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Review

# Building and Sustaining a Statewide Telepsychiatry Network: Lessons Learned from the North Carolina Statewide Telepsychiatry Program (NC-STeP)

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## Highlights

### Public health relevance—How does this work relate to a public health issue?

- North Carolina's statewide telepsychiatry network (NC-STeP) addresses psychiatric workforce shortages and ED boarding across rural and underserved regions.
- Telepsychiatry enables timely crisis assessment and safe community discharge, improving throughput and access to behavioral health care statewide.

### Public health significance—Why is this work of significance to public health?

- Over 13 years, NC-STeP reduced unnecessary psychiatric hospitalizations and generated substantial cost avoidance for the health system.
- Program expansions (maternal, pediatric, university settings) demonstrate scalable integration of specialty behavioral health in routine care.

### Public health implications—What are the key implications or messages for practitioners, policy makers and/or researchers in public health?

- Statewide telepsychiatry can function as core clinical infrastructure when financing, interoperability, and equity measurement are aligned.
- Embedding equity-focused strategies is essential to ensure telehealth expansion does not widen racial or rural access disparities.

## Abstract

**Background:** North Carolina faces persistent shortages of psychiatric professionals, particularly in rural and underserved regions, resulting in prolonged emergency department (ED) boarding, avoidable psychiatric hospitalizations, and inequitable access to behavioral health services. The North Carolina Statewide Telepsychiatry Program (NC-STeP), launched in 2013, is one of the nation's longest-running statewide telepsychiatry programs. **Objective:** To summarize the development, implementation, outcomes, and lessons learned from NC-STeP across ED, community, maternal, pediatric, and university settings. **Methods:** Data were synthesized from NC-STeP operations and peer-reviewed publications (2013–2025). **Results:** NC-STeP completed 67,543 ED psychiatric assessments, prevented 11,802 hospitalizations, and generated \$63.7 million in cost savings. Telepsychiatry increased safe discharges, reduced ED boarding, improved access, and revealed persistent equity gaps. **Conclusions:** NC-STeP demonstrates a scalable statewide telepsychiatry model improving throughput, reducing avoidable admissions, and expanding equitable behavioral health access.

**Keywords:** telepsychiatry; emergency department; boarding; involuntary commitment; cost savings; interoperability; maternal health; pediatrics; university students; health equity

## 1. Introduction

Mental disorders are among the leading causes of morbidity, disability, and premature mortality worldwide. In the United States, approximately 26.2% of adults experience a mental disorder in any given year [1]. Despite the prevalence of mental illness, nearly half of adults with a mental health condition and 80% of individuals needing substance use treatment do not receive needed care [2].

In North Carolina, these access challenges are intensified. More than 54% of adults with mental illness receive no treatment [2], over 70% of children with treatable mental disorders remain untreated [3], and 93 counties qualify as Mental Health Professional Shortage Areas [4]. Workforce maldistribution is particularly severe in rural counties, which frequently lack psychiatrists altogether [5]. Consequently, emergency departments (EDs) have become de facto mental health providers. In 2013, NC hospitals had 162,000 behavioral health ED visits. From 2008 to 2010, in North Carolina, 10% of ED visits had one or more mental health diagnosis (MHD) code assigned to visit; twice the estimated national average [6]. There was a 17.7% increase in rate of ED visits of patients with MHD; compared to 5.1% increase in overall rate of ED visits and people with mental health disorders were admitted to the hospital at twice the rate of those without [6].

Individuals with psychiatric crises often experience prolonged ED boarding times, delayed treatment, and unnecessary hospitalization often due to limited psychiatric expertise onsite. Telepsychiatry has emerged as a viable solution to these systemic challenges. Prior studies demonstrate that telepsychiatry increases access, reduces geographic disparities, enhances continuity of care, and lowers healthcare costs [7]. The North Carolina Statewide Telepsychiatry Program (NC-STeP) was designed to address these barriers through a coordinated, technology-enabled psychiatric service delivered across diverse clinical settings [8]. Established under North Carolina Session Law 2013-360 and launched in 2013, NC-STeP began with 28 hospitals, ultimately expanding to 76 ED sites. The program's vision was to ensure that anyone presenting with a behavioral health crisis receives timely psychiatric assessment and linkage to appropriate care. After its initial success, in 2018, the North Carolina Legislature expanded NC-STeP to include community-based primary care clinics, significantly broadening its reach beyond EDs.

