and rates of emergency department visits from 2020-2021 for the age group, source of payment and ethnicity [3].

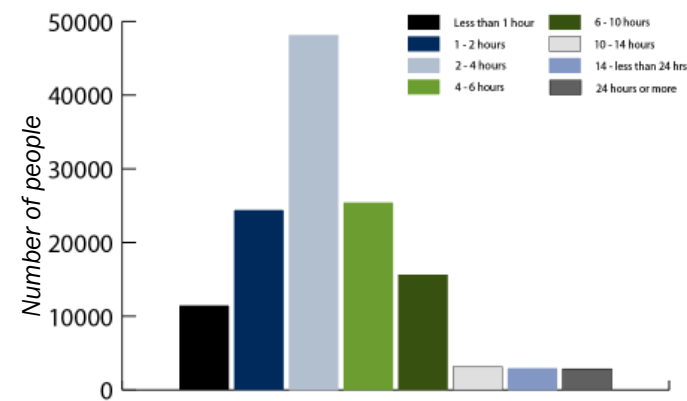
Those diagrams highlight disparities in wait times, revealing potential inefficiencies in the healthcare system. By analyzing wait times across different demographic groups, patterns emerge that underscore the need for targeted interventions to address disparities and ensure equitable access to care. Moreover, understanding these patterns is crucial for healthcare providers and policymakers to tailor services and resources effectively, ultimately improving healthcare outcomes for all populations. Overall, these diagrams serve as powerful tools for identifying areas for improvement and implementing evidence-based strategies to enhance healthcare delivery and access.

Initiatives such as a behavioral health observation unit and a specialized room for pediatric care were spurred from those diagrams aiming to cater to the unique needs of different patient groups effectively.

Additionally, the implementation of subwait areas and results pending waiting rooms has emerged as a direct response to prolonged wait times observed in the general waiting room.

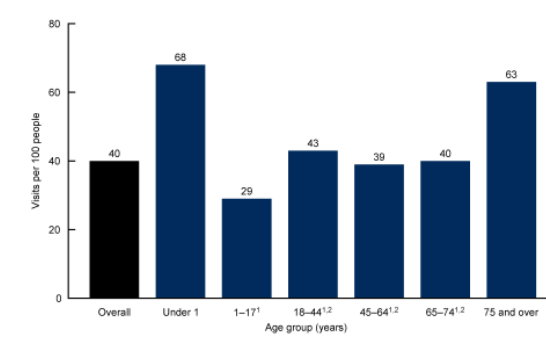


Percentage of adult emergency department visits lasting 4 hrs or more by patients with & without mental health disorder by group age
Data National Center for Health Statistics, National Hospital Ambulatory Medical Care Survey, 2017-2019

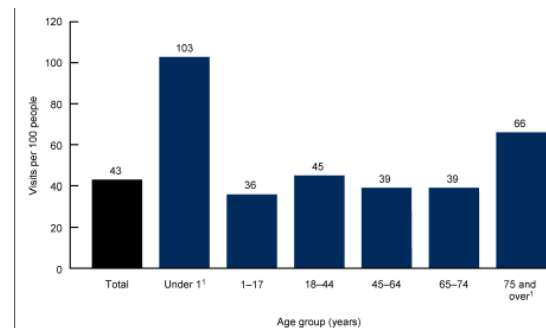


Number of people waiting to see a physician, registered nurse, or physician assistant
Data from the National Hospital Ambulatory Medical Care Survey: 2021

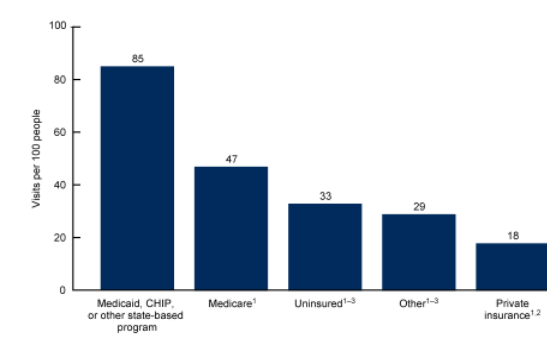
emergency department STATISTICS



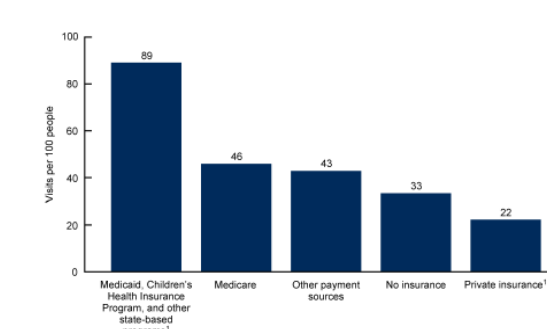
Emergency department visit rate, by age: United States, 2020



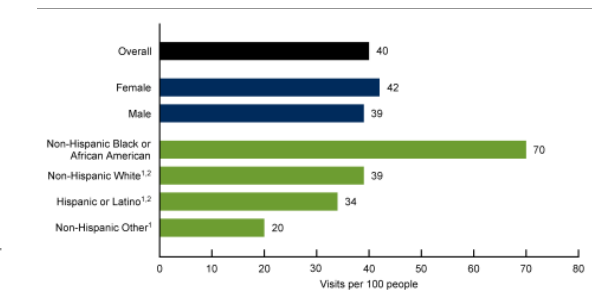
Emergency department visit rate, by age: United States, 2021



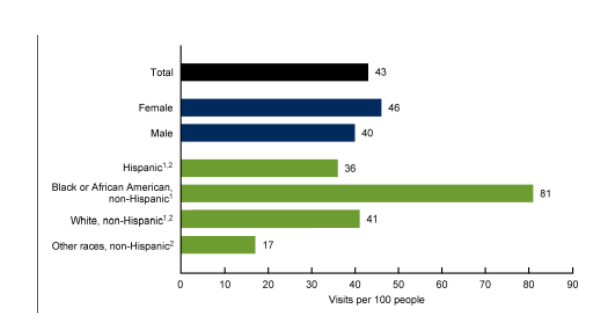
Emergency department visit rate, by primary source of payment: United States, 2020



Emergency department visit rate, by primary source of payment: United States, 2021



Emergency department visit rate, by sex and race and ethnicity: United States, 2020



Emergency department visit rate, by sex and race and ethnicity: United States, 2021

literature REVIEW

Overcrowded hospital emergency departments (EDs) are a global issue due to long pre-triage waiting times, influenced by factors like inadequate staffing and resources. This situation has eroded patients' trust in EDs and their willingness to seek care in emergencies, which can lead to increased morbidity and mortality. **While interventions have mainly focused on operational improvements, there's a growing recognition of the importance of the physical environment in ED design** [5].

ED knowledge highlights the challenges of managing increased care demands including efficiently processing patients while incorporating various diagnostic and treatment services [5], adapting treatment areas to fluctuating patient volumes, ensuring safety and security for all, providing comprehensive access to information, involving families in care, and ensuring availability of inpatient rooms for admitted patients.

Lean methodology is a quality improvement model used in the health-care industry to increase efficiency by supporting value-added activities, and reducing non-value-added activities in systems. Scientific literature in this area is limited accordingly given this paucity of research, ED design can only be the product of expert opinion, and not evidence-based [5].

Several study data suggests that several domains of physical design decisions influence safety, efficiency or both. Per the Environmental Correlates of Safety and Efficiency in Emergency Departments [5], these include:

- | | |
|--|-----------------------------|
| (1) entrance and patient waiting, | (2) traffic management, |
| (3) sub-waiting or internal waiting areas, | (4) triage, |
| (5) exam/treatment area configuration, | (6) teamwork, |
| (7) Adjacencies and Access, | (8) technology integration, |
| (9) behavioral health patient, | (10) boarding patients, |
| (11) Results waiting area. | |

Following is a summary of our understanding of how these domains affect the emergency department design.

(1) Entrance and patient waiting

Per CADRE & HKS article on Safety and Efficiency in Emergency Departments [4], **the location of the entrance and patient waiting lounge is an area identified across all sites as critical to efficient and safe care delivery.** It affects all the points to be listed below.

