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01

Care in the Time of Crisis:

Designing for Patients with Behavioral Health Needs in the Emergency Department

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Abstract

Behavioral health needs are increasing at an alarming rate with one in five adults experiencing a mental illness of varying acuity. Prior research shows that 68 percent of adults with behavioral health conditions also have chronic medical comorbidities.

However, current behavioral health services are plagued by access, payment, and provider gaps. The lack of care continuity results in a failure to engage patients before their needs become severe. As a result, patients with behavioral health needs often present in the Emergency Department for initial treatment. Given that one out of every eight emergency department visits is due to a behavioral health issue, inappropriate utilization of the emergency department is a serious concern. The unpredictable volume of behavioral health patients prevents timely triage, increases wait times, stretches physicians, and requires a higher level of immediate, specialized care that strains many emergency departments. Consequently, behavioral health patients are often placed in emergency department spaces that are not designed to treat them, which can be dangerous and demoralizing for both patients and staff.

Some providers have begun to dedicate specialized support models that guarantee immediate access to psychiatric care and connect patients with ongoing support which improves overall emergency department patient throughput resulting in decreased wait times and length of stay. It also reduces utilization in admissions and readmissions and reduces the total cost of care for behavioral health patients. This research aims to provide insights into the myriad factors influencing the need for psychiatric crisis services and how design can be leveraged to support human-centered care. The research documents expert interviews with clinicians and behavioral health designers; interventions that serve behavioral health patients and the associated outcomes in the function and flow of emergency department services; ultimately facilitating the provision of quality acute care for patients in crisis.

Keywords: *behavioral health, emergency department, acute care, utilization, care quality*

1.0 Introduction

Behavioral health encompasses people's psychological well-being and ability to function in everyday life. In this article, behavioral health is an umbrella term that includes conditions such as mental health disorders and substance use disorders. There is a growing body of evidence that links behavioral health to physical health.¹ Counselors, social workers, therapists, specialized nurses or nurse practitioners, psychologists, and psychiatrists

help manage patients' behavioral health needs. Treatment includes therapy, counseling, and medication.

Low-acuity behavioral health needs are the most common.¹ Patients with low-acuity behavioral health needs can function socially and professionally without ongoing support, but they benefit from early identification and prevention. Patients with

moderate-acuity behavioral health needs often have trouble functioning socially and professionally. They require low-intensity, ongoing support to improve functioning, facilitate self-management, and prevent symptom escalation. Patients with severe and persistent behavioral health needs require constant support to allow for semi-independent functioning.

Historically, behavioral health has been funded, structured, and researched separately from other clinical conditions. However, policymakers, payers, and health systems are increasingly recognizing that behavioral health is an essential part of physical health and population health. In recent years, there has been an increased focus on aligning behavioral health with other health services. Emergency departments are not equipped to assist those experiencing an exacerbation of serious mental illness.^{2,3} Jails and prisons have become de facto mental institutions where those suffering from severe mental illness are unlikely to receive the care and services they need.⁴ Improving behavioral health has the potential to significantly improve clinical outcomes and healthcare costs.

This article is intended to describe the need for dedicated facilities in which emergency services are rendered to stabilize behavioral health patients in crisis; provide design guidance for the creation of healing spaces beyond the requirements in the FGI Guidelines for Design and Construction documents for hospitals and outpatient facilities; and ultimately be a resource for architects and planners who intend to conduct further research on designing for patients with behavioral health needs. The narrative literature review covers the prevalence, utilization, access to appropriate services, the national suicide prevention and mental health crisis hotline, emergency departments, and the role of architects and planners.

1.1 Prevalence and Utilization

Behavioral health conditions are prevalent with 20 percent of the adult population living with a behavioral health disorder. Approximately 70 percent of patients with a behavioral health condition have medical comorbidity.² Additionally, “deaths of despair” (from alcohol, drugs, or suicide) have more than doubled since 1999. Despite the prevalence of behavioral health conditions, they often go untreated. Notably,

57 percent of adults with behavioral health conditions did not receive treatment. A consequence of the lack of treatment is the “deaths of despair” that have been associated with substance-use disorders. In 2018, 182,000 adults died from alcohol and drug-related causes.² Behavioral health needs are not limited to the adult population alone. Simultaneously, there is an increasing trend of behavioral health cases in the adolescent population with 13 percent of the adolescent population reporting a major depressive episode. Concurrently, research shows that there has been a 60 percent increase in adolescent suicide rates in 2018, increasing from a stable rate between 2000-2007.^{4,5}

Behavioral health conditions are some of the costliest comorbidities due to inappropriate care utilization and poor outcomes across conditions.³ Prior research shows that 68 percent of adults with behavioral health conditions also have chronic medical comorbidities. Current approaches to addressing behavioral health needs are often inadequate and fragmented. These approaches lead to poor outcomes. In 2017 alone, deaths related to suicide, alcohol, and drugs reached the highest rate since the Centers for Disease Control and Prevention (CDC) began collecting this data in 1999.

Treating patients with behavioral health diagnoses cost about \$900 more per month than patients without such diagnoses. The cost differential increased by 27 percent from 2014 to 2017. Spending on behavioral health services has reached roughly \$280 billion in 2020—5.5 percent of total health care spending. With the ongoing shift to value-based reimbursements, managing the health of complex behavioral health (behavioral health) patients is crucial to reducing expensive over-utilization.

1.2 Access to Appropriate Services

Current behavioral health services are plagued by access, payment gaps, and provider shortages that continue to limit access to reliable treatment. Provider shortages, stigma, and limited reimbursement create significant barriers to timely, cost-effective behavioral health care. A 2016 report by the Health Resources and Services Administration (HRSA) shows a 20 percent decrease in the supply of adult psychiatrists from 33,650 in 2017 to 27,000 by 2030.⁸ The report indicated significant shortages of psychiatrists, psychologists, and social workers, school counselors, and marriage and

family therapists. The magnitude of provider shortages, however, is not the only issue when considering access to behavioral health services. Non-uniform distribution is the other major concern, as certain areas of the country have few or no behavioral health providers available.⁹ Access to mental health services is especially critical in areas besieged by poverty.¹⁰

The lack of care continuity results in failure to engage patients before their needs become severe. Patients with a behavioral health need often present in the emergency department for initial treatment. Most notably, many providers struggle to address surging psychiatric emergency department visits nationwide. In recent years, behavioral health-related emergency department visits have increased by 44 percent, but only 17 percent of emergency department physicians say they have access to on-call mental health professionals.^{3,5} Due to increased rates of mental illness and the fragmentation of mental health resources across U.S. communities, the number of patients requiring behavioral health treatment who present to U.S. emergency departments is on the rise.^{5,6} Given that one out of every eight emergency department visits is due to a behavioral health issue, inappropriate utilization of the emergency department is a serious concern for many providers.³ Rates of emergency department visits increased from approximately 14.1 emergency department visits to 20 emergency department visits per 1,000 population from 2006 to 2014.³ During this same period, the rate of mental health and substance abuse-related emergency department visits increased by 44 percent.⁷ These visits are three times longer than those of patients with

nonpsychiatric needs and significantly more costly. Many emergency departments are too loud, bright, and busy to help patients in a behavioral health crisis stabilize. To address this, health systems are investing in a variety of specialized emergency services, including telepsychiatry, holding units, emergency department co-located crisis services, and behavioral health-specific emergency units.

1.3 The National Suicide Prevention and Mental Health Crisis Hotline

With the unpredictable volume of behavioral health cases flooding the healthcare system, the Senate and House passed the National Suicide Hotline Designation Act which required the Federal Communications Commission to designate 988 as the new phone number for a national suicide-prevention and mental health crisis hotline.⁴

The new 988 mental health crisis line went live on July 16th, 2022. Federal health officials estimate may receive up to 12 million calls and texts in its first year alone.⁴ Prior research has projected that 80 percent of this call volume can be resolved over the phone without dispatching mobile crisis teams, law enforcement, or emergency medical services. However, the remaining 20 percent represents a patient population that requires extremely high acuity care.^{4,5}

Even if the hotline is successful in shifting over-reliance on law enforcement, it will overwhelm health systems, particularly Emergency Departments. With the launch

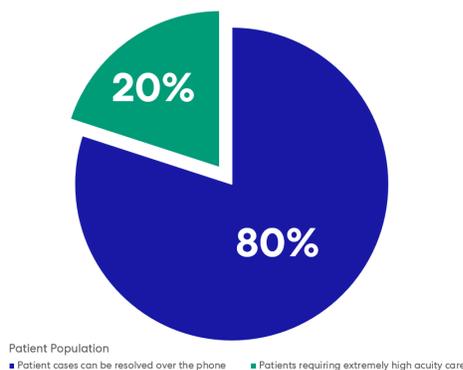


Figure 1: Patient population requiring varying acuity care.^{4,5}

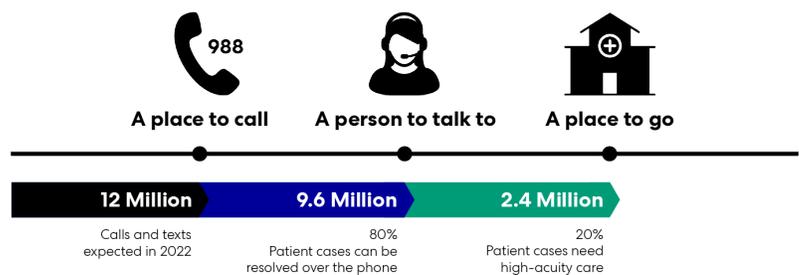


Figure 2: Crisis care continuum- Alignment of crisis services toward a common goal of optimal care for individuals in behavioral health crisis.^{4,5,11}