Multiple NC-STeP research studies, as well as clinical programs, have evaluated its impact on access to care, ED workflow, patient outcomes, cost reductions, telepsychiatry utilization patterns, and equity. This paper summarizes lessons learned from the last 13 years of successful operation of NC-STeP.

## 2. Materials and Methods

### 2.1. Study Design

This paper synthesizes NC-STeP program data, peer-reviewed studies, operational evaluations, and system-level analytics from 2013–2025.

### 2.2. Data Sources

- NC-STeP clinical operations data
- Program evaluation dashboards
- Peer-reviewed publications
- COVID-19 telepsychiatry utilization data
- Hospital ED operational metrics

### 2.3. Data Analysis

The following data were analyzed for this paper:

- ED length of stay
- Hospitalization outcomes
- Cost-savings estimates

- Telepsychiatry utilization differences by race/sex
- Program expansions into maternal, pediatric, and university settings

#### 2.4. Ethical Considerations

This study involved secondary analysis of de-identified program data. Ethical review and approval were not required for this study because it involved secondary analysis of de-identified program data and did not meet the definition of human subjects research.

### 3. Results (Lessons Learned Across Core Program Domains)

#### 3.1. Electronic Health Records Technology and Workflow

Telepsychiatry is a viable option for providing psychiatric care to those who are currently underserved or who lack access to services. While the current technology is adequate for most uses, and continues to advance, there remain barriers to its widespread utilization. One such barrier when working with different healthcare systems is that they utilize different electronic health record systems (EHRs). For a successful clinical encounter, a provider needs to see a patient as well as review his or her health record. That is true whether the clinical encounter takes place face to face or via telepsychiatry. However, obtaining access in real time to patient's health records, including lab results and other pertinent clinical information, may not be straightforward if the provider does not have the ability to view the patient's electronic health record. This is often the case when the patient and provider are in different health care systems that use different EHRs. At the time NC-STeP went live, a fully functional health information exchange (HIE) was not available in many states, including North Carolina. To meet its needs, the program envisioned a telepsychiatry portal that supported all the health information technology functions required of the telepsychiatry network, including scheduling appointments for patients and preparing work schedules for providers, exchanging clinical data for patient care, and collecting encounter data to support the needs of network managers and billing agents to support timely referrals and program reporting. The portal was conceptualized as a group of distinct but related technologies that could serve as the primary interface through which data regarding patient encounters were reviewed and created. Most of the components of the portal existed at the time and were readily available. However, for the telepsychiatry network to be successful, these components needed to be integrated to work as a whole. NC-STeP developed an integrated portal enabling ED physicians to request consults; staff to input patient data; telepsychiatrists to review records, conduct evaluations, and transmit results to the hospital HER; and for ED physicians to make disposition decisions.

Given the heterogeneity of EHRs across 108 hospitals, NC-STeP implemented interoperability solutions using Direct Messaging and C-CDA standards to navigate the health information exchange environment. One of the main benefits of the portal is that it provides a single platform for conducting telepsychiatry assessments across EDs and providers, regardless of the EHR vendor or whether an EHR is available to the ED or the provider. The portal takes advantage of a secure messaging capability shared by all EHRs that are certified as stage 2 or higher by the Medicare and Medicaid EHR Incentive Programs. These EHRs can exchange direct messages containing demographic, clinical, and billing data with the portal. The data are prepared by using consolidated clinical document architecture (C-CDA) and are sent as attachments to the direct message.

NC-STeP published this experience in 2 peer-reviewed papers that described how the program developed a web portal that connected participating hospital emergency departments and remote psychiatric providers to share secure electronic health information regarding patient encounters across different EMRs[9,10]. The portal continues to provide an efficient experience for the patient and the point-of-care provider, a reliable document exchange for the psychiatric providers, and effective record keeping for the billing and government entities. It does so while respecting the idea that the purpose and fit of telecare services in the wider care system should drive introduction of information-sharing technology and not the other way around.

### 3.2. Emergency Department Boarding Study

The number of patients seeking treatment in emergency departments (EDs) for mental health reasons continues to rise, and these patients are often kept in the ED until they can be treated, hospitalized, or discharged, leading to overcrowding [11,12]. Many EDs lack adequate psychiatric staffing, leading to psychiatric patient boarding, which increases ED overcrowding and results in poorer patient outcomes (e.g., increased mortality, higher anxiety, lack of formal psych assessment). ED overcrowding with mental health patients also has major financial consequences because beds remain occupied for long periods. Telepsychiatry is proposed as a solution to provide timely psychiatric consultation remotely, especially for rural or understaffed hospitals. Telepsychiatry can provide rapid psychiatric evaluation, timely treatment recommendations, improved continuity for involuntary commitment decisions, and better patient flow in EDs. Thus, telepsychiatry may alleviate overcrowding by increasing the rate of discharges home.