(2) Traffic Management / Patient flow

The need for one-way patient flow through the ED to address several issues was inphasized [4]. When patients need to return to a previous location, **it leads to increased walking distance, congestion at certain points, and perceptions of neglect among patients.**

These challenges not only affect efficiency but also create manageability problems. Data suggests separating routes based on patient acuity levels and segregating exits from entrances to improve overall flow and efficiency within the ED [4.15].

(3) Sub-waiting or internal waiting areas

An internal waiting room was defined as a design strategy to keep exam rooms empty for acute patients. In other words, **less acute patients can remain vertical in the internal waiting room instead of occupying exam rooms while awaiting test results** [5].

Efforts to enhance efficiency and enhance the patient journey have centered on the notion of **eliminating any waiting period.**

Per NEJM Catalyst- Nobody Wants a Waiting Room [7]; an **academic medical center applied innovative methods from other industries to eliminate the waiting room & launch a telehealth program.** The possibility of eliminating waiting rooms represented one opportunity to transform the patient's experience. Also, the idea of a sub waiting room was introduced in the article by CADRE & HKS [4]; where the ED is operating normally but inpatient bottlenecks prevent patients from being admitted.

literature REVIEW

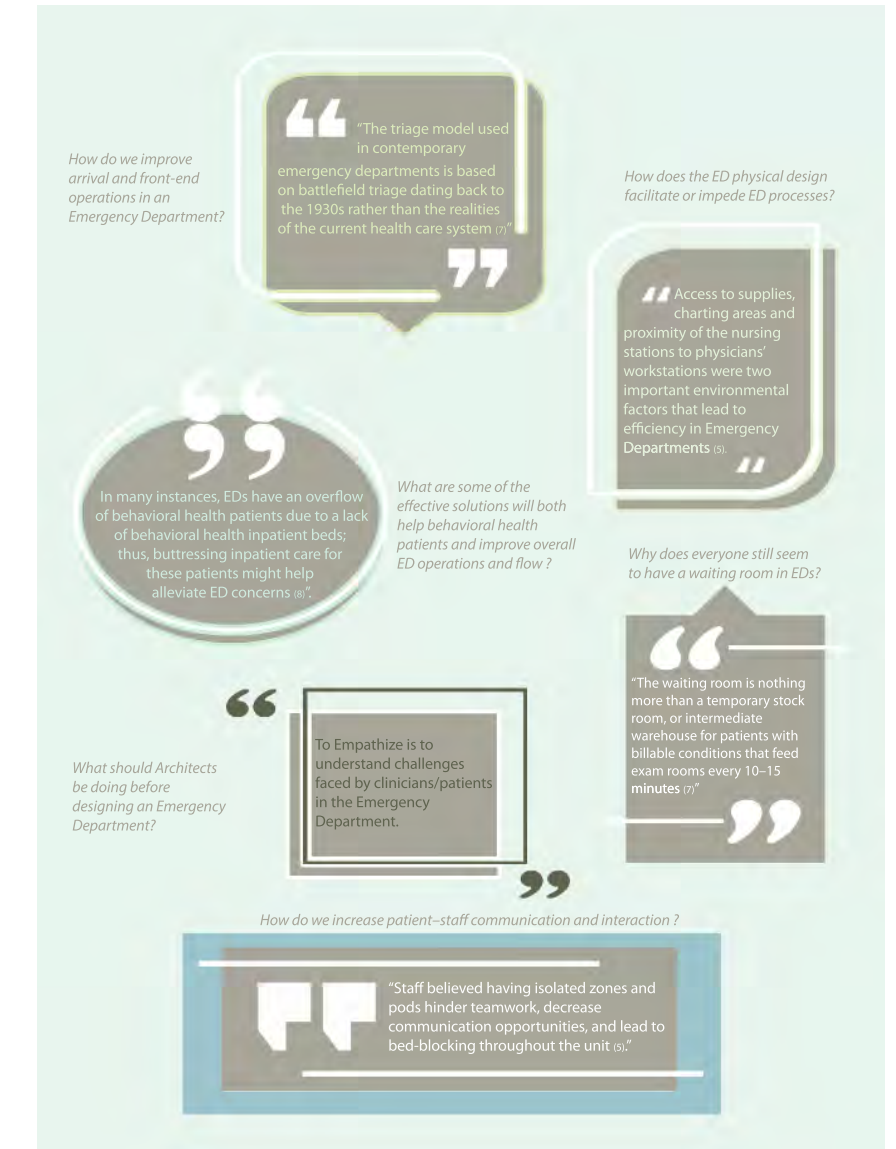
(4) Triage

Various facilities utilize different triage methods, ranging from simple rapid triage for separating patients by urgency to more complex approaches. Changes in triage processes primarily affect the number and visibility of triage rooms. **A common finding is the segregation of low-acuity patients after rapid triage and registration expedites treatment for more severe cases. This often involves establishing a separate area for fast-track patients to alleviate congestion in waiting and registration areas.** Some suggest that current triage models are outdated, linking them to battlefield triage from the 1930s [8], rather than reflecting modern healthcare needs. **Proposed solutions include using vitals-monitoring bracelets in waiting areas and implementing E-triage solutions like registration kiosks to streamline data input and assist triage nurses without replacing their role** [6].

(5) Exam/treatment area configuration

The layout of an ED impacts safety and efficiency. Common configurations include linear, pods, and ballroom layouts. Linear or multiple pod designs are better for higher volumes, allowing for patient separation by acuity.

Standardizing exam rooms with identical setups can speed up access for medical staff. Recommendations from FGI reimagining the ED study [8] **suggest modular patient care stations for low to medium-acuity patients and flexible treatment areas with movable walls. Additional suggestions include pop-up treatment alcoves during peak hours and single patient rooms that can accommodate multiple recliners.** Flexibility in expanding treatment spaces and implementing one-way circulation paths are also recommended for future ED planning.



surveys |
INTERVIEWS

survey PATIENTS

We created a brief survey to gather anonymous feedback from individuals who recently visited emergency departments. This survey, shared within our networks and on social media platforms, comprises ten questions.

The initial two questions gather general information about the location of the emergency department, while the subsequent eight questions delve into the specifics of the visit, including reason for the visit, the quality of the experience, and wait times. The final question encourages respondents to share any additional thoughts or comments about their experience.

The aim was to utilize the insights gathered from this survey to better understand the experiences of individuals in emergency departments. By analyzing the responses, we hope to identify areas for improvement and inform our design recommendations to enhance the overall quality of care provided in these settings from a patient's perspective.

The anonymity of respondents is strictly maintained to encourage honest feedback, ensuring that their voices are heard and valued in our efforts to drive positive change.

The survey is shown to the right, along with quotations from the respondents answers to the last question about any other thoughts and comments they'd like to share regarding the improvement of wait times in the emergency department.

Emergency Department Experience Survey

Questions

1. When was the last time you were at the emergency room?

Date
 

2. Where was the Emergency Department located?

State 
Zip Code

3. What was the reason for your visit?

4. How long was the wait time?

- 0-1 HR
 1-3 HR
 3-5 HR
 More than 5 Hours

5. Did your concerns get addressed?

- Yes
 No

6. Did you have anyone accompanying you?

- Yes
 No

- How many people were accompanying you?

7. Did the Emergency Department staff have any issues retrieving your data and medical history?

- Yes
 No

8. How would you describe the overall environment of the Emergency Department? (Please pick 2)

- Calm and Quiet
 Loud and Restless
 Safe
 Unsafe

9. Were you provided with information about the expected wait time upon arrival?

- Yes
 No

Thank you! Any other thoughts or comments you'd like to share regarding the improvement of wait times in the emergency department?

“It was unexpected good.”

“Good service.”

“Avoid the too much routine process to decrease the waiting time”

“would be nice to let us know wait times”

“It was probably a slow day. There was no wait time.”

“The wait times in the ED is absolutely absurd. The system needs to be improved. Half of the patients coming to the ED are not emergent and easily can be seen at the urgent care. Also some patients can easily be seen through a telemed appointment via phone or video call. Then the doctor can prescribe the proper medication or if more severe and labs or imaging is needed then they can proceed in that direction. An average wait time of 6-8 hours in ED in America does not make sense. We should be having one of the best health care systems in the world.”