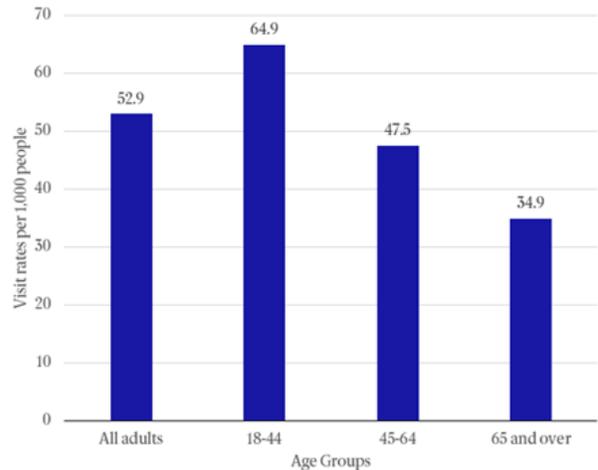
of the crisis line, experts argue that demand for acute behavioral health services will outstrip supply as there are not enough beds at appropriate levels of care to respond to this surge in demand. Gaps in behavioral health services negatively impact clinical outcomes, health care utilization, and total cost of care. For many advocates and leaders, the hotline launch serves as an inflection point to reimagine the crisis care continuum starting with the front door to safer, better crisis services.

The current approaches to addressing behavioral health needs are often inadequate and fragmented which leads to poor outcomes. Given the limited availability of psychiatric beds, emergency department staff often “board” patients presenting in acute crisis, who must then wait for appropriate care in a hectic environment that can exacerbate their symptoms. As a result, patients with psychiatric emergencies wait three times longer in the emergency department than non-psychiatric patients, costing an additional \$2,200 per visit and experiencing worse clinical outcomes.

Furthermore, between 1998 and 2013, the total number of psychiatric beds in the United States decreased from 34 to 22 beds per 100,000 population, a 35 percent reduction from an already low base rate of psychiatric beds per population. This reduction in the number of psychiatric beds led to higher bed occupancy rates, significantly lower average inpatient length of stay, and prolonged emergency department waiting times for patients with psychiatric illness who need to be hospitalized, all of which have contributed to an increased threshold for admission and decreased threshold for discharge for patients at risk of suicide.

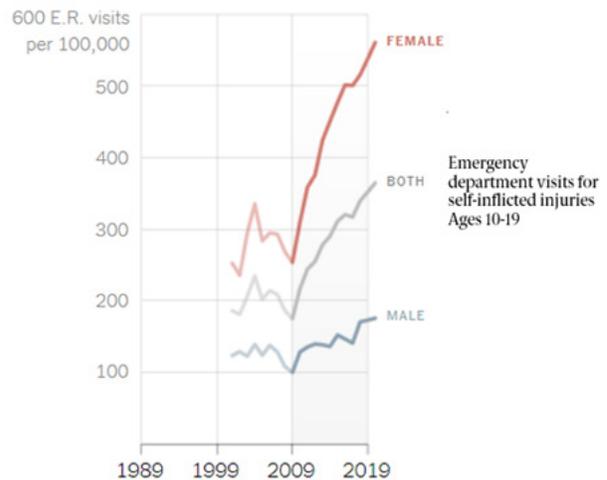
1.4 Emergency Departments

Today in the United States, nearly 50 percent of all hospital care begins in the emergency department, and, over the last 20 years, the emergency department patient volume has increased by 23 percent as many Americans use the emergency department to access primary care services.¹² As a result, the emergency department has become the primary front door for health care; receiving more than 200 visits a minute.¹³ Additionally, patient experience and perception of care received at the emergency department impact a health system’s brand and ultimately its Net Promoter Score.¹⁴



Source: National Center for Health Statistics, National Hospital Ambulatory Medical Care Survey, 2017-2019

Figure 3: Emergency Departments visit rates for adults with mental health disorders, by age group: U.S. 2017-2019.



Source: Centers for Disease Control and Prevention

Figure 4: Emergency Departments visits for self-harm by children and adolescents rose sharply over the last decade, particularly among young women.

In the United States, emergency departments are required to stabilize all patients under the Emergency Medical Treatment & Labor Act (EMTALA), regardless of their ability to pay, though they can be billed for those services afterward.¹⁵ When there is inadequate access to primary care or preventive care, patients may need to rely on the emergency department. Even when an

individual has a regular source of care, if they are not open at night, on weekends, or have long waits for an appointment, they may not be accessible when they are needed. Several previous analyses have indicated that access and convenience play an important role in the choice to seek care in an emergency department.¹⁶ Individuals may also not have a regular primary care provider, particularly if they are uninsured or newly insured.¹⁷ Other studies have shown that a significant number of patients seeking care in the emergency department are referred there by their primary care physician, in some cases because the regular provider does not have available appointments.^{18,19}

A challenge in the emergency department is the potential for crowding, which can have several adverse consequences, including longer wait times, and worse health outcomes including higher mortality for patients.^{20,21} Crowding and wait times are not just a function of the volume of patients, but also of how quickly they are assessed and moved through. Behavioral health patients, for instance, can be slower and more difficult to process because of a shortage of behavioral health beds.²¹ The unpredictable volume of behavioral health patients prevents timely triage, increases wait times, stretches physicians thin, and often requires a higher level of immediate, specialized care that strains many emergency departments. As a result, behavioral health patients are often warehoused in emergency department spaces that are not designed to treat them, which can be dangerous and demoralizing for both patients and staff.²¹

1.5 The Role of Architects and Planners

The new focus on population health has changed the market.⁵ As health systems take on the risk of caring for large populations, managing the health of complex behavioral health patients is crucial to reducing expensive over-utilization.^{22,23} As the rising prevalence and changing economics in behavioral health lead to a surge in new builds and renovations, architects and planners in tandem with providers can truly support patients. Since traditional emergency departments do not have sufficient resources to treat patients with

acute behavioral health concerns, some providers have dedicated specialized support models intending to guarantee immediate access to psychiatric care and connect patients with ongoing support. Dedicating urgent psychiatric services improves overall emergency department patient throughput (e.g., decreased wait times, length of stay), reduces utilization (e.g., admissions and readmissions), and reduces the total cost of care for behavioral health patients.

2.0 Methodology

2.1 Literature Review

A narrative review of the literature was conducted to understand current trends in mental and behavioral crisis care. The review included a total of over 60 sources. The keywords used in the search included:

1. Emergency Severity Index (ESI)
2. Psychiatric boarding
3. Behavioral Health
4. Substance-use disorders (SUDs)
5. Psychiatric stabilization
6. EMPATH units
7. Emergency department utilization
8. Environmental Safety Assessment Risk

Search databases included Google Scholar, PubMed, American Psychology Association, Research Gate, and multiple academic and professional journals.

2.2 Expert Interviews

Ten interviews were conducted with industry experts ranging from care providers of psychiatric and emergency medicine (n=6), architects and planners specializing in the planning and design of mental and behavioral healthcare facilities (n=4), and anonymized patient accounts (n=3). These semi-structured interviews included long-form qualitative descriptions of the constructs illustrated in Figures 5 and 6.

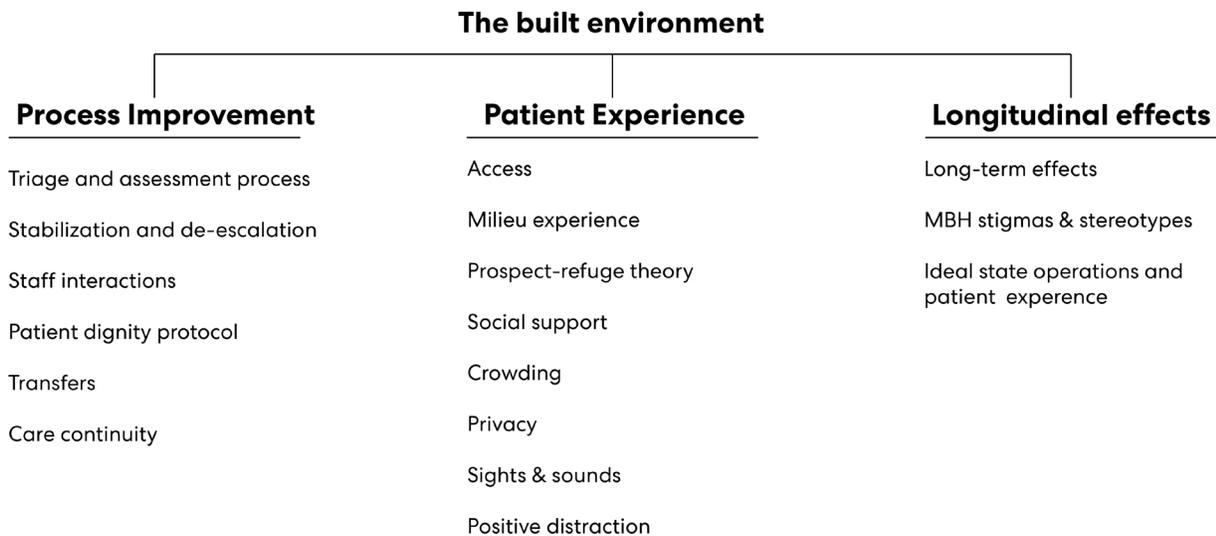


Figure 5: Qualitative interview constructs—the relationship between the built environment and psychiatric care.