In 2020, NC-STeP published its findings from a large retrospective observational study that compared ED length-of-stay (LOS) for psychiatric patients during NC-STeP active vs. inactive periods [13]. The study evaluated whether NC-STeP improved emergency department (ED) outcomes for adult psychiatric patients—specifically focusing on boarding, meaning prolonged ED stays due to delays in psychiatric assessment, treatment, or disposition. Extended length of stay (>2 days) was used as a proxy for patient boarding. Results showed that during the study period, 86,931 adults with behavioral health symptoms visited EDs at the 30 study hospitals (2012–2017). Of these, 44,857 (51.6%) visits occurred during periods when NC-STeP was available (active), and 42,074 (48.4%) occurred during periods when the program was unavailable (inactive). Of the visits during the program-active period, 76.0% (N=34,072) of patients were discharged home, compared with 72.2% (N=30,376) when the program was inactive. Of patients in the active period, 16.4% (N=7,363) were transferred to a psychiatric hospital, compared with 16.0% (N=6,725) during the inactive period. The findings of this study suggested that telepsychiatry effectively increased the rate of patients with behavioral health issues being discharged from EDs to their home and decreased the rates of hospital admissions and transfers of these patients. NC-STeP implementation increased the proportion of patients with a LOS of 2 days who were discharged home by 19 percentage points. Among patients with a LOS of 1–2 days, the percentage of those discharged home also increased, but this increase was considerably lower (i.e., 2.8 percentage points). Overall, more patients were discharged home when NC-STeP was active: 76.0% active vs. 72.2% inactive and there were slightly fewer psychiatric hospital transfers: 16.4% active vs. 16.0% inactive. Telepsychiatry had the strongest impact in reducing psychiatric transfers for extended length of stay patients (>2 days). This group reflects true psychiatric boarding. The results for this group when NC-STeP was active showed that 61.7% patients were discharged home (vs. 42.8% when inactive) and 29.3% were transferred to psychiatric hospitals (vs. 46.2% when inactive). For patients with Shorter (1–2 day) Stays, there was slight improvement in % discharged home (77% active vs. 74.2% inactive), as well as a slight increase in psychiatric hospital transfers (15.4% active vs. 13.9% inactive).

This study showed that NC-STeP was associated with more patients being safely discharged home; fewer psychiatric hospital transfers, especially among boarded patients; potential reductions in ED overcrowding, bed shortages, and hospital financial losses; and improved access to psychiatric expertise, particularly for rural or small hospitals.

Telepsychiatry programs like NC-STeP significantly improve ED management of psychiatric patients—especially those boarded for long periods—by speeding psychiatric assessment and treatment; reducing unnecessary psychiatric transfers; allowing more patients to be safely discharged home; and mitigating ED overcrowding and enhancing patient satisfaction

### 3.3. Cost-Savings Study

Emergency departments (EDs) across the United States have seen a substantial rise in visits related to mental health and substance use disorders (M/SUDs) [14]. This surge has intensified challenges such as overcrowding, resource limitations, and uneven access to psychiatric expertise.

Because community-based behavioral health services are often insufficient or inaccessible, EDs have increasingly become default providers of psychiatric care, especially for uninsured and low-income individuals protected under Emergency Medical Treatment and Labor Act (EMTALA), a 1986 federal law requiring Medicare-participating hospitals with emergency departments to provide a medical screening exam and stabilizing treatment for anyone with an emergency medical condition, regardless of ability to pay and prohibits transferring patients for financial reasons before they are stabilized. Many psychiatric emergencies can be resolved in ED with proper evaluation and treatment. However, many ED physicians lack specialized training in behavioral health and may “overprescribe” hospitalization recommendations to be safe, which can contribute to unnecessary psychiatric hospitalizations—including involuntary commitments (IVCs). ED-based telepsychiatry is one possible solution. Telepsychiatry consultation services in the EDs can decrease unnecessary psychiatric hospitalizations and contribute to significant cost savings. Avoiding unnecessary psychiatric hospitalization can promote patient satisfaction, reduce costs, and improve outcomes for the patients and families. Prompt, specialized evaluation can often resolve psychiatric emergencies without hospitalization.