“Perhaps identifying easy cases that could free up queue of people waiting. waiting area was scary unsafe and simply not clean either. some very aggressive people being angry and yelling at other patients.”

“It was an unusual circumstance bc Urgent Care sent me and directed me to tell them it was a lacerated artery, which they could also see bc i was bleeding. many others were waiting before and after me, despite the waiting room feeling tiny and chaotic.”

“Staff didn't allow my husband to enter waiting room, he went home since there was no toilets outside. There was a 70-old man waiting 8 hours in ED waiting area for exam results.”

“The wait time was fine, though I attribute it to the fact that I have insurance. Because there was someone there before me and when my partner mentioned the screaming person to the staff he was meet with the a very dismissive response implying that they were homeless and that they had just be dropped off there and they would get to them when they had time.”

“It was very crowded and took several hours to get the child into an exam room for treatment. She ended up needing to be admitted to the hospital to stay overnight for IV treatment because she was so dehydrated by the time we were seen by a doctor. A mentally unstable person in the ER was also trying to claim that the baby was hers and had to be restrained and taken away by the authorities. Not a fun experience.”

key TAKEAWAYS

We collected 24 responses to the patient survey, all stemming from Emergency Department visits within the past three years. A majority of these responses originated from California, reflecting the circulation of the survey within our network and connections. Responses regarding the reasons for visit were categorized according to Emergency Severity Index (ESI) criteria, predominantly falling under the ESI 2 category.

Wait times for patients varied, with approximately 46% waiting for less than an hour, while 12.5% endured waits exceeding 5 hours. Among the respondents, 22 out of 24 felt their concerns were adequately addressed, though two patients with high fever and influenza, and heart palpitations with light-headedness respectively, reported otherwise.

Accompaniment to the Emergency Department was diverse, with 58% accompanied by one person, 21% by two, 4% by three, and 17% arriving alone. The retrieval of patient data and medical history by emergency department staff posed no issues for 79% of respondents, though 21% reported difficulties.

Overall, 75% of participants deemed the Emergency Department environment safe, while 25% felt it was unsafe. Opinions regarding the atmosphere varied, with half finding it calm and quiet, and the other half perceiving it as loud and restless. A significant 83% of respondents were not informed about expected wait times upon arrival.

In the open-ended section soliciting suggestions for improving wait times, respondents expressed various concerns. These included the need for clarity regarding available amenities, dissatisfaction with seating options, a desire for information on the number of people ahead and expected wait times, frustration with long wait times, a call for separated waiting areas, reports of increased anxiety due to lack of information, and observations of a disorganized and confusing setting.

“My spouse arrived at the ED by ambulance. They had a bay available and was processed in with very little wait time. We were in that bay for over 5 hours, however, mostly waiting for the next step in care. When we left, there were three gurneys with ambulance patients waiting for ED bays in the hallway, so they were clearly short of both ED care bays and staff to efficiently serve the patients that were arriving.”

“Lots of temporary screens, seating, face guards, etc. confusing and disorganized, even though quiet and calm for the most part. uncertain how long we would wait increased the anxiety and condition that we arrived and were visiting the ED in the first place.”

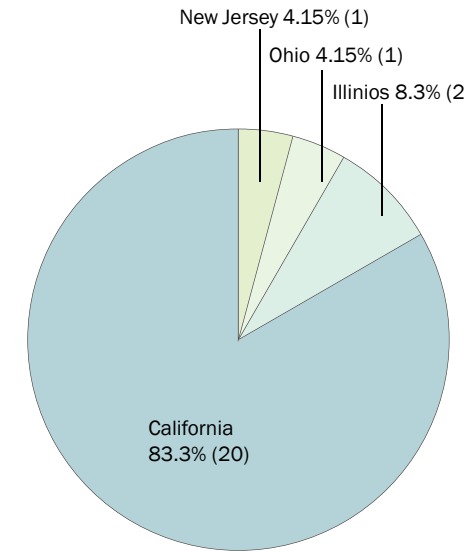
“I was blind with labor pains so barely recall any check-in detail. My ex, who is known to faint crossing the threshold of a medical facility survived so I suppose that says something!”

“We can have different zone to saperate the waiting people. for example, quiet zone, kids zone”

“It took 2.7 hrs to be seen for an XRay. The painkillers that were needed were administered 3.5 hrs after arrival and the surgery that would be needed was left up to the patient to arrange through their regular doctor’s referral, which was disastrous (the next available surgeon was a month away). The patient was sent away with a temporary fix (3 days) and a prescription for painkillers for the next two days only. The patient, despite having MediCal (which did not result in good treatment options) opted to fly to their home country for free social medicine/surgery that happened within two days of being seen in Yerevan, Armenia.”

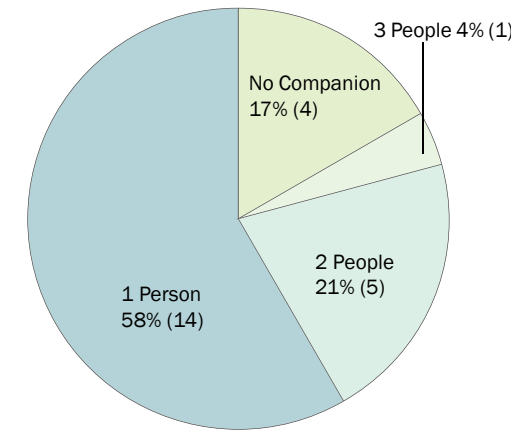
“A number they can give just like they would at a bank. A number that shows how many people are ahead of you expecting to see a doctor and the approximate waiting time, that way a person can go home and rest while they wait for their turn and come back half an hour or an hour before the expected time. They could also phone the person when to come back to the hospital.”

“It would be helpful to know amenities available, or have more comfortable seating options”



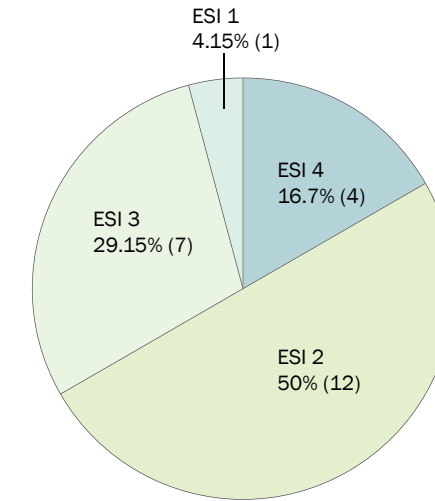
Emergency Department Location

The Majority of Responses (83%) were from the state of CA.



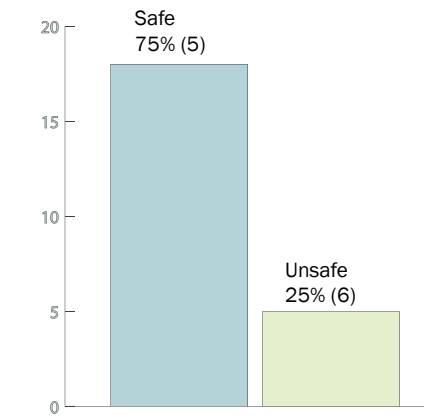
Number of People Accompanying

The Majority of Respondents (58%) had only one person accompanying them.



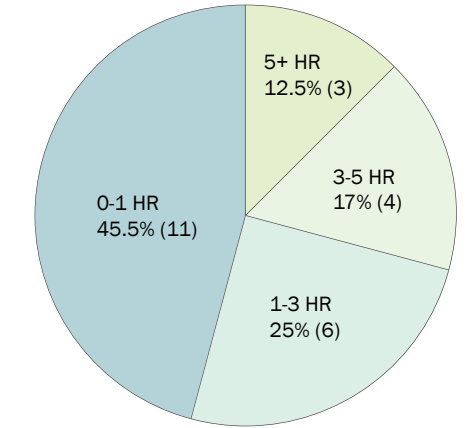
Emergency Severity Index (ESI)

The Majority of respondents were ESI 2s (50%)



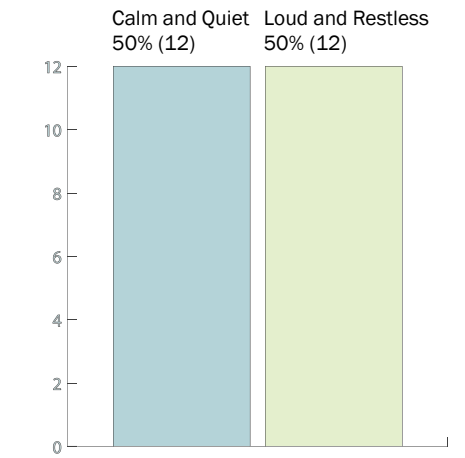
Environment (Safe VS UnSafe)

The Majority of Respondents (75%) described the overall environment in the Emergency Department as Safe.