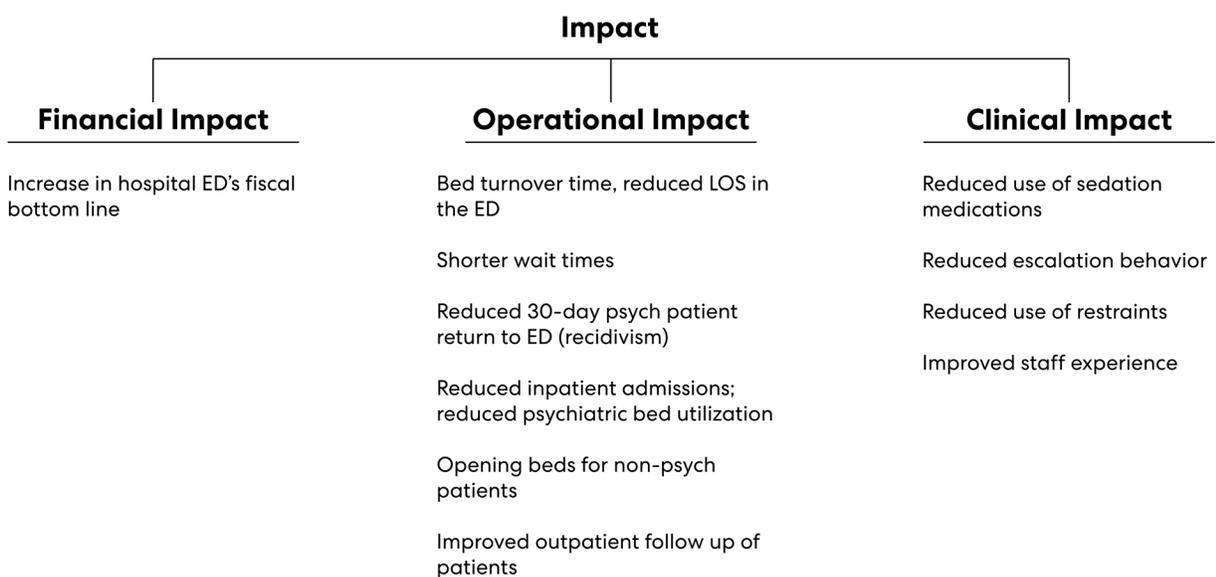


Figure 6: Understanding the outcomes—the financial, operational, and clinical impact of interventions.

2.3 Case Studies

Four crisis care facilities were selected based on their unique crisis care design strategies. The facilities were analyzed to demonstrate the range of design options based on the assumed patient population and operational strategy which included understanding patient flows and the triage process for psychiatric crisis patients. The author also had the opportunity to attend a user group meeting for the expansion of the Northside Hospital Gwinnett project which included new behavioral health pods. The facilities selected for case studies include:

1. University of Virginia University Hospital Expansion, Charlottesville, NC
2. Northside Hospital Gwinnett Emergency Department Expansion, Lawrenceville, GA
3. Duke Health Regional Hospital Behavioral Health Expansion and Emergency Department, Durham, NC
4. Emergency Psychiatric Assessment, Treatment, And Healing (EmPATH) Unit

3.0 Results

The results from the literature review, expert interviews, and case studies can be broadly classified under deinstitutionalization of psychiatric services; psychiatric boarding; balancing privacy and safety; theory of supportive design, and the business case for investing in the behavioral health service line.

3.1 Deinstitutionalization of Psychiatric Services

Over the past 40 years, services for psychiatric patients have become increasingly deinstitutionalized, shifting away from inpatient facilities. As a result, inpatient beds have dwindled to less than 50,000 nationwide, forcing patients to seek other avenues for treatment, including outpatient facilities, outpatient medical management groups, and community resources.^{25,26} There has been a 35 percent decrease in the number of psychiatric beds between 1998–2013 arising from the deinstitutionalization of psychiatry.^{27,28} Unfortunately, those resources have also become increasingly constrained by widespread budget cuts, leaving patients with the health care system's last remaining safety net—the emergency department.²⁷

3.2 Psychiatric Boarding

Psychiatric boarding is the holding of a behavioral health patient in the emergency department, while an inpatient bed or other appropriate placement is sought.²⁸ Interviewees (n=6) reiterated that the effect of psychiatric boarding on patient health, hospital finances, and staff resources have long been acknowledged, yet the problem persists. This is fueled by the drastic decrease in inpatient psychiatric beds by 35 percent between 1998 and 2013, the increase in opioid use disorder cases, and inadequate community-based alternatives.^{27,28}

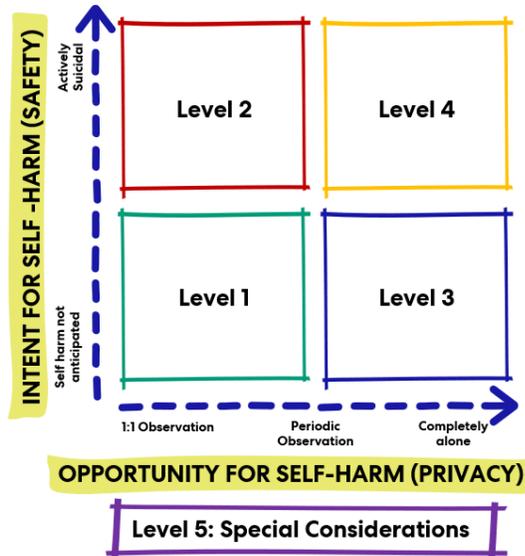
In response, the Substance Abuse and Mental Health Service Administration (SAMHSA) has issued several documents outlining the appropriate use and best practices for reducing behavioral health treatment in emergency departments.²⁸ Among these is the February 2020 “National Guidelines for Behavioral Health Crisis Care,” a best practices toolkit for providers, communities, and the public.²⁸ The toolkit has been combined with related papers contributed by industry addressing key issues relevant to crisis services, homelessness, technology advances, substance use, legal issues impacting crisis services, financing crisis care, diverse populations, children and adolescents, rural and frontier areas, and the role of law enforcement.^{29,30,31,32}

3.3 Balancing Privacy and Safety

The New York University Emergency Department Visit Severity algorithm separates visits into non-emergent, emergency but primary care treatable, emergent emergency department care needed but preventable, and emergency care needed and not preventable/avoidable. Interviewees (n=5) stated that the caveat with this algorithm is that injuries and mental health/SUD cases are their own category and are not assessed to their level of urgency or ability to be avoided.²⁴

A recurring theme in the literature review and expert interviews was the need for security while also promoting safety. Undoubtedly, interviewees (n=4) suggest that there is tension between ensuring security and promoting a therapeutic environment and sometimes facility planners need to prioritize one over the other. Interviewees (n=3) also suggested the need for planners to understand the environmental safety assessment risk framework developed in the behavioral health

design guide (Figure 7). The case studies are examples of innovative facilities that employ one or more design characteristics to best navigate the tension in emergency and extended stay behavioral health settings.^{24,16}



Source: Adapted from Hunt, J. M., Sine, D. M., DrBE, C. S. P., & ARM, C. (2018). Behavioral health design guide.

Figure 7: Environmental Safety Assessment Risk.

3.4 Theory of Supportive Design

Scientific research pioneered by Ulrich et al. suggests that healthcare environments support coping with stress and promote wellness by providing space flexibility; access to nature; calming interior design elements; positive distractions and clear lines of sight. To achieve safety, privacy and comfort, designers are implementing these five core tenets of healing design in a new era of behavioral health environments.^{33,34}

1. Space flexibility enables facilities like emergency departments to accommodate large volumes of behavioral health patients, but also flex to meet the needs of non-behavioral health patients.³⁵
2. Access to nature and/or natural light creates a relaxing atmosphere to help individuals de-escalate.