In 2022, NC-STeP published a study that demonstrated these cost savings from preventing unnecessary psychiatry hospitalization [15]. The study covered a time period from November 2013 to June 2020 covering a comprehensive dataset of 19,383 patient encounters, all involving NC-STeP telepsychiatry services. Data included admission/discharge dates, discharge location, and involuntary commitment (IVC) status. Discharge dispositions were recoded into three groups: home, transfer (for psychiatric hospitalization), and other. To estimate cost savings from avoided psychiatric hospitalizations, the study used North Carolina's reimbursement method for “three-way” psychiatric beds—special state-funded beds for indigent patients under IVC [16]. The enhanced three-way rate is \$900 per day. Assuming an average 5-day inpatient psychiatric stay, the study estimated a cost savings of \$4,500 per overturned IVC (i.e., \$900 × 5 days). This approach avoided uncertainties in published national cost estimates and uses a state-standardized payment rate. The results showed that over 6½ years of study period, the NC-STeP telepsychiatry program generated more than \$20 million in cost savings, primarily by preventing unnecessary psychiatric hospitalizations through overturning inappropriate involuntary commitments (IVCs). Among 19,383 encounters across 53 hospital EDs, 13,537 patients presented under IVC, and 4,627 IVCs were overturned, allowing patients to be safely treated and discharged using community resources. Avoiding unnecessary hospitalization also promotes patient satisfaction, decreases the financial burden for a hospital stay and improves outcomes for the patients and families. The program served a high-need population, including approximately 32% uninsured patients, and reduces burdens on hospitals, state psychiatric facilities, law enforcement, and families. Actual savings were likely much higher when accounting for additional system-level benefits such as improved ED throughput and reduced transportation demands.

### 3.4. COVID-19 Utilization Study

The COVID-19 pandemic had profound impacts on mental health across the United States, and the world, with widespread fear, uncertainty, financial strain, and social isolation contributing to rising levels of psychological distress, including anxiety, depression, and suicidality. Public health measures such as social distancing and stay-at-home orders, while necessary to limit viral spread, intensified feelings of loneliness, frustration, and hopelessness, making deteriorating mental health a significant public health challenge during the early stages of the pandemic. As the demand for behavioral health services increased, telehealth emerged as a critical mechanism for sustaining access to care. Federal guidance and policy changes rapidly accelerated the adoption of remote care, leading to dramatic increases in telehealth use across health systems and particularly in mental health services. Telepsychiatry—using secure, real-time audio-video communication for psychiatric assessment—offers important advantages in this context by reducing exposure risk, expanding access to psychiatric expertise, decreasing wait times, and preventing avoidable hospitalizations. Yet, little

research has examined how telepsychiatry use in ED settings changed during COVID-19 or how utilization varied across demographic groups. In 2022, NC-STeP published a study that evaluated the impact of COVID-19 on telepsychiatry consultation volumes in North Carolina emergency departments and examined differences by sex and race to inform equitable and effective behavioral health responses during and beyond public health crises [16]. The NC-STeP COVID-19 utilization analysis examined 4,739 telepsychiatry consultations across 27 North Carolina hospital EDs, tracking how use patterns changed before, during, and after the COVID-19 lockdown [17]. The findings of this study reported several cross-cutting themes around demand, equity, and system stress.

This study found that during COVID-19, telepsychiatry use increased sharply, becoming a critical safety-net when in-person psychiatric services were disrupted. Emergency departments (EDs) saw more patients with anxiety, depression, substance use, and stress-related conditions, and the NC-STeP telepsychiatry network proved highly scalable and resilient during the lockdown. However, utilization was uneven across racial groups. White patients' use of telepsychiatry rose more than that of minority groups, while Black patients showed smaller increases. The study pointed to structural barriers such as differences in ED use, disparities in help-seeking patterns, inequitable referral practices, disproportionate pandemic stressors, and limited access to follow-up resources. These patterns mirror broader behavioral health inequities in North Carolina and across the U.S.

There were also sex-based differences. Women had a larger proportional increase in telepsychiatry use than men, potentially due to higher rates of anxiety/depression, caregiver responsibilities, and heightened psychosocial stress during lockdown.