Wait Time

More than half of respondents waited more than an hour.



Environment (Calm and Quiet VS Loud and Restless)

The Responses for the environment being calm and quiet vs loud and restless were divided in half.

health PROVIDERS

We have completed more than a dozen interviews with healthcare providers and directors of emergency departments across different locations, sizes, and healthcare systems.

The survey on the right was designed to facilitate our discussions with them. However, the primary aim of these interviews was to allow emergency department experts to identify the factors contributing to prolonged wait times, such as workflows, staffing, communication, to name a few, and engage in collaborative conversations to brainstorm ideas for an “ideal” emergency department workflow and layout.

We interviewed a diverse group of experts, including emergency department physicians, nurses, administrative officers, and department directors and chiefs, many of whom have experience in different emergency department settings.

Throughout the interviews, we prioritized the insights of these experts, who shared what aspects of their work are effective, what needs improvement, and their envisioned changes for the emergency department workflow.

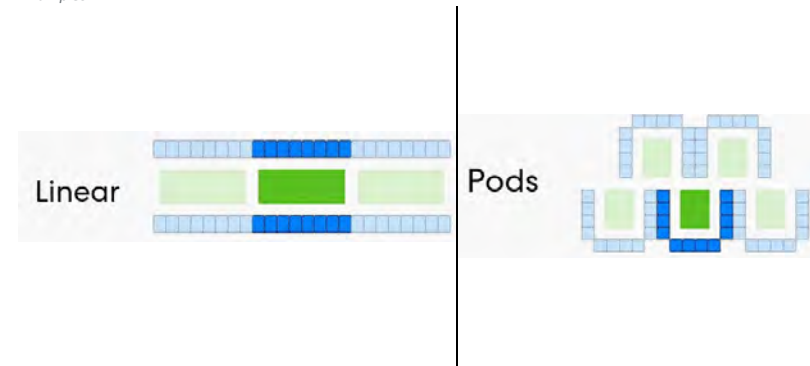
Emergency Department Survey

Questions

1 Describe patient flow within the emergency department from admission to discharge

2 Describe the preferred emergency department layout relative to Design Configuration - pick one

Examples:



Centralized, Decentralized, or Hybrid location for

Examples: Centralized means one large room in the center of the department, Decentralized means multiple smaller room scattered around the department. Hybrid means one larger room in the center with smaller stations scattered around.

Nurse stations

Equipment rooms

Soiled rooms

Medication rooms

Describe preferred proximity to other departments

Examples to medical imaging, surgery, intensive care & Cath lab

3 How many entrances do you think the ED should have?

If Other, please elaborate

4 What steps should be taken to address staffing levels and ensure adequate coverage during peak periods?

In general, do you believe there is there a lack of specialty physicians at Emergency Departments? (Y/N)

Examples: Neurologist, Cardiologist..

If yes, please specify.

5 How are patient expectations managed, and what information is communicated about wait times?

6 Are there initiatives in place to enhance coordination between various departments?

Examples: imaging is too slow on CT readings.

7 Are there specific protocols for prioritizing and expediting cases based on severity? (Y/N)

If yes, what are they?

8 How is technology used to streamline processes and improve wait times?

9 What type of technology do you use to access patient records and help with registration?

Examples: (EPIC, Cerner, Meditech..)

10 How are ESI 3s Handled?

11 Should there be a dedicated Pediatrics ED?

Should there be a dedicated Behavioral Health ED?

Other than Pediatrics and Behavioral health patents, what other specialties should have a dedicated ED?

12 Can you identify any systemic issues or bottlenecks in the Emergency Department workflow?

13 What is considered a wasteful activity? How do you think this can be avoided?

14 Should there be a Fastrack program or immediate bedding systems in the ED? Please elaborate

15 Any systems in place for dealing with informing patients before they get to the ED?

Examples: 24-Hour Tele-Medicine access to physicians

Any systems in place for dealing with informing patients after they leave to the ED?

Examples: Referring to clinics, Case Managers

key TAKEAWAYS

Despite variations in emergency department operations and layouts among the healthcare providers and emergency department directors we interviewed, several common issues emerged.

Triage Efficiency

Triage was consistently highlighted as a bottleneck in emergency department flow, with many viewing it as a wasteful activity. While some facilities found success with the physician in triage model, others continue to grapple with triage inefficiencies.

Rigidity of ED Design

The inflexibility of emergency department design emerged as a challenge, with lengthy design and construction processes often resulting in outdated facilities upon completion.

Visibility VS Privacy

While direct visibility of patients in waiting rooms is desired, healthcare providers also require privacy for sensitive conversations.

Persistent Patient Boarding

Experts unanimously acknowledged that patient boarding is a persistent issue requiring proactive design considerations.

Staffing Shortages

Staffing shortages across all roles remain a pervasive challenge, prompting the need to design emergency departments that can adapt to such constraints.

Communication

Effective communication emerged as a cornerstone for successful emergency department operations, both internally among staff and externally with other hospital departments.



Emergency Department Wait Times is not Only an Emergency Department Problem, It's a Hospital Problem.



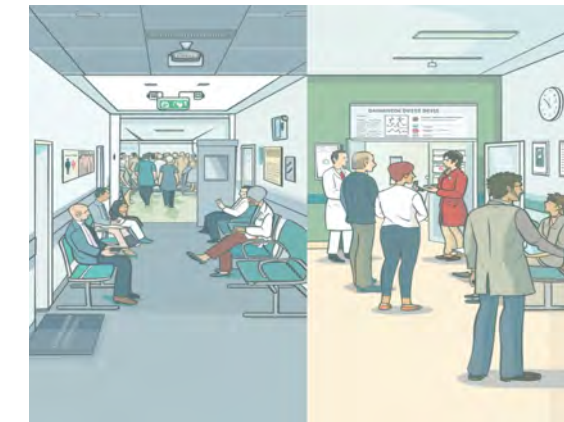
Triage Efficiency

A Challenge in Emergency Department Flow



Rigidity of ED Design

Resulting in Inflexibility and Outdated Facilities



Visibility VS Privacy

Balancing Patient Visibility and Provider Privacy



Persistent Patient Boarding

Call for Proactive Design Solutions



Staffing Shortages

Need for Adaptive Solutions



Communication

A Key Pillar of Effective ED Functioning

case **STUDIES**

case STUDY

Three Emergency Departments (EDs) located within large hospitals volunteered to take part in the research. These hospitals were affiliated with three different healthcare systems and were situated in different geographic areas.

The selection criteria for the EDs aimed to ensure diversity in several aspects, including the number of examination/treatment rooms, architectural layout, provider system, and geographic location.

The team reached out to clients and contacts of their prominent architecture firm specializing in healthcare design. Hospitals with a distinctive ED layouts were specifically targeted. This approach was adopted to benefit from the successful operations that helped expedite the ED operations.

Semi-structured interviews were conducted with physicians, chief nursing officer, nurse manager, or medical director of the EDs to capture perspectives from ED physicians, administrators overseeing day-to-day operations, and those involved in long-term strategic planning. During the interviews, participants were asked to describe the layout of their EDs and explain how patients flow from entry to discharge and about their daily routines, from arrival to departure.

Participants were prompted to identify concerns such as

- bottleneck areas,
- inefficient activities,
- communication challenges among clinicians,
- safety and security issues,
- concepts related to efficiency and safety.

They were also encouraged to discuss elements of the physical environment that function well and those needing improvement, along with anticipated design changes in response to process innovations. Each interview lasted approximately one hour and was conducted individually by the team.

Below is an analysis of the selected case studies with a focus on the points the team tried to integrate in their proposed model.