3. Calming interior design, including color palette, wall decorations, and furniture, contributes to the therapeutic environment.
4. Positive distractions, such as music, televisions, arts and crafts, and exercise areas supplant patients' anxieties.
5. Clear lines of sight from nurse stations are essential to preserving the security and safety of patients and staff.³⁶

3.5 Establishing the Business Case

In the interviews, clinical experts (n=5) agree that emergency departments, inpatient psychiatric units, local law enforcement, and community-based services have limited resources and competing priorities. Despite the high prevalence of acute needs, interviewees (n=4) suggested that reimbursement for behavioral health services is inconsistent across payers and sites of care. After assessing behavioral health access in their market, health systems often start where they experience the highest patient demand for initial treatment: primary care and the emergency department.^{37,38,39} The business case for targeted investments in behavioral health facilities can be broadly categorized under the financial impact, operational impact, and clinical impact.^{40,41}

3.5.1 Financial Impact

Patients with a behavioral health diagnosis incur 2-3 times more cost than those patients without a diagnosis. Within the emergency department, behavioral health patients often require extended specialty care. Each behavioral health visit to the emergency department prevents 2.2-bed turnovers and results in a loss of \$2,265.²⁵

3.5.2 Operational Impact

Emergency department staff are often ill-equipped to address patients' behavioral health needs, increasing length of stay by 38 percent and slowing throughput. A patient with a psychiatric emergency waits more than three times longer than a patient with non-psychiatric needs, blocking at least two patients from receiving more timely care.^{24,16}

3.5.3 Clinical Impact

Adults suffering from mental health conditions are more likely to have medical comorbidity and often experience worse clinical outcomes due to poor self-management.^{31,20} For example, depression is consistently associated with an increased risk of poor glycemic control, complications, and care utilization for diabetic patients.²⁰

3.6 Case Studies

3.6.1 University of Virginia University Hospital Expansion, Charlottesville, VA

University of Virginia Health System is a large academic system in Charlottesville, Virginia. It is a designated Level I Trauma Center with a high admission rate of 25 percent. The Emergency Department in 2013 had 41 exam rooms, two trauma rooms and there were no dedicated behavioral health rooms. Each time a behavioral health patient was seen in the Emergency Department, the staff had to remove all equipment, supplies, or chairs in the rooms to provide a safe environment. Designed to address critical medical and behavioral health needs for upwards of over 70,000 patients annually, the new emergency department was designed and nearly doubled the health system's prior emergency room capacity, significantly reducing patient wait times. The prior facility's Emergency Department beds frequently reached full capacity and these patients had to be treated on stretchers in hallways. It was important to the facility to provide for patient privacy, safety, and dignity.

One of the key features of the design was flexibility/adaptability. This allows the Emergency Department to immediately adjust to variations in workload and patient types such as adults, adolescents, and children.

A dedicated pediatric check-in and waiting room welcome the health systems' youngest patients with bright yellow couches, child-sized seating, a playfully shaped ceiling light, and views of the light-filled atrium. An interactive wall depicting a topographical map of the Shenandoah Valley invites children to play with built-in animal figures that can be slid along tracks. Also, among the new spaces in the new emergency department are eight secure behavioral health rooms—separate from the hustle and bustle of the emergency department—that provide a safe, calming environment for patients in acute mental health distress. Bright clerestory windows in these rooms usher in natural light, creating a soothing effect.

The large team workstation in the behavioral health module allows for collaboration between staff and providers. Being an academic center, the workstations required enough space for rounding with several students. The medications, supplies, and equipment are maintained in the module to increase efficiencies and decrease walking distances. Three of the rooms can be cordoned off from the rest of the behavioral module so they can flex if needed with the adjacent emergent Emergency Department module rooms or be used for pediatric behavioral health patients separated from the adult population. Anti-ligature-resistant hardware is used throughout the module.



Figure 8: Emergency department, University of Virginia University Hospital Expansion, Charlottesville, VA, Perkins&Will.

Clinical staff at University of Virginia Health System served as expert interviewees. The team approached the project with a “build and they will come” approach, which ultimately led to other hospitals and providers sending their patients to the new behavioral health unit. As a result, the emergency department is absorbing greater community needs and will need to find flexible options to expand the behavioral health unit. The current behavioral health unit is fully occupied and is under-resourced due to a lack of supply due to growing demand. As a result, behavioral health patients have a longer length of stay.

The unit staff prefers the separation of their team station from the corridor. The glass enclosure provides visibility and controls sound and a level of safety. The unit staff prefers an intercom system inside the behavioral health team station so they can better understand everything being said in the hallway, and interviewees (n=1) have indicated that the space is good for this type of interaction. There is a lack of consult rooms, specifically, a family consult room. This room was on the conceptual drawings but was ultimately removed as a security measure. Currently, a regional staff member works with patients with legal orders in this space. The staff has positive feedback on the large bathrooms in the behavioral health area. Earlier, they did not have a patient shower in this space but were added to the project program prior to the unit becoming operational.

The behavioral health unit is an open unit due to state regulations. However, there are different rules for a locked unit. Patients stay in the room and patient observers sit outside the room, in the corridor. Within the behavioral health unit, the patient room doors are left unlocked. Staff indicated recommendations for acoustic treatment of the behavioral health module to reduce noise in the patient areas. The patient observers sit directly outside the patient rooms in the corridors which have poor acoustical quality.

3.6.2 Northside Hospital Gwinnett Emergency Department Expansion, Lawrenceville, GA

Northside Hospital Gwinnett Emergency Department Expansion was conceived with the idea that having separate areas for behavioral health patients is the first step to accommodating behavioral health needs in its new 5,000-square-foot “behavioral health holding

unit” in the emergency department. The unit, designed by Perkins&Will and JE Dunn Construction is attached to the emergency department via a secure hallway and can accommodate up to twelve patients at a time.

Prior to the renovation of the new area, the behavioral health patients were treated in a large room that could accommodate three stretchers and three recliners. Due to privacy issues, they did not like to hold more than three patients at a time in this room. They also tried to keep only same-sex patients in the room, and the room was not a locked unit. A high-risk and suicidal or homicidal patient was not placed in this area but retained in the treatment rooms in the main Emergency Department. The closest bathroom for this space were in the main Emergency Department. The closest shower room for these patients was on the second floor. The camera within the room was monitored by the tech in the adjacent trauma nursing station. Patients stayed in this area for several hours, up to several days awaiting placement and transfer to other facilities. The mental health evaluators had to utilize a desk in another area of the Emergency Department to do their paperwork because there was no space allocated for them near the behavioral health room. These patients were considered low-risk, but there were concerns about possible elopement from the area. Security was distant from this room and visibility was limited. The area for these patients needed to be updated for these patients’ safety.

Each patient bay is outfitted with positive distractions, such as a TV covered with unbreakable material and a window. Clinical interviewees (n=3) reiterate that space flexibility helps even small facilities achieve separation through swing rooms. A strategy to meet behavioral health patients’ needs in the emergency department was the provision of positive distractions within separate behavioral health areas. The holding unit’s separation from the emergency department, combined with its incorporation of positive distractions, helps patients de-escalate more quickly while also increasing the throughput of non-behavioral health patients in the main emergency department. By embracing positive distractions, the unit has balanced the security/comfort tension in a way that benefits both behavioral health and non-behavioral health patients.



Figure 9: Emergency department plan, Northside Hospital Gwinnett Emergency Department Expansion, Lawrenceville, GA, Perkins&Will.


Glass partition
ensures staff
safety & privacy


Calming color
palette reduces
anxiety




Windows provide
access to nature
and natural light


Clear lines of
sight from nurse's
station ensure
security

Figure 10: The nurse's station in the behavioral health holding unit, Northside Hospital Gwinnett Emergency Department Expansion, Lawrenceville, GA, Perkins&Will.


Curved edges to
promote safety
and comfort


TVs promote
positive
distraction




Windows provide
access to nature
and natural light


Clear lines of
sight from nurse's
station ensure
security

Figure 11: Treatment bays for low-risk patients in the behavioral health holding unit, Northside Hospital Gwinnett Emergency Department Expansion, Lawrenceville, GA, Perkins&Will.



Figure 12: Patient nooks (left), treatment bays (right), and de-escalation rooms (further right) in the behavioral health holding unit, Northside Hospital Gwinnett Emergency Department Expansion, Lawrenceville, GA, Perkins&Will.

3.6.3 Duke Health Regional Hospital Behavioral Health Expansion and Emergency Department, Durham, NC

Durham Regional Hospital, now Duke Health Regional Hospital, for years served many patients through the Emergency Department. They were continuously trying to meet the needs of patients experiencing behavioral health issues. The emergency department was initially designed to accommodate between 25,000 to 35,000 patients per year. The number of high acuity cases in the emergency department has now increased to around 64,000 per year. An expert interviewee (n=1) stated that the increase in behavioral health cases led to the expansion of the current emergency department. The Duke Behavioral Health Center North Durham at Duke Regional Hospital is the realization of their vision. Changes in the healthcare market include more patient-centered care that involves the family and community.