The racial disparities identified underscore the need for equity-focused interventions, including culturally informed care, unbiased referral pathways, stronger trust-building in underserved communities, and policies supporting equitable digital and ED-based access. Technology alone cannot ensure equitable access—targeted design and outreach are essential.

Looking forward, telepsychiatry should be integrated as a core component of emergency mental health care. Future planning must address racial and sex disparities, strengthen statewide platforms like NC-STeP, and use data-driven strategies such as flexible staffing, culturally tailored engagement, and equitable referral practices.

In summary, the pandemic increased behavioral health needs and telepsychiatry use but also revealed persistent inequities. Telepsychiatry played a key role in stabilizing ED psychiatric care, and achieving equitable access will require sustained, intentional efforts. These disparities emphasize that technology alone cannot guarantee equitable care; rather, telepsychiatry programs must be paired with intentional policies aimed at addressing referral biases, strengthening trust and engagement in underserved communities, and ensuring that emergency pathways do not inadvertently perpetuate inequities. As states continue integrating telepsychiatry into routine emergency care, these findings point to the need for targeted outreach, culturally responsive practices, and ongoing monitoring of disparities to ensure that telehealth expansion advances—not undermines—health equity. Ultimately, the pandemic provided a natural stress test for statewide telepsychiatry infrastructure such as NC-STeP, demonstrating both its capacity to absorb system shocks and the importance of embedding equity-focused strategies into its future evolution.

### 3.5. *MOTHeRS (Maternal Outreach Using Telehealth for Rural Sites) Program*

The COVID-19 pandemic worsened long-standing maternal health disparities in Eastern North Carolina, a region marked by high rates of poverty, chronic illness, food insecurity, and limited access to medical and mental health services. These challenges contribute to disproportionately high maternal and infant mortality rates—especially among Black, American Indian/Alaska Native, low-income, and rural women.

To address these issues, NC-STeP expanded its statewide telepsychiatry network to create the MOTHeRS Project (Maternal Outreach Through Telehealth for Rural Sites). Beginning in 2020, the program integrated comprehensive maternal-fetal and behavioral health services directly into rural obstetric clinics through telehealth. A multidisciplinary team—including maternal-fetal medicine

specialists, psychiatrists, behavioral health managers, dietitians, diabetes educators, and nurse navigators—works alongside local OB-GYN providers to deliver coordinated, patient-centered care.

The project also screened all patients for depression, anxiety, and food insecurity. Those in need received rapid behavioral health consultation, mental health treatment via telepsychiatry, and medically tailored food support with nutrition education. Remote ultrasound review and specialty consultations reduced travel burdens for high-risk pregnancies.

The MOTHeRS Project provided services in four rural counties, improved care access, strengthened care coordination, and reduced stigma surrounding mental health and food assistance. The MOTHeRS Project team published its initial findings in a paper in 2023 [18], highlighting its outcomes and describing MOTHeRS as an innovative, scalable model for improving maternal health access and reducing disparities in rural regions. With its integration of obstetric and psychiatric services, the program enhances early intervention, reduces travel strain, and supports healthier pregnancies and postpartum experiences. The paper concluded that this integrated co-management model was a promising and scalable approach for improving maternal and infant health outcomes in underserved rural communities.

The current data show that the MOTHeRS Project has demonstrated substantial impact across maternal-fetal health, mental health service delivery, and food security initiatives. Since its inception, 122 perinatal patients have received specialized maternal-fetal medicine (MFM) care, with significant improvements in access demonstrated through an estimated 36,784 driving miles saved for patients who would otherwise have faced long travel distances for specialty care. In addition, the project supported 116 visits with Diabetes Educators or Medical Nutrition Therapists, enhancing care for patients with high-risk pregnancies.

A major component of the initiative has focused on expanding access to perinatal mental health services. The program has delivered 2,051 LCSW visits and 768 psychiatric visits, totaling 2,819 mental health encounters. This mental-health support also translated into considerable travel savings—an estimated 471,496 miles saved for patients receiving psychiatric and behavioral health services closer to home.

The project's food security work has also had measurable reach. Clinics received 1,195 food boxes, enabling screening for food insecurity among 41,229 patients. Of these, 888 food boxes were distributed directly to patients with identified needs, strengthening the project's whole-person approach to maternal health. Findings from the MOTHeRS Project demonstrated an improved access to high-risk pregnancy care within local communities; shortened wait times for mental health consultations; reduced travel burden for vulnerable patients in rural regions; high patient satisfaction, especially regarding nutrition support and reduced stigma related to food assistance; and an enhanced provider support, reducing professional isolation and improving retention in underserved areas.