Emergency Department Case Study A:

Focus Area: The ED employs an observation unit strategy to identify patients who may not be safely discharged after the initial ED evaluation but could likely be discharged after 6–24 hours of additional observation and treatment. Research shows that patients in an EDOBU have shorter stays, reduced costs, and similar clinical outcomes compared to those admitted to inpatient ward and that the use of an OBU reduces the number left-without-being-seen rates [14].

Emergency Department Case Study B:

Focus Area: laboratory testing conducted close to the site of patient care offers the advantage of streamlined and expedited access to crucial diagnostic testing. This proximity reduces the time it takes for medical staff to receive test results, enabling faster decision-making and more prompt treatment for patients in need of urgent care.

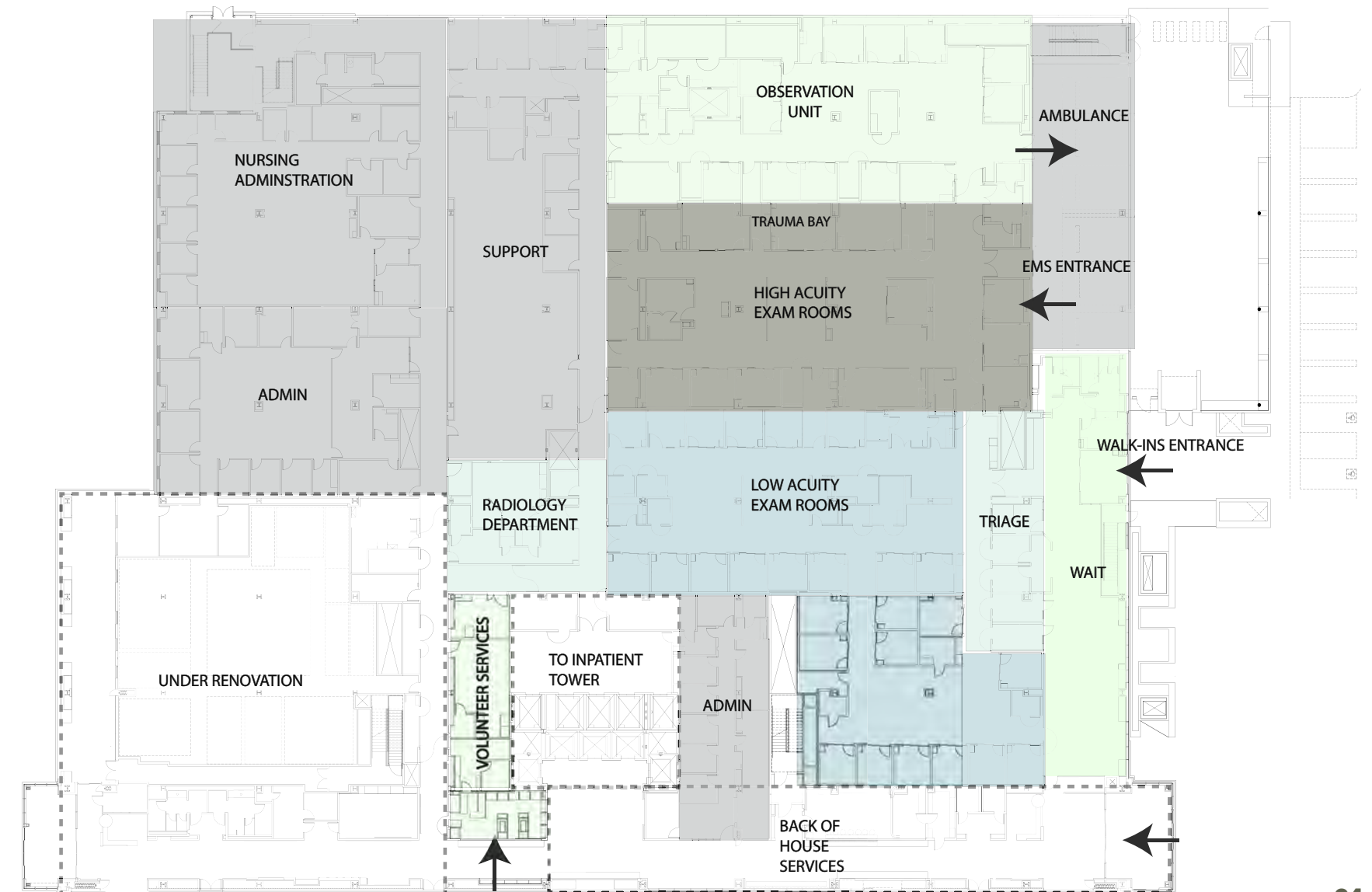
Emergency Department Case Study C:

Focus Area: Having dedicated treatment areas for pediatrics and behavioral health within an emergency department offers several benefits: Specialized care, comfort and safety, efficient resource allocation, enhanced privacy and confidentiality and specialized staffing and training. All of which can improve the quality of care and outcomes for these populations.

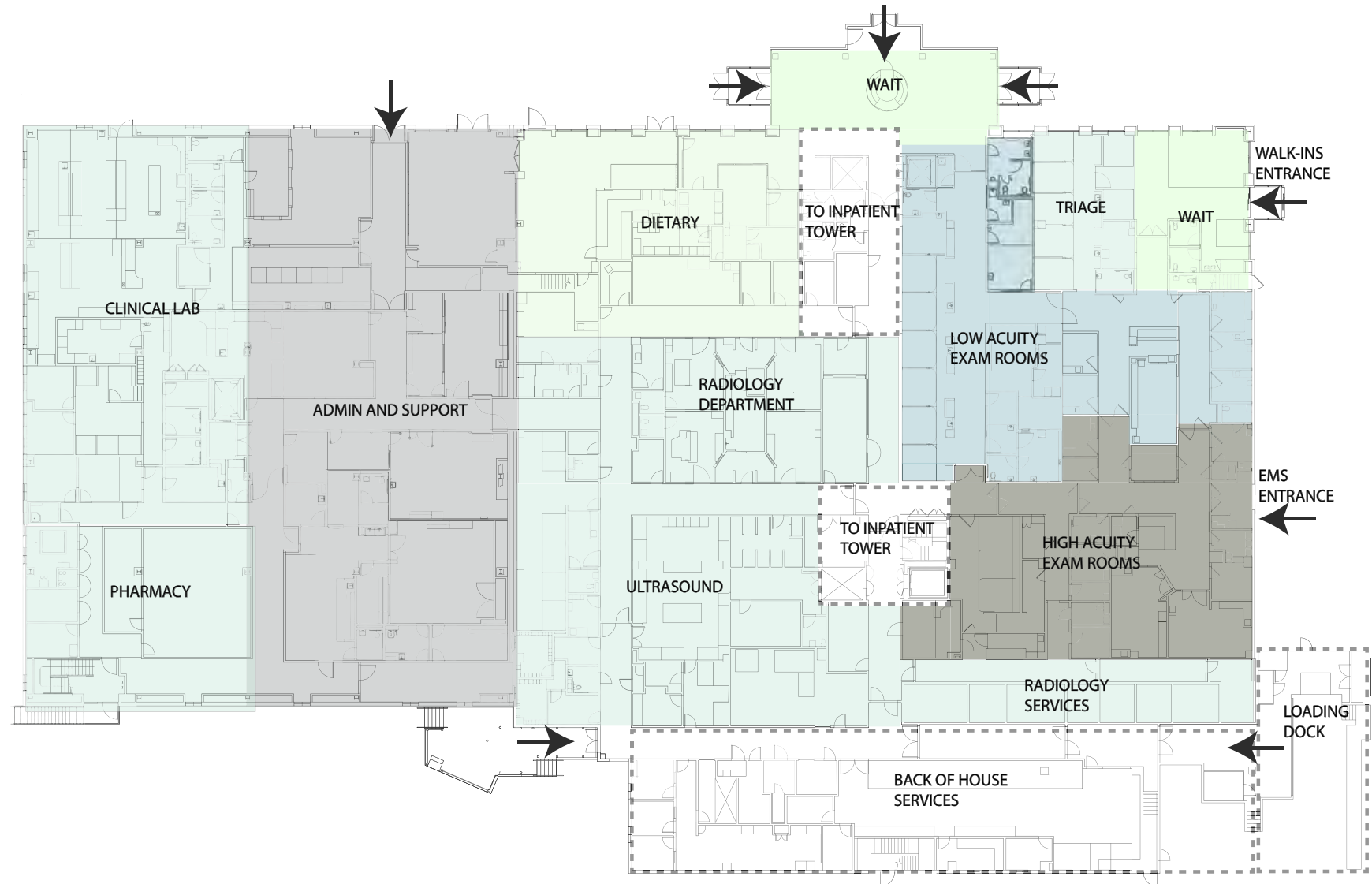
Concerns arising from the current design for the three case studies:

- The sequential arrangement of emergency department services, rather than a parallel approach may lead to bottlenecks and prolonged wait times.
- Designing without boarding patients in mind may lead to overcrowded waiting areas and increased likelihood of spread of infections
- Exam rooms segregation doesn't allow for flexibility during patients surge.