Within the expanded Emergency Department there is a secured unit of private rooms to specifically meet the needs of behavioral health patients. The new Behavioral Health Center consolidated Duke University Hospital's and Duke Regional hospital's behavioral health inpatient units into one private unit. They also relocated their clinic, electroconvulsive therapy (ECT), and outpatient services to this facility. The design considerations included enhancing efficiency through adjacencies and enabling a safe, healing environment for high-risk and low-risk patients. The facility incorporated state-of-the-art care using best practices for psychiatric treatment and created outdoor courtyards, group therapy space,

and support groups for the community. The Behavioral Health Emergency Department patients have secure outdoor access. Flex rooms allow for use by both patients with behavioral health needs and non-behavioral health needs. Patients that are seen in the Emergency Department can be referred to outpatient Behavioral Health services or transferred to inpatient behavioral health services as needed. There are 42 private inpatient rooms with windows, 30 rooms for outpatient visits, a gym, a multipurpose room, and three secure courtyards for recreation and meditation.

The space has been designed for operational efficiency with direct feedback from the space's users. The milieu is located closer to the emergency department's treatment rooms, because of which staff members no longer make the approximately 300-foot walk to and from the temporary waiting area they've been using since construction began. The waiting area gives the security team more space to check in patients and visitors and gives better visibility to the triage nurses who give patients initial evaluations. Instead of central spots within the emergency department where medications or clean utilities are stored, they are stored in multiple medication rooms, nourishment stations, and clean holds scattered throughout the space. This drastically improves flow by reducing the number of steps for the team members who make frequent trips to these spaces during their shifts.

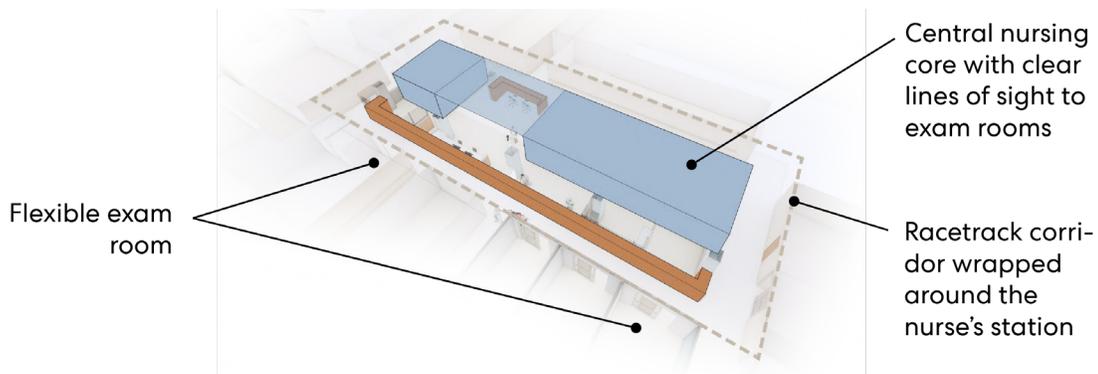


Figure 13: The emergency department nurse's station conceptual diagram, Duke Health Regional Hospital Behavioral Health Expansion and Emergency Department, Durham, NC, Perkins&Will.



Figure 14: The nurse's station, Duke Health Regional Hospital Behavioral Health Expansion and Emergency Department, Durham, NC, Perkins&Will.

3.6.4 Emergency Psychiatric Assessment, Treatment, and Healing (EmPATH) Unit

To improve care for patients in the emergency department and hospital operations, several models have been implemented across the country to provide more focused, immediate care for mental health patients and to reduce the need for inpatient treatment. Past research has shown a decrease in psychiatric admissions with the implementation of a variety of psychiatric emergency services models.⁴² Other outcomes that have shown improvement are emergency department boarding times and a 70 percent reduction in length of stay (LOS) from 16.2 hours to 4.9 hours.^{43,44}

Much of the problem is due to a mismatch between patient demand and health care supply. The demand for emergency psychiatric care is increasing, yet the supply

is not enough.^{31,33} Hence, many of the interventions to address this problem focus on one or both variables. The Emergency Psychiatric Assessment, Treatment, and Healing (EmPATH) unit was developed to accomplish several goals, primarily to increase the supply of mental health care and to offload the demand in the Emergency Department. Specifically, it was intended for patients with acute mental health needs to receive more immediate and focused care and, when possible, avoid hospitalization. In the past, patients too unstable for discharge from the Emergency Department waited days for an available inpatient psychiatry bed and, during this boarding period, did not receive the needed attention or treatment.²⁵ The EmPATH unit aims to decrease the time, space, and monetary burdens on the Emergency Department and to preserve the limited inpatient psychiatry beds for patients who truly need

a higher level of care. Most notably, the EmPATH unit was able to demonstrate a 25 percent reduction in the 30-day psychiatric patient recidivism to the emergency department; a 60 percent increase in the outpatient follow-up of patients from 39.4 percent to 63.2 percent; a 60 percent reduction in inpatient psychiatric admissions and a total of \$861,000 added to the hospital's bottom line by relocating psychiatric patients which led to increased beds for non-psychiatric patients.^{43,44}

3.7 Patient Vignettes

A detailed review of the literature on policies that shaped the current behavioral health crisis shows that lack of funding, insurance coverage, provider shortages, and stigma have led to the present state of crisis care where patients languish in emergency departments for days at a stretch.⁴⁵ In addition to overwhelming healthcare

systems, this experience can be dehumanizing for the patient experiencing the symptoms.

3.8 Patient Experience Mapping

Based on the qualitative interviews with anonymous behavioral health patients (n=3), a patient experience map with touchpoints that included gain points and pain points across three stages—pre-arrival, triage, and and boarding was charted as shown in Figure 15.

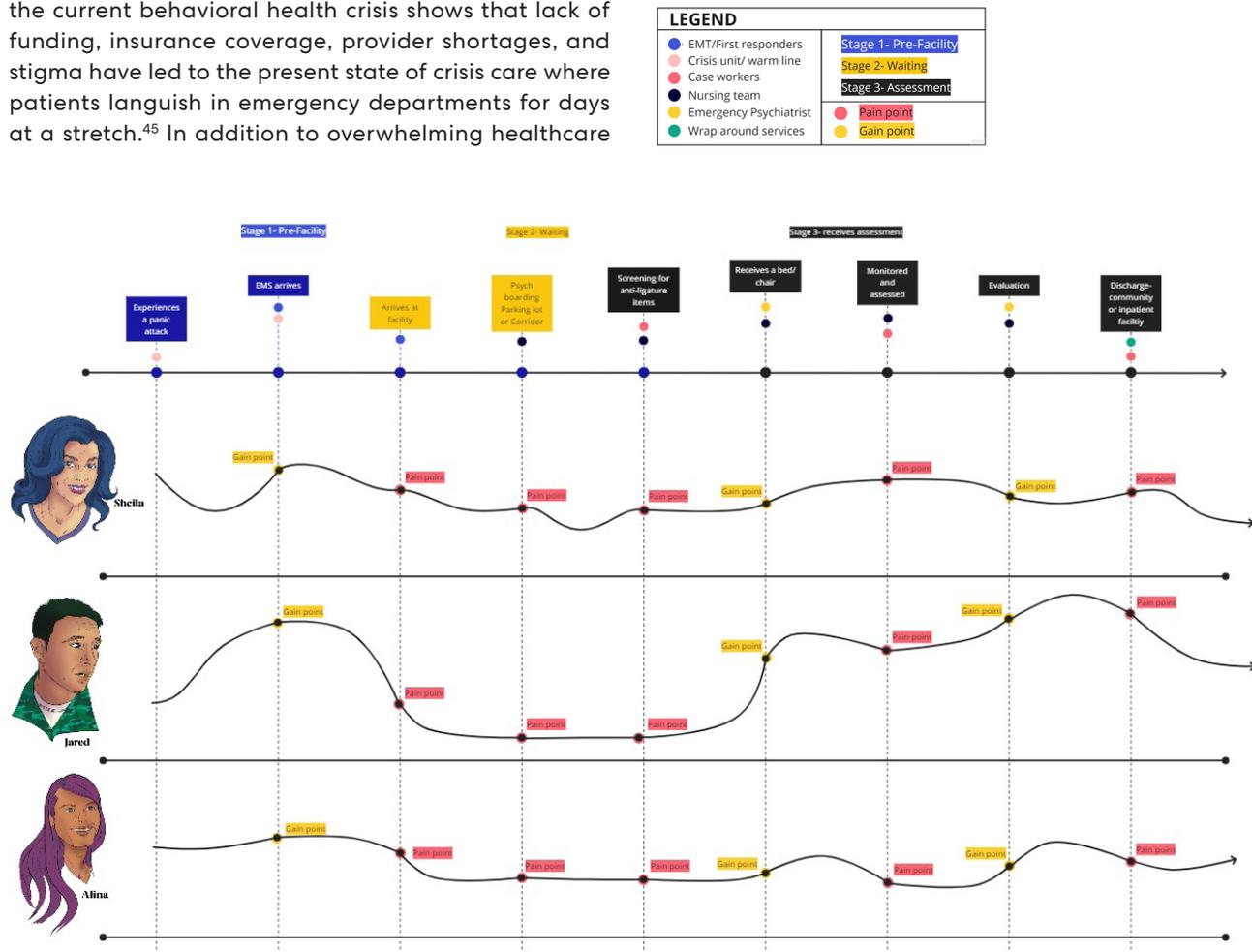


Figure 15: Mapping the behavioral health patient experience through the Emergency Department.