The MOTHeRS Project demonstrates a scalable, effective approach to reducing rural maternal health disparities by integrating specialty care, behavioral health, and social support through telehealth. As maternal mortality continues to rise—especially among minority and rural populations—policy action to expand such models is urgent. Strengthened investment in telehealth-enabled collaborative care can ensure safer pregnancies and healthier outcomes for mothers and infants across rural America.

### *3.6. Impact of Education Strategies on Individuals' Attitude Towards Telemental Health Service*

The COVID-19 pandemic intensified the U.S. mental health crisis, yet nearly half of individuals with significant mental health symptoms still do not seek care due to barriers such as stigma, cost, limited trust in the mental health system, lack of mental health providers, and uncertainty about where to find help [2,19]. Telemental health offers a promising solution by expanding access, reducing costs, and increasing convenience—but adoption remains limited.

In 2023, NC-STeP team published a survey experiment study titled "Exploring the Impact of Education Strategies on Individuals' Attitude Towards Telemental Health Service: Findings from a

Survey Experiment Study” [20]. This study examined whether different educational strategies could improve individuals’ attitudes toward and intentions to use telemental health services. Drawing on multiple theories—including the AIDA (Attention, Interest, Desire, and Action) model, technology acceptance model (TAM), theory of reasoned action (TRA), heuristic-systematic processing, and social identity theory—the researchers compared two educational videos: one narrated by a peer (in-group) and one by a professional (out-group). A survey experiment with 282 students at one of the rural HBCUs (Historically Black Colleges and Universities) found that:

- Attitude strongly predicts intention to use telemental health services.
- The peer-narrated video influenced a wider range of factors shaping attitudes, including ease of use, subjective norms, trust, relative advantage, and stigma.
- The professional-narrated video influenced only trust and relative advantage.
- Overall attitude and intention levels were similar across groups, but peer-based messaging led to deeper, more comprehensive information processing.

These findings suggest that in-group, peer-driven education strategies may help individuals consider more dimensions of telemental health—particularly social factors like stigma—leading to more informed and nuanced attitudes. This has important implications for designing culturally relevant educational materials that address disparities in mental health service use, especially among underserved racial minority populations.

### 3.7. Pediatric Mental Health Initiative (NC-STeP-Peds)

The NC-STeP-Peds initiative expanded the North Carolina Statewide Telepsychiatry Program (NC-STeP) to meet the rising mental health needs of children and adolescents, especially those living in rural and underserved areas through a \$3.2 million, three-year grant funding from the United Health Foundation.

The NC-STeP-Peds model delivers pediatric mental health care through a comprehensive, team-based telepsychiatry approach. Core elements include pediatrician-led care supported by mental health clinicians and psychiatric consultants, evidence-based and measurement-based treatment, universal behavioral health screening, family engagement, and collaboration with schools and community agencies. Key project components include embedding licensed behavioral health providers in six practices, delivering psychiatric consultation via telemedicine, building a virtual-reality community (“NC Rural Kids Get Well”) for education and peer support, and developing an AI-driven knowledge management portal to support collaboration and family engagement. The program also serves as a training platform and collaborates with community and university partners to build a broader continuum of care. Telepsychiatry serves as the primary modality, aligning well with children’s comfort with technology. The clinical workflow begins with universal screening in pediatric practices, followed by referrals, scheduled telepsychiatry sessions, and virtual psychiatric evaluations. Pediatricians manage medications, while behavioral health providers offer therapy, maintain patient registries, coordinate care, and meet regularly with child psychiatrists.

Program outcomes are evaluated across four domains:

- Access: wait times, patient volumes, follow-ups, re-consults, and underserved population metrics
- Effectiveness: improvements on validated measures
- Patient Experience: satisfaction and visit adherence
- Continuity: follow-up consistency and visit frequency

As of January 2026, NC-STeP-Peds has screened 43,858 children, provided over 700 new psychiatric evaluations, and completed 1,858 mental health visits. These achievements highlight increased early identification of behavioral health needs, reduced barriers to specialty care in rural regions, stronger integration between primary care and mental health, and improved long-term

outcomes. The initiative demonstrates a scalable telemedicine model that helps address statewide shortages in child and adolescent psychiatry.