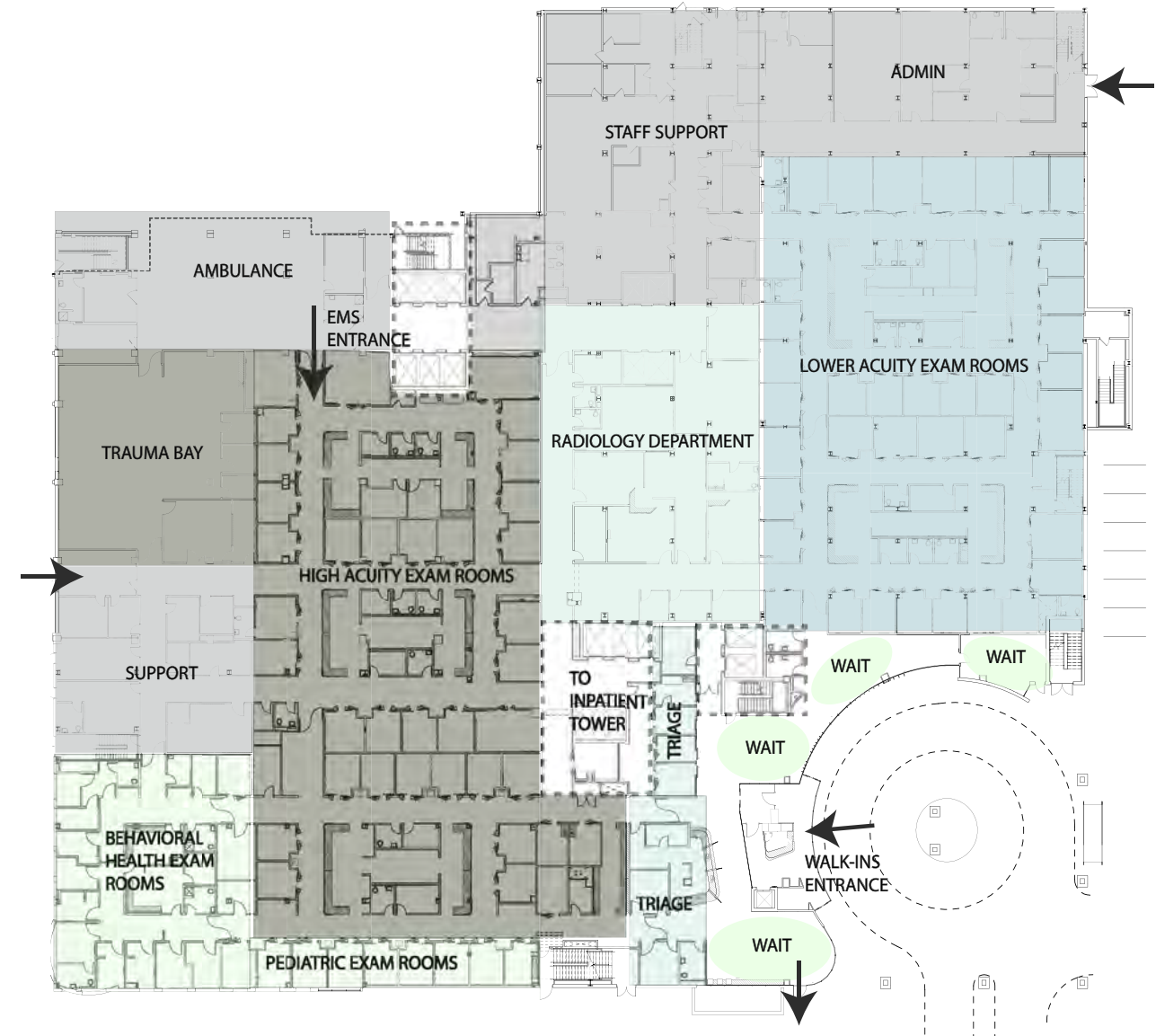
EMERGENCY DEPARTMENT A



EMERGENCY DEPARTMENT B



EMERGENCY DEPARTMENT C



current model | **PROPOSED MODEL**

proposed MODEL

The proposed model for reimagining the Emergency Department (ED) waiting room layout encompasses several ideas aimed at optimizing patient flow and enhancing overall efficiency:

1. Centralized Rapid Assessment Unit:

- Upon arrival, patients undergo initial assessments, including vital sign checks and documentation of their chief complaints.
- Subsequently, patients transition to the waiting area and proceed to the centralized assessment unit for triage, positioned at the heart of the ED waiting area, where a physician is stationed to guide them to their next destination within the ED.

2. Sub-Waiting Areas:

- Transitioning from a single waiting area to multiple sub-waiting areas tailored to specific patient needs.
- This segmentation aims to reduce perceived wait times by providing patients with clear visibility of their position in the care process and the number of individuals ahead of them.
- Patients move between different sub-waiting areas such as imaging, Point of Care (POC), retail pharmacy, and examination rooms, returning to the centralized assessment unit to check in between required tests/diagnosis for further direction.

3. Observation Area for Patient Boarding:

- Designating a dedicated observation area within the ED to accommodate admitted patients awaiting transfer to inpatient beds or awaiting availability of hospital staff.
- This area ensures patients receive necessary monitoring and care while awaiting further disposition.

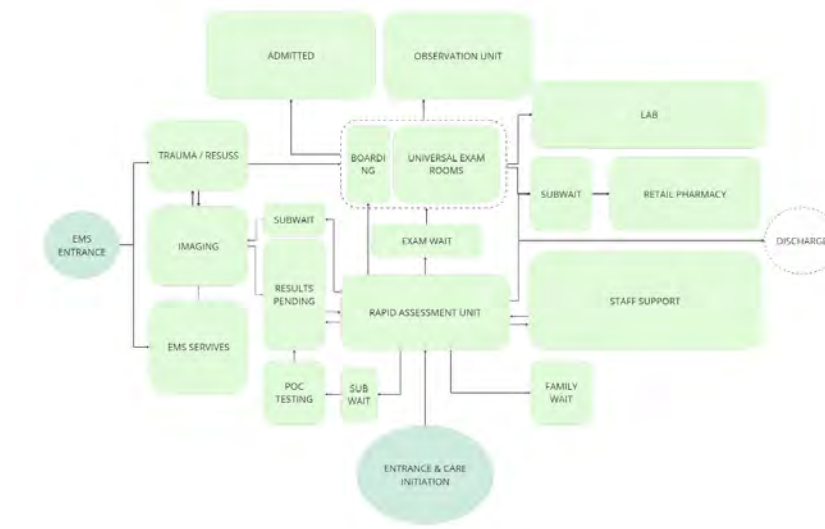


Fig. 5 A flow chart showing the main relationships within and outside of the Emergency Department waiting area for the proposed model

4. Universal Examination Rooms:

- Introducing “Universal” examination rooms equipped to accommodate various patient demographics and medical needs.
- These rooms can be flexibly divided into categories such as pediatrics, behavioral health, geriatric care, etc., based on the specific requirements of the ED.
- The adaptability of these rooms allows for seamless adjustment in response to patient influx or changing departmental needs.