4.0 Discussion

Adequate behavioral health patient care in emergency department settings has been a challenge, but designers and facility planners have found innovative ways to balance the security/comfort tension, primarily through space flexibility, positive distractions, and calming interior design. Patients respond best to treatment when they feel at home, and facility planners and designers can potentially create a comforting environment. Cold, institutional wards focusing only on security leave behavioral health patients feeling anxious and stigmatized.^{45,46}

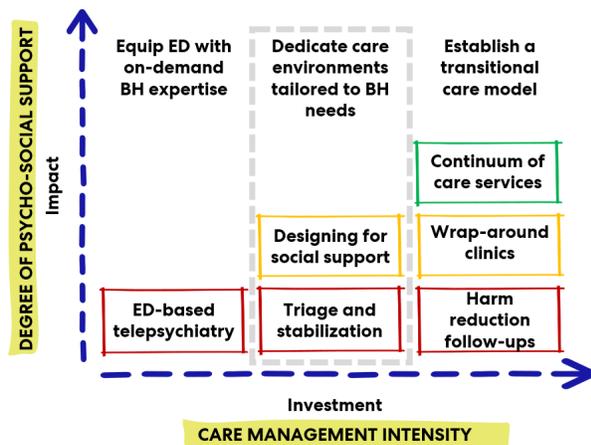


Figure 16: Impact vs. Investment of interventions for behavioral health quality improvement in the emergency department.

4.1 Design Recommendations

The following design recommendations (see Table 1) have been developed based on the barriers to optimal behavioral health care as expressed by the interviewees (n=13).

Table 1: Barriers to optimal behavioral health and associated design recommendations.

BARRIERS TO OPTIMAL BEHAVIORAL HEALTH CARE	DESIGN STRATEGIES
Space constraints limit behavioral health-specific room construction	Turn one or more patient rooms into swing rooms to flex to the needs of the care-seeking population
Emergency department spaces are constricting and chaotic	Incorporate windows, murals, or posters to provide patients with access to nature and natural light
Non-behavioral health patients feel uncomfortable in behavioral health-outfitted rooms	Use calming interior design to create behavioral health rooms that are as comfortable for all patients as possible
Emergency department spaces exacerbate behavioral health conditions	Design a separate space for behavioral health patients with positive distractions to promote self-de-escalation
Traditional emergency department rooms are safety hazards and make staff supervision difficult	Establish clear lines of sight with an open nurse station

The following design recommendations center on the core tenets of healing design derived from Ulrich's theory of supportive design.

4.1.1 Calming Interior Environments

Interior Design choices shift the emphasis of space from security to comfort, without sacrificing safety. Soft color palettes, comfortable furniture, biophilic wall decorations, and large open group spaces promote healing. Incorporating elements of nature is also beneficial, either through indestructible murals or secure healing gardens. Large windows with minimal or no window treatments provide natural light and minimize dark corners.

4.1.2 Positive Distractions

Key features of behavioral health treatment and recovery are positive distractions ranging from a digital fish tank to chalkboard-painted walls to gyms that can help patients reconnect to life outside the facility. For facilities with available space, dedicated rooms for de-escalation can be extremely therapeutic. Facilities that do not have the space or the patient volumes to dedicate an entire room for de-escalation, can consider creating flexible spaces in communal areas that contain positive distractions.

4.1.3 Designing for Safety

Ensuring the safety of the care environment by offering patients who board for longer than 24 hours, and their caretakers, access to personal care and hygiene supplies. An ideal emergency department provides access to spaces showering and private spaces to address other activities of daily living (ADLs); access to clean hospital gowns/scrubs; access to a safe and private sleeping space with a bed or adapted sleeping lounge chair, clean sheets, blankets, and pillows. In addition to providing a safe environment to the patient, the emergency department must also provide provisions for the caretaker(s) to charge their phones and other devices safely and appropriately. Table 2 provides examples of various design strategies for making physical design and operational decisions that can be identified during the risk assessment process.

Table 2: Strategies for safety and security.

GOAL	INTENT	DESIGN STRATEGIES
Staff and visitor identification	Identify authorized individuals in the unit	<ol style="list-style-type: none"> 1. Employee badges 2. Visitor management software
Controlled access	Permit only authorized individuals in the unit	<ol style="list-style-type: none"> 1. Electronic access control systems 2. Secure sally port entry and exit 3. Buffer zones 4. Time-delayed egress 5. Designated visiting hours
Perimeter detection	Prevent unauthorized or unwanted intrusions to the unit.	<ol style="list-style-type: none"> 1. Perimeter detection alarms (e.g., sensors on doors and windows, surveillance cameras) 2. Adequate interior and exterior lighting 3. Monitored radio frequency for devices worn by patients
Reduced risk for patient suicide	Reduce safety risks inherent in the unit's patient population, including patient elopement	<ol style="list-style-type: none"> 1. Behavioral and mental health risk assessment to identify and mitigate features that could be used to attempt suicide 2. Training of staff caring for at-risk patients 3. Assignment of patient self-harm risk categories to each room 4. Surveillance cameras
Staff safety	Identify staff risks and mitigations to address them and improve safety on the unit	<ol style="list-style-type: none"> 1. Fixed and portable duress alarms 2. Video surveillance 3. Staff training 4. Required staff competency in verbal and non-verbal de-escalation techniques

Note: Adapted from FGI Design of Behavioral Health Crisis Units (2022)

4.1.4 Social Support

Group areas serve as spaces where patients can carry out the routine of daily life, which aids in recovery. Simple common rooms foster social interactions and should be designed flexibly so that patients can engage in a variety of activities in one space, such as arts and crafts, games, and movies. For emergency departments with adequate space, a central corridor or ‘Main Street’ model can simultaneously provide a residential feel and positive distraction. The Main Street space provides a very literal representation of a residential area, with quotidian space that helps to deinstitutionalize the overall environment. Additionally, the Main Street space can be designed to accommodate different patient acuity levels, so that all patients at a given facility can feel engaged.

4.1.5 Space Flexibility

Designing for flexibility ensures that spaces are acuity-adaptable for the patient population. Most emergency departments should have at least one, if not an entire pod, of ‘swing rooms.’ Swing rooms facilitate necessary medical treatment and are also outfitted to be safe for behavioral health patients. Swing rooms provide separate spaces for behavioral health patients, where they can be removed from the chaotic emergency department environment. Additionally, providers can use swing rooms for non-behavioral health patients to increase throughput and utilization and allow the space to flex to meet the needs of the emergency department patient population. Pod models separate

different behavioral health populations into separate units, each of which contains patient rooms, group areas, and potentially treatment rooms. The level of security can be modified for each pod. Ideal state planning and operations must minimize exposure to Emergency Department events that can be traumatizing by boarding children and teens in rooms distanced from Trauma Rooms and distanced from adult behavioral health patients. Large pods should have small dayrooms that can accommodate behavioral health patients who are in the Emergency Department for more than 24 hours. Behavioral health patients benefit by having their own dedicated space, and non-behavioral health patients benefit by getting expedited care that might normally have been delayed due to emergency department overcrowding.

4.1.6 Programming Phase

This is a critical first step in the design process in which the scope of a project is reviewed and needs are identified. During programming, the design team and the clinical operations team confirm key planning figures (e.g., number of recliners and beds) and allocate appropriate support spaces to ensure the new or renovated unit includes all areas and spaces necessary for effective and efficient execution of the operational model described in the functional program. Specific design strategies should be taken into consideration regarding access, flow, adjacencies, and management of the unit to support optimal care and safety of patients and staff. See Table 3 for an annotated list of rooms and areas that may be included in a behavioral health crisis unit.

Table 3: Programming—Summary of spaces, intended uses, design strategies, and justification.

SPACE	INTENDED USES	DESIGN STRATEGIES	JUSTIFICATION
Intake room or area	Initial assessment prior to beginning treatment	<ol style="list-style-type: none"> 1. Located near entrance 2. Two means of retreat for staff safety 3. Typically designed as a high-risk space 	Patient behavior is an unknown risk
Nurse station (commonly referred to as a care team station)	Often considered home base for the care team. The care team will use this space to conduct clinical tasks and documentation; observe patient care areas, directly or via surveillance cameras; and meet with other staff.	<ol style="list-style-type: none"> 1. Minimizes patient access to devices, supplies, and documentation 2. Provides good visibility to patient care areas 3. Promotes staff interaction with patients 4. Surveillance camera monitors (if present) shielded from patient view 	The care team often requires a safe, designated staff space that allows for patient observation. Where the nurse station is open to a multiple-patient observation area, provision of a directly accessible, lockable staff work area should be considered

Note: Adapted from FGI Design of Behavioral Health Crisis Units (2022).