### 3.8. University Students' Mental Health Initiative

Mental health problems are common among college students. Although university students report levels of mental health similar to their non-university counterparts [21], recent studies suggest an increase and severity of mental problems and help-seeking behaviors in university students around the world in the last decade [22]. Some researchers refer to these trends as an emerging “mental health crisis” in higher education [23]. Despite this burden, many students—especially those from minority backgrounds living in rural areas—face reduced access to mental health services and cultural or normative barriers (e.g., stigma) that suppress help-seeking and exacerbate disparities.

Against this backdrop, NC-STeP launched, in spring 2022, a five-year initiative at Elizabeth City State University (ECSU), an HBCU in Pasquotank County, with investment from Blue Cross and Blue Shield Foundation of North Carolina. The partnership sought to address local psychiatric workforce shortages and strengthen campus connectedness as mental health needs surged.

Operationally, the model emphasizes universal screening for mental health conditions; systematic assessment and monitoring using validated scales (e.g., PHQ-9, GAD-7); joint care planning with care plan revision if not improving; facilitation and coordination of behavioral health treatment; and continuity with an appointed care team member. The integrated care team typically includes the primary care provider (PCP), behavioral health manager (care manager/therapist), and a psychiatric consultant, with workflows designed so psychiatrists collaborate with a care manager while the PCP remains the longitudinal prescriber.

Students enter via multiple routes: (1) referral from the campus PCP following elevated PHQ-9 or GAD-7 scores or observed concerns; (2) self-presentation to health services requesting counseling; or (3) referral from the counseling center. Importantly, NC-STeP consults occur within the student health center, reducing segregation between physical and mental health services.

The on-campus team (psychiatric NPs/psychiatrists and counseling staff) co-manages care and executes ongoing outreach: residence-hall and classroom education, athletic team activities, “Viking Visits” in academic buildings, and frequent tabling at orientations, open houses, dining halls, games, and community events.

From April 2022 through March 2025, the program completed 2,316 PHQ-9 and 2,317 GAD-7 screenings; generated 184 referrals to LCSW/counselors and 100 referrals to psychiatrists/psychiatric NPs; conducted 481 scheduled sessions; and performed 1,026 email and 786 phone follow-ups. The team also supported 26 on-call/evening sessions, 99 walk-ins, and 170 marketing/outreach activities.

This campus-embedded, telepsychiatry-enabled collaborative care model addressed structural and cultural access barriers for rural minority students by co-locating mental and physical health services and employing systematic measurement-based care. The high throughput of screenings, growth in sessions, and strong student satisfaction indicate feasibility and acceptability in the HBCU context.

The observed semester-linked utilization pattern underscores the importance of aligning staffing, outreach, and appointment capacity with the academic calendar—front-loading resources in September–October and February–April, and planning flexible coverage during winter and summer.

The NC-STeP's Students' Mental Health Initiative demonstrates a scalable, equitable model that:

- Reduces treatment gaps
- Increases early detection
- Improves student engagement and outcomes
- Overcomes provider shortages
- Supports minority and rural student populations

The NC-STeP model demonstrates that telepsychiatry is a practical solution to campus mental health workforce shortages, suggesting that it may be worthwhile to mandate or incentivize telepsychiatry integration within student health systems at public universities, especially rural

campuses and HBCUs. Policymakers can strengthen campus mental health statewide by supporting telepsychiatry expansion, integrated care models, equity-centered funding strategies, and sustainable regulatory frameworks.

#### 4. Discussion

NC-STeP demonstrates that a statewide telepsychiatry program can dramatically improve behavioral health access, particularly in rural and underserved regions grappling with chronic psychiatric workforce shortages. Over thirteen years of implementation of this program, several cross-cutting strengths have emerged that highlight the program's statewide impact and provide insights for replication in other states.

##### *System-Level Improvements*

NC-STeP has measurably improved system performance across North Carolina's emergency departments (EDs). Hospitals participating in the program consistently report reductions in ED boarding, faster access to psychiatric consultation, and streamlined disposition processes [24]. By enabling rapid expert assessment regardless of a hospital's size or location, telepsychiatry helps prevent unnecessary psychiatric admissions, frees scarce inpatient beds, and reduces avoidable law-enforcement or EMS involvement. These improvements translate into substantial cost avoidance for hospitals and the state—both through reductions in inappropriate involuntary commitments and fewer prolonged ED stays. The statewide scope of NC-STeP allows even small rural hospitals to benefit from a coordinated, high-quality psychiatric consult service that they could not independently support.