5. Additional Treatment Alcoves:

- Introducing dedicated treatment alcoves equipped with essential medical resources such as medical gases, monitors, power sources, and IV tracks.
- These alcoves serve as supplementary treatment spaces, readily available in the event of unexpected emergencies that may lead to overcrowding in the ED waiting area.
- By providing these alcoves, the ED can efficiently manage patient influx and ensure prompt access to essential care resources when needed.

proposed MODEL

6. Observation Units and Clinics:

- Establishing observation units and specialized clinics, including a behavioral health critical access unit, in close proximity to the main Emergency Department.
- These units cater to patients requiring extended observation or specialized care following their initial examination in the ED.
- The objective is to reduce unnecessary occupancy of ED resources by patients who have been triaged and examined but are not yet ready for discharge, thereby optimizing resource allocation and enhancing overall ED efficiency.

The diagrams and flowcharts presented in this section serve to visually depict the workflow and spatial relationships within the proposed model of the Emergency Department (ED) waiting room. Additionally, they illustrate potential expansions of this model to accommodate larger EDs with increased examination room capacity.

These visual representations outline the flow of patients within the ED, detailing adjacencies and pathways for efficient movement. Furthermore, they delineate connections extending to areas external to the ED waiting room, illustrating the seamless transition of patients from various hospital entry points to the “universal” examination rooms within the ED, and onward to other departments, clinics, and facilities within the hospital campus.

Through these diagrams, the comprehensive integration of the proposed model into the broader hospital infrastructure is demonstrated, highlighting its role in facilitating streamlined patient care pathways and optimizing resource utilization across the entire healthcare facility.

The primary objectives of this proposed model are to directly tackle the key issues and insights identified through the literature review, interviews, and surveys outlined earlier in this document.



Fig. 6 A bubble diagram showing possible Emergency Department layout expansion

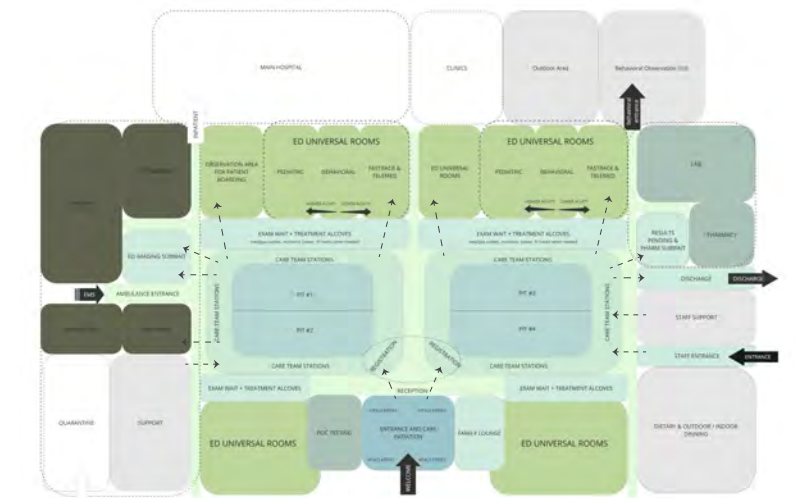


Fig. 7 A bubble diagram showing possible Emergency Department layout further expansion

current MODEL

The flowchart of the current emergency department model outlines the step by step sequential process from admission to discharge.

It also highlights significant challenges. Long wait times contribute to patients leaving without being seen or being discharged against medical advice. Patients often repeat their symptoms multiple times, leading to frustration and communication issues. Additionally, the model overlooks the needs of boarding patients, leaving them stranded in hallways awaiting inpatient beds.

Given these challenges revealed by the flowchart, it becomes imperative to reimagine the design and operation of the emergency department in a design focused on efficiency, patient-centered care, and resource optimization is necessary to improve outcomes and reduce wait times.

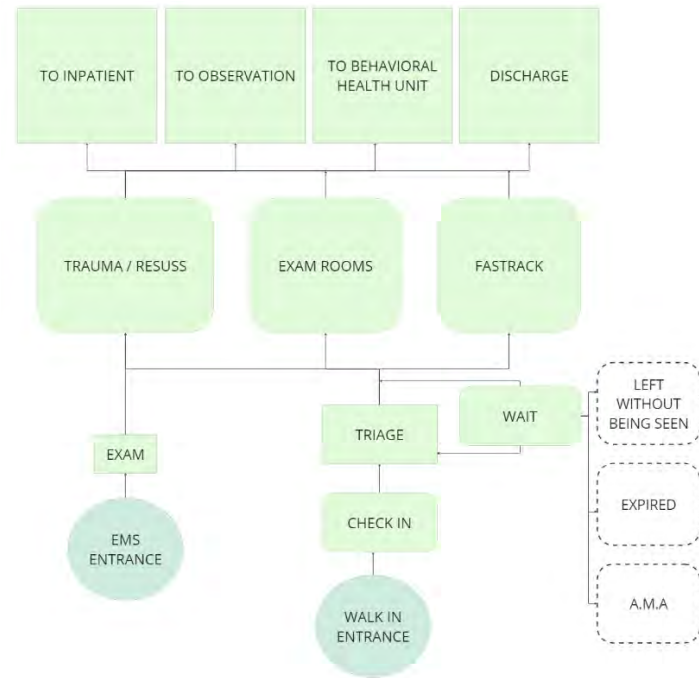


Fig.2 A flow chart showing the main relationships within and outside of the Emergency Department waiting area for the current state of Emergency Department design practices

VS.

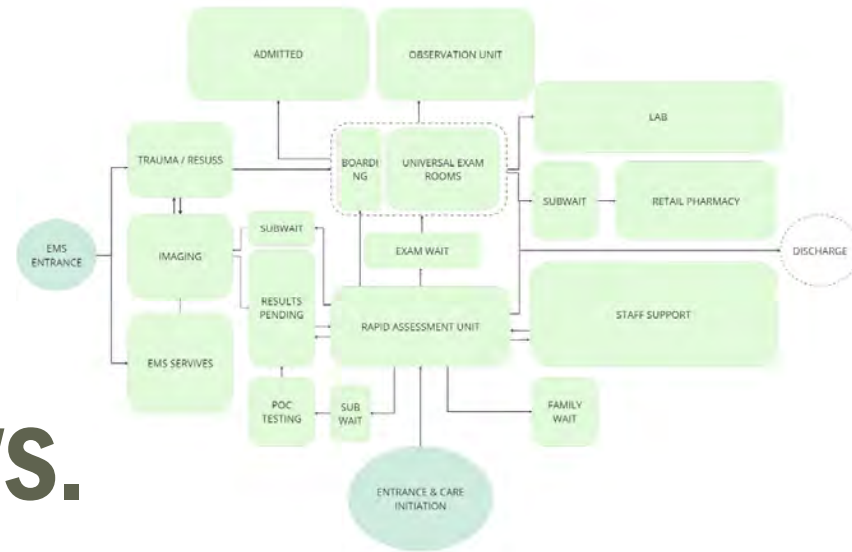


Fig.5 A flow chart showing the main relationships within and outside of the Emergency Department waiting area for the proposed model

proposed MODEL

The proposed model tackles various challenges encountered in the current emergency department setup with strategic redesign elements. To mitigate extended wait times, the waiting room is reimaged with distinct subwait and results pending areas. Additionally, dedicated space for boarding patients was provided as well as designated spaces with wider corridors equipped with essential medical resources to accommodate potential surges in patient volume.

To enhance communication and streamline care processes, measures such as the physician in triage model are introduced. Bringing the care team together in a centralized location fosters improved communication and facilitates the seamless sharing of crucial patient information, ultimately enhancing overall efficiency and quality of care.

proposed MODEL



Centralized Rapid Assessment Unit
Implementation of a centralized rapid assessment unit in the ED waiting area



Sub-Waiting Areas
Transitioning from a single waiting area to multiple sub-waiting areas



Observation Area for Patient Boarding
Designating a dedicated observation area within the ED to accommodate patient boarding



Universal Examination Rooms
Introducing "Universal" examination rooms



Additional Treatment Alcoves
Introducing dedicated treatment alcoves equipped with essential medical resources



Observation Units and Clinics
Establishing observation units and specialized clinics in close proximity to the ED

next STEPS

The future model of triage and vitals checking in an Emergency Department (ED) is likely to be characterized by increased automation, integration of technology, and a focus on efficiency and patient-centered care.