Table 3 (continued): Programming—Summary of spaces, intended uses, design strategies, and justification.

SPACE	INTENDED USES	DESIGN STRATEGIES	JUSTIFICATION
Staff toilet room	To relieve the staff during shifts	<ol style="list-style-type: none"> 1. Separated with locked door 2. Located near nurse station 3. Directly accessible to the unit 	A toilet room that is convenient for staff to access minimizes time away from patient care areas.
Medication safety zone	Storage for medication to be administered on the unit. Medication may be administered from this zone	<ol style="list-style-type: none"> 1. Located out of circulation path 2. Separated with locked door from other spaces 3. Work counter 4. Handwashing facilities 5. Acoustic design to minimize sound transmission 6. Visible to the nurse station 	Most jurisdictions require medication to be stored in a secure location. Separation with a locked door is a best practice
Exam/ treatment room	Medical assessment and minor medical treatment for patients on the unit. This space might be used to medically clear a patient prior to admission to the BHCU	<ol style="list-style-type: none"> 1. Handwashing facilities 2. Often designed as a medium-risk space 3. Secure storage 	Exam/treatment rooms located in the BHCU will reduce the need for patients to leave the unit for medical examination or treatment
Multiple patient observation area	Provision of a therapeutic and comfortable setting in which patients can stabilize and receive therapy and treatment	<ol style="list-style-type: none"> 1. Open-plan area 2. Directly visible from nurse station 3. Camera surveillance 4. Furnished with recliners and/or other patient care station types 5. Furnished with small activity tables 6. Access to daylight 7. Non-institutional décor 8. Could be designed as a high- or medium-risk area depending on facility and acuity of patients 	<p>A therapeutic stabilization and treatment space has proved to reduce average length of stay for many patients.</p> <p>An open area provides space for a variety of patient activities and direct visibility of patients by staff</p>
Single-patient observation room	Observation of patients in a private space	<ol style="list-style-type: none"> 1. Designed for only one patient at a time 2. Observable from a constantly attended location (i.e., a nurse station) 3. Camera surveillance considered where direct visibility from the care team station may be impeded 4. Typically designed as a high-risk space 	Some patients may benefit from private observation. If a patient is too disruptive, staff can move that patient to this room
Patient toilet room	For patients to relieve themselves, patient hygiene	<ol style="list-style-type: none"> 1. Durable, tamper-resistant, and ligature-resistant fixtures, finishes, and hardware throughout 2. Anti-barricade door options 3. Designed as a high-risk space 	Staff need to be able to monitor and access the room without compromising patient dignity and privacy
Shower room	Patient hygiene	<ol style="list-style-type: none"> 1. Durable, tamper-resistant, and ligature-resistant fixtures, finishes, and hardware throughout 2. Designed as a wet location 3. Designed as a high-risk space 	<p>Access to a shower helps to provide a hygienic, shared patient care environment</p> <p>Staff members need to be able to monitor and access the room without compromising patient dignity and privacy</p>
Quiet room	A quiet space for patients to go when they are agitated	<ol style="list-style-type: none"> 1. Calming, color-changing lights 2. Minimal stimulation from other patients or the environment 3. Acoustic privacy from common areas 4. Often designed as a high-risk space 	Quiet rooms and similar spaces increase patient choice and can help calm a patient, reducing the need for involuntary medication or physical restraint

Note: Adapted from *FGI Design of Behavioral Health Crisis Units (2022)*.

Table 3 (continued): Programming—Summary of spaces, intended uses, design strategies, and justification.

SPACE	INTENDED USES	DESIGN STRATEGIES	JUSTIFICATION
Secure holding room	Temporary holding space to provide patients a secure environment until they are ready for treatment or transfer to another facility	<ol style="list-style-type: none"> 1. Separated with locked door 2. Designed for one patient at a time 3. Observable from a constantly attended nurse station 4. Small window in the door or the wall adjacent to the door 5. Camera surveillance may be added 6. Design as a high-risk space 	This is a dedicated, patient-safe environment for short-term use during a crisis for which other spaces on the unit may not be appropriate
Consultation room	A private setting in which patients can meet with a provider	<ol style="list-style-type: none"> 1. Considerations: 2. Barricade-resistant hardware 3. Vision panel for door or wall 4. Duress alarm 5. Options for staff retreat 6. Patient-facing design 	Consultations with a psychiatrist, social worker, therapist, or other professional should occur in a private setting
Nourishment area	Storage for snacks and beverages for patient use	<ol style="list-style-type: none"> 1. Extent of patient access determined by the facility risk assessment and functional program 2. Work counter with easily accessed snacks and beverage dispenser so patients can serve themselves 3. Ice machine 4. Handwashing facilities 5. Patient food refrigerator 6. Storage for non-refrigerated food 	Designated space for patient nourishment increases choice and a sense of normalcy
Outdoor area	Space for patients to sit, walk, converse, or engage in leisure activity outdoors	<ol style="list-style-type: none"> 1. Enclosed, secure, safe, and elopement-resistant 2. Visible from the nurse station 3. Dedicated space separate from public spaces and paths 	Access to nature and daylight has proved to be therapeutic. It can reduce stress and anxiety, which in turn promotes a safer environment for staff and patients
Clean workroom or clean supply room	Storage of clean supplies used in the unit and/or space for work activities associated with these supplies	<ol style="list-style-type: none"> 1. Separated with locked door 	Space designated for these uses must be accessible to staff only
Soiled workroom or soiled holding room	Storage for soiled supplies prior to processing and/or associated work activities	<ol style="list-style-type: none"> 1. Separated with locked door 2. Negative pressure ventilation 	Space designated for these uses must be accessible to staff only
Equipment and supply storage	Storage of equipment and supplies used in the unit	<ol style="list-style-type: none"> 1. Separated with locked door 	Space designated for storage of equipment and supplies is needed.
Environmental services room	Storage for environmental services supplies	<ol style="list-style-type: none"> 1. Separated with locked door 	Designated space for environmental services supplies should be inaccessible to patients
Family lounge/ waiting area	Public waiting area (not for patient visitation)	<ol style="list-style-type: none"> 1. Located outside of patient care area 2. Located near public toilets 3. Amenities, as appropriate, including space for family/visitor consultation 	A comfortable space for family and visitors that is separate from patient treatment areas can reduce complications and potential negative effects of interactions with all patients and staff

Note: Adapted from FGI Design of Behavioral Health Crisis Units (2022).

5.0 Conclusion

The spatial design of an emergency department has a considerable impact on the quality and effectiveness of behavioral health treatment and plays a key role in recovery for many patients. The importance of comfortable and secure facilities in achieving population health goals cannot be underestimated. Architects and facility planners play a pivotal role in advocating for these spaces.

It is important to note that key challenges in the emergency department may be addressed at various points of leverage. Change to the built environment is only one leverage point. Other potential leverage points include the use of technology, process improvement, education and training, and operational policy changes. The scope of this research was limited by the availability of time, funds, and resources. Future studies on care environments for acute behavioral health patients can explore rigorous post-occupancy evaluations for individual interventions or the case studies highlighted in this research.

Ideally, crisis services must be designed to serve anyone, anywhere, and anytime. Communities that commit to this approach and dedicate resources to address needs decrease psychiatric boarding in emergency departments and reduce the demands on the justice system. These two benefits translate into better care, better health outcomes, and lower costs. In addition to continuous funding for process improvement by healthcare systems, a commitment by the community and state and local governments is essential for crisis services to remain a crucial element of the continuum of care for individuals in a behavioral health crisis.

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References

- [1] Stambaugh, L. F., Forman-Hoffman, V., Williams, J., Pemberton, M. R., Ringeisen, H., Hedden, S. L., & Bose, J. (2017). Prevalence of serious mental illness among parents in the United States: results from the National Survey of Drug Use and Health, 2008–2014. *Annals of Epidemiology*, 27(3), 222-224.
- [2] Alegria, M., Jackson, J. S., Kessler, R. C., & Takeuchi, D. (2007). Collaborative psychiatric epidemiology surveys (Psychiatric Emergency Services), 2001-2003 [United States]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research. <https://www.icpsr.umich.edu/web/ICPSR/studies/20240>
- [3] Weiss, A. J., Barrett, M. L., Heslin, K. C., & Stocks, C. (2016). Trends in emergency department visits involving mental and substance use disorders, 2006-2013. *Statistical brief*, 216.
- [4] McCance-Katz, E. F. (2020). SAMHSA: creating a system of care that meets the needs of people with mental and substance use disorders. *Psychiatric services*, 71(5), 416-418.
- [5] Turvey, C., & Fortney, J. (2017). The use of telemedicine and mobile technology to promote population health and population management for psychiatric disorders. *Current psychiatry reports*, 19(11), 1-8.
- [6] Gindi, R. M., Black, L. I., & Cohen, R. A. (2016). Reasons for emergency room use among US adults aged 18-64: national health interview survey, 2013 and 2014. *National health statistics reports*, (90), 1-16.
- [7] Moore, B. J., Stocks, C., & Owens, P. L. (2017). Trends in emergency department visits, 2006–2014. *HCUP statistical brief*, 227.
- [8] Beck, A. J., Manderscheid, R. W., & Buerhaus, P. (2018). The future of the behavioral health workforce: optimism and opportunity. *American Journal of Preventive Medicine*, 54(6), S187-S189.
- [9] Andrilla, C. H. A., Larson, E. H., Patterson, D. G., &