##### *Clinical Impact*

From a clinical standpoint, NC-STeP enhances the quality and safety of behavioral health care. Remote psychiatric consultation enables timely de-escalation of crises, accurate diagnosis, and earlier initiation of treatment, often allowing patients to be stabilized and discharged safely home rather than hospitalized. Beyond EDs, NC-STeP has expanded into primary care, pediatrics, maternal-fetal medicine, and university students' health centers, embedding psychiatric expertise directly within the care settings where patients naturally present. This integration improves continuity, strengthens team-based care, and increases patient satisfaction by reducing travel burdens and accelerating access to specialty treatment. The program demonstrates that telepsychiatry, when operationalized within collaborative-care frameworks, can extend psychiatric expertise to populations that historically lacked access.

##### *Technology Innovations*

Efficient telepsychiatry at scale requires coordination across numerous electronic health record (EHR) systems, a challenge that has hindered many telehealth programs nationwide. NC-STeP's interoperability model, developed early in the program's history, provides a framework for achieving secure, real-time information exchange across diverse EHR platforms. By building a centralized portal that supports scheduling, documentation, secure messaging, direct data exchange, and clinical workflow management, NC-STeP enabled a seamless experience across more than 100 hospital and clinic partners. This approach demonstrates that technology need not be uniform to be effective; rather, interoperability solutions that respect existing workflows can empower statewide telepsychiatry networks without requiring costly system-wide EHR consolidation.

##### *Equity Considerations*

Despite the overall success of NC-STeP, program data—especially from the COVID-19 period—reveal persistent racial disparities in telepsychiatry utilization. White patients benefited the most from increased telepsychiatry use during the pandemic, while Black patients showed more modest

gains. These differences likely reflect a combination of structural barriers, referral patterns, cultural mistrust, and unequal access to follow-up resources. Thus, while telepsychiatry can expand access, technology alone cannot eliminate inequities. Achieving equitable care requires intentional, culturally informed outreach, unbiased referral pathways, community partnerships, and monitoring systems capable of identifying disparities in real time. NC-STeP's experience highlights the importance of embedding equity-focused strategies into all statewide telehealth efforts.

## 5. Conclusions

Psychiatric workforce shortages continue to worsen nationwide, with the most severe gaps concentrated in rural and underserved areas. These shortages strain emergency departments, limit access to timely behavioral health care, and contribute to avoidable hospitalizations and poorer patient outcomes. Against this backdrop, NC-STeP offers a successful, scalable, and cost-effective model for delivering high-quality psychiatric services through telehealth at a statewide level.

Over thirteen years of operation, NC-STeP has demonstrated that coordinated telepsychiatry can significantly improve system performance—reducing ED boarding, increasing timely psychiatric evaluations, and preventing unnecessary psychiatric hospitalizations. The program's ability to integrate seamlessly with diverse clinical environments illustrates the flexibility and adaptability required for statewide behavioral health initiatives.

NC-STeP's expansion into maternal health, pediatrics, and university settings further highlights the versatility of telepsychiatry and its potential to transform mental health service delivery across the care continuum. In maternal-fetal medicine, it supports high-risk pregnancies and reduces travel burdens; in pediatric practices, it strengthens early identification and treatment of behavioral health needs; and in university health centers, it addresses the growing mental health demands among college students. Taken together, these efforts demonstrate that telepsychiatry is not merely a temporary solution for workforce shortages—it is a foundational component of a modern, equitable behavioral health system. By embedding psychiatric expertise within everyday care settings and leveraging technology to overcome geographic and resource barriers, NC-STeP provides a replicable blueprint for other states seeking to expand access, improve outcomes, and build a more resilient mental health infrastructure.

The NC-STeP experience indicates that telepsychiatry can function as core clinical infrastructure—not an adjunct—when three conditions are met: (1) financing aligns with collaborative-care workflows; (2) interoperability is operationalized through simple, scalable HIE tools; and (3) equity is measured and managed with real-time, stratified dashboards and targeted outreach. Health systems adopting this model should prioritize ED-clinic integration, measurement-based care, and closed-loop referrals; regulators can accelerate impact through parity reimbursement, streamlined licensure/credentialing, and equity reporting requirements. With these enablers in place, statewide telepsychiatry can reliably reduce boarding, avoid unnecessary hospitalization, and expand access across the life span—from perinatal care to pediatrics to university health—while advancing health equity.

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