The team recommends the following healthcare technologies to better streamline the ED processes, enhance communication, and improve patient care delivery:

Digital Triage Tools: Implementation of digital triage tools that use artificial intelligence (AI) algorithms to quickly assess patients' symptoms and prioritize their care needs based on severity. These tools may include smartphone apps, web-based platforms, or self-service kiosks in the waiting area.

Telemedicine: Integration of telemedicine capabilities into the ED examination rooms, allowing patients to be remotely assessed by healthcare providers via video calls or virtual consultations with specialists not physically present in the ED.

Wearable Devices and Remote Monitoring: Utilization of wearable devices and remote monitoring technology to continuously track patients' vital signs and health parameters, both in the emergency department and after discharge. This enables early detection of deteriorating conditions and facilitates proactive interventions.

Real-Time Vitals Monitoring: Implementation of advanced monitoring systems that provide real-time data on patients' vital signs, allowing healthcare providers to make timely clinical decisions and interventions. These systems may include wireless sensors, wearable monitors, or integrated monitoring devices in examination rooms.

Patient-Centered Design: Emphasis on patient-centered design principles to create a more welcoming and comfortable environment. This may involve use of digital displays to provide information and entertainment while patients wait.

Integration with Electronic Health Records (EHR): Seamless integration of triage and vitals data with electronic health records (EHR) systems to ensure continuity of care and facilitate information sharing among different healthcare providers and settings.



Integration of Tele-Medicine capabilities into the Emergency Department process, allowing patients to be remotely assessed by healthcare providers.



Implementation of advanced monitoring systems that provide real-time data on patients' vital signs.



Implementation of digital triage tools that use artificial intelligence (AI) algorithms to quickly assess patients' symptoms.



The Patient Experience

A Day in the Life

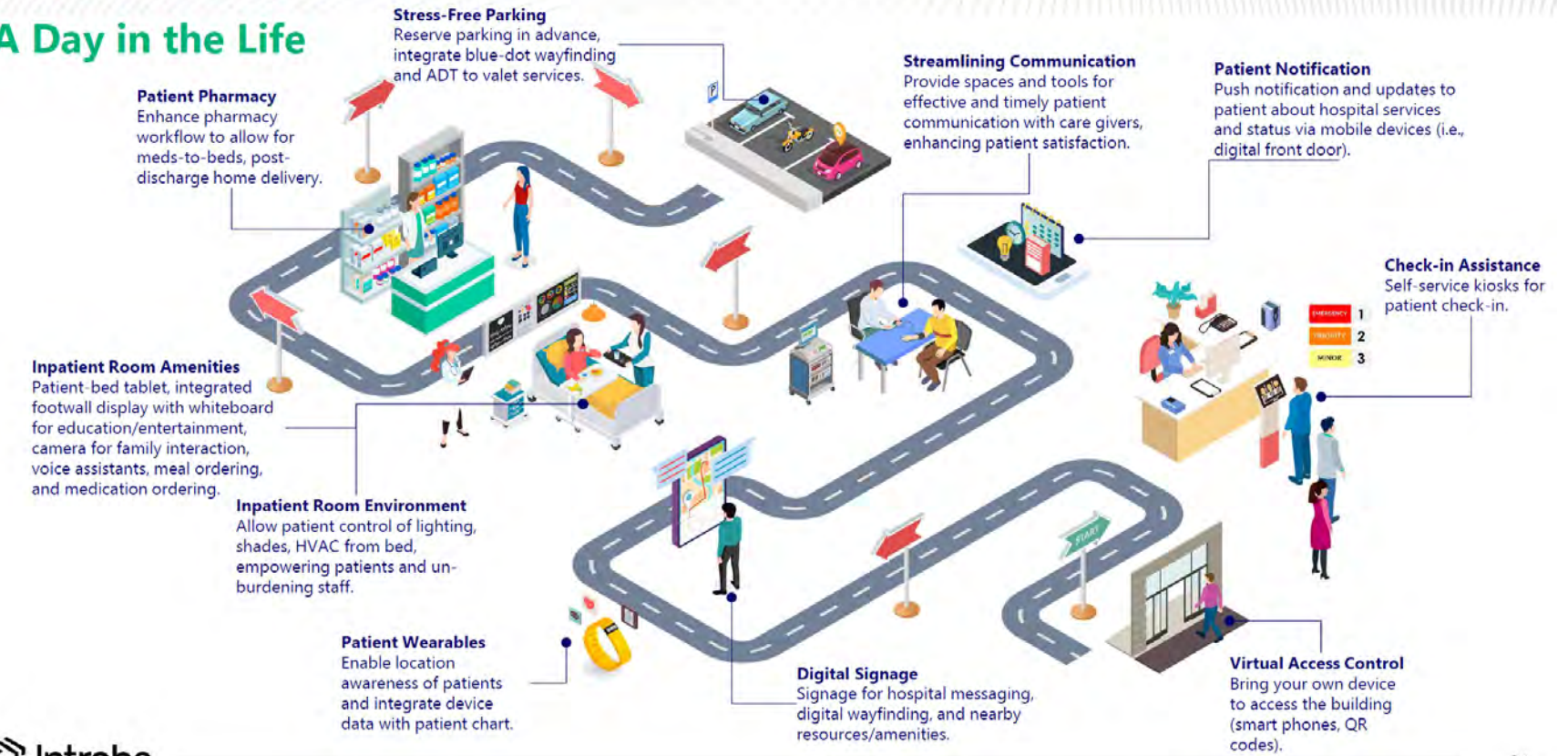


Image courtesy of Introba from a presentation on healthcare technology system services

the **CONCLUSION**

key TAKEAWAYS

Emergency department wait times are a significant challenge affecting both patients and healthcare providers. This document undertakes a thorough exploration of the factors contributing to prolonged wait times in emergency departments. Drawing insights from case studies, patient input, and healthcare professional perspectives, we aim to uncover opportunities for enhancing emergency department design and operations.

Our proposed model advances existing concepts while introducing innovative approaches to optimize the flow of emergency department waiting areas. Through the application of creative design strategies and the integration of technology, our goal is to streamline processes and elevate the overall waiting room experience for patients. Furthermore, we acknowledge the crucial role of supporting healthcare staff in delivering exceptional care by implementing solutions that enhance efficiency and alleviate stress.

In conclusion, addressing emergency department wait times necessitates a comprehensive strategy that considers the diverse factors impacting patient experiences and operational effectiveness. By reimagining the design and layout of emergency departments, we can cultivate environments that prioritize patient well-being and empower healthcare professionals to deliver exemplary care. Through collaborative endeavors and pioneering solutions, we endeavor to diminish wait times and enhance the overall emergency department experience for all stakeholders. This document serves as a starting point, with the aspiration that our insights and recommendations will inspire further exploration and development. We aim to stimulate critical thinking among stakeholders and provoke consideration of previously overlooked issues in the design of future emergency departments.



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*Images used in this document were created using Midjourney program

the TEAM

OUR STORY



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Embracing a diverse background and immersing myself in various cultures has profoundly enriched my life and career. Last year honored as one of healthcare design magazine's 2023 rising stars in healthcare design, is a testament to my six-year journey in the U.S., where my aspirations to advance my career in architecture evolved into a calling for healthcare planning and design. The challenges it brings only intensify my fulfillment, affirming my belief that purpose-driven work is the ultimate pursuit. Last year, during a visit to the emergency department that lasted for hours, my instinct as a medical planner kicked in, prompting me to find ways to improve the waiting experience. Collaborating with Sandy, we applied for and received Perkins&Will's mini grant innovation incubator program. Excited to share with you the labors of this work close to our hearts.



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As a technical coordinator and designer with Perkins&Will's Los Angeles studio, with over 12 years of experience in designing and developing healthcare and master planning projects and in delivering innovative solutions that support sustainable changes. I have developed extensive skills in construction administration, facilitation of OSHPD projects and delivering exemplary projects on time and schedule to the client. I appreciate the challenges posed by working on existing buildings and the opportunity they present to partner with project teams to generate creative solutions. Like many, I've experienced the anxiety of waiting for hours, either for myself or alongside loved ones, in the emergency department. This first-hand experience fuels my belief that through meticulous research and implementation of effective architectural practices, we can address and alleviate this pressing concern and improve the overall quality of care for patients in need.

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