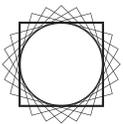
- Garberson, L. A. (2017, June). Supply and Distribution of the Behavioral Health Workforce in Rural America. In 2017 Annual Research Meeting. AcademyHealth.
- [10] Chow, J. C., Jaffee, K., & Snowden, L. (2003). Racial/ethnic disparities in the use of mental health services in poverty areas. *American Journal of Public Health*, 93(5), 792-797.
- [11] Balfour, M. E., Hahn Stephenson, A., Delany-Brumsey, A., Winsky, J., & Goldman, M. L. (2021). Cops, clinicians, or both? Collaborative approaches to responding to behavioral health emergencies. *Psychiatric Services*, appi-ps.
- [12] Marcozzi, D., Carr, B., Liferidge, A., Baehr, N., & Browne, B. (2018). Trends in the contribution of emergency departments to the provision of hospital-associated health care in the USA. *International Journal of Health Services*, 48(2), 267-288.
- [13] Pitts, S. R., Niska, W., & Burt, C. W. (2008). National Hospital Ambulatory Medical Care Survey: 2006 emergency department summary. *National Health Statistics Reports*; no 7.
- [14] Welch, S. J. (2010). Twenty years of patient satisfaction research applied to the emergency department: a qualitative review. *American Journal of Medical Quality*, 25(1), 64-72.
- [15] Peth, H. A. (2004). The emergency medical treatment and active labor act (EMTALA): guidelines for compliance. *Emergency Medicine Clinics*, 22(1), 225-240.
- [16] Usher-Pines, L. (2013). Applying what works to reduce non-urgent emergency department use. Rand Corporation website.
- [17] Garfield, R., & Young, K. (2015). Adults who remained uninsured at the end of 2014. Washington, DC: Kaiser Family Foundation.
- [18] Weinick, R. M., Burns, R. M., & Mehrotra, A. (2010). Many emergency department visits could be managed at urgent care centers and retail clinics. *Health Affairs*, 29(9), 1630-1636.
- [19] Bentley, T. G., Effros, R. M., Palar, K., & Keeler, E. B. (2008). Waste in the US health care system: a conceptual framework. *The Milbank Quarterly*, 86(4), 629-659.
- [20] Sun, B. C., Hsia, R. Y., Weiss, R. E., Zingmond, D., Liang, L. J., Han, W., & Asch, S. M. (2013). Effect of emergency department crowding on outcomes of admitted patients. *Annals of Emergency Medicine*, 61(6), 605-611.
- [21] Morley, C., Unwin, M., Peterson, G. M., Stankovich, J., & Kinsman, L. (2018). Emergency department crowding: a systematic review of causes, consequences and solutions. *PloS one*, 13(8), e0203316.
- [22] Hsia, R. Y., & Niedzwiecki, M. (2017). Avoidable emergency department visits: a starting point. *International Journal for Quality in Health Care*, 29(5), 642-645.
- [23] Smulowitz, P. B., Honigman, L., & Landon, B. E. (2013). A novel approach to identifying targets for cost reduction in the emergency department. *Annals of Emergency Medicine*, 61(3), 293-300.
- [24] Billings, J., Parikh, N., & Mijanovich, T. (2000). Emergency department use in New York City: a substitute for primary care? *Issue Brief (Commonwealth Fund)*, (433), 1-5.
- [25] Nicks, B. A., & Manthey, D. M. (2012). The impact of psychiatric patient boarding in emergency departments. *Emergency Medicine International*, 2012.
- [26] American Psychiatric Association, & American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders: DSM-5.*, Arlington, VA.
- [27] Bastiampillai, T., Sharfstein, S. S., & Allison, S. (2016). Increase in US suicide rates and the critical decline in psychiatric beds. *JAMA*, 316(24), 2591-2592.
- [28] Substance Abuse and Mental Health Services Administration. (2020). *National Guidelines for Behavioral Health Crisis Care—A Best Practice Toolkit.*
- [29] Chowdhury, S. M., Wun, L., & Machlin, S. (2012). Linking medical expenditure panel survey to the National health interview survey: weighting and estimation. Agency for Healthcare Research and Quality Working Paper, (12005).
- [30] Coster, J. E., Turner, J. K., Bradbury, D., & Cantrell, A. (2017). Why do people choose emergency and urgent care services? A rapid review utilizing a systematic literature search and narrative synthesis. *Academic Emergency Medicine*, 24(9), 1137-1149.

- [31] Holland, K. M., Jones, C., Vivolo-Kantor, A. M., Idaikkadar, N., Zwald, M., Hoots, B., & Houry, D. (2021). Trends in US emergency department visits for mental health, overdose, and violence outcomes before and during the COVID-19 pandemic. *JAMA Psychiatry*, 78(4), 372-379.
- [32] LaCalle, E., & Rabin, E. (2010). Frequent users of emergency departments: the myths, the data, and the policy implications. *Annals of Emergency Medicine*, 56(1), 42-48.
- [33] Meyer, H. & Johnson, S.R. (2017). Behavioral Health: Fixing a System in Crisis. Modern Healthcare. Retrieved November 26, 2021, from <https://www.modernhealthcare.com/reports/behavioral-health/>
- [34] Ulrich. (1991, January). Effects of interior design on wellness: theory and recent scientific research. *Journal of Health Care Interior Design: Proceedings from the Symposium on Health Care Interior Design*. Symposium on Health Care Interior Design., 3, 97-109. <https://europepmc.org/article/med/10123973>
- [35] Parwani V, Tinloy B, Ulrich A, D'Onofrio G, Goldenberg M, Rothenberg C, Patel A, Venkatesh AK. Opening of Psychiatric Observation Unit Eases Boarding Crisis. *Academic Emergency Medicine*, 2018 Apr;25(4):456-460. doi: 10.1111/acem.13369. Epub 2018 Feb 1. PMID: 29266537.
- [36] Scharf, D. M., Eberhart, N. K., Hackbarth, N. S., Horvitz-Lennon, M., Beckman, R., Han, B., & Burnam, M. A. (2014). Evaluation of the SAMHSA primary and behavioral health care integration (Pbehavioral healthCI) grant program. *Rand health quarterly*, 4(3).
- [37] Schreyer, K. E., & Martin, R. (2017). The economics of an admissions holding unit. *Western Journal of Emergency Medicine*, 18(4), 553.
- [38] Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: results from the 2014 National Survey on Drug Use and Health. HHS Publication No. SMA 15-4927, NSDUH Series H-50. Retrieved from <https://www.samhsa.gov/data/>
- [39] Theriault, K. M., Rosenheck, R. A., & Rhee, T. G. (2020). Increasing emergency department visits for mental health conditions in the United States. *The Journal of Clinical Psychiatry*, 81(5), 0-0.
- [40] US Department of Health and Human Services. (2017). Health resources and services administration. National Center for Health Workforce Analysis, 2012-2025.
- [41] Vinton, D. T., Capp, R., Rooks, S. P., Abbott, J. T., & Ginde, A. A. (2014). Frequent users of US emergency departments: characteristics and opportunities for intervention. *Emergency Medicine Journal*, 31(7), 526-532.
- [42] Zeller S, Calma N, Stone A. Effects of a dedicated regional psychiatric emergency service onboarding of psychiatric patients in area emergency departments. *Western Journal of Emergency Medicine*, 2014 Feb;15(1):1-6. doi: 10.5811/westjem.2013.6.17848. PMID: 24578760; PMCID: PMC3935777.
- [43] Kim, A. K., Vakkalanka, J. P., Van Heukelom, P., Tate, J., & Lee, S. (2022). Emergency psychiatric assessment, treatment, and healing (EmPATH) unit decreases hospital admission for patients presenting with suicidal ideation in rural America. *Academic Emergency Medicine*, 29(2), 142-149.
- [44] Kim, A. K., Vakkalanka, J. P., Van Heukelom, P., Tate, J., & Lee, S. (2021). Emergency psychiatric assessment, treatment, and healing (EmPATH) unit decreases hospital admission for patients presenting with suicidal ideation in rural America. *Academic Emergency Medicine*.
- [45] Wittwer, S. D. (2006). The Patient Experience with the Mental Health System. *Journal of Managed Care Pharmacy*, 12(2 Supp A), S21-S23.
- [46] Schuur, J. D., Hsia, R. Y., Burstin, H., Schull, M. J., & Pines, J. M. (2013). Quality measurement in the emergency department: past and future. *Health Affairs*, 32(12), 2129-2138.

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