# Customizing Early Intervention Treatment for Psychosis in the UTHealth – Harris County Psychiatric Center

INQUIRY: The Journal of Health Care Organization, Provision, and Financing Volume 58: I-7 © The Author(s) 2021 Article reuse guidelines: sagepub.com/journals-permissions DOI: 10.1177/00469580211049030 journals.sagepub.com/home/inq

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## **Abstract**

High-need, high-cost patients include those with diagnosed serious mental illnesses (e.g., schizophrenia; SMI). They often delay or fail to seek treatment. If they receive treatment, care is often sought from generalist settings (e.g., primary care or emergency medicine) or is suboptimal due to the provision of limited, non-evidence-based intervention and lack of communication, integration, and coordination among providers. This results in high aggregate costs and poor outcomes. Value-based health care requires care coordination to address the medical and social needs of this population. We describe a unique early intervention program for SMI that emanates from an inpatient setting: The Early Onset Treatment Program (EOTP) at the University of Texas Health Science Center at Houston–Harris County Psychiatric Center. The EOTP offers free, phase-specific, multi-disciplinary treatment to young adults without health insurance with the aim of improving their long-term outcomes and reducing the rate of rehospitalization. An evaluation of the EOTP indicates program participants were significantly less likely to be rehospitalized at six months (4.73 times less likely) and at 12 months (3.5 times less likely) than a comparison group (p < .001), and participants' scores of symptomatology and disability significantly decreased following treatment.

#### **Keywords**

schizophrenia, psychotic disorders, early medical intervention, serious mental illness, inpatient care

- What do we already know about this topic?
  - · Literature suggests early interventions for psychosis promote recovery and reduced rehospitalization.
- How does your research contribute to the field?
  - The majority of literature supporting early interventions are conducted in research and/or outpatient settings, and our study adds to the viability of early intervention programs for underserved, uninsured individuals in an inpatient setting.
- What are your research's implications towards theory, practice, or policy?
  - Our research implies the feasibility of implementing cost-free, valuable, evidence-based, and effective early intervention programming for individuals early in the course of a severe mental illness.

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# Introduction

Serious mental illnesses (SMI) are disorders associated with impaired functioning and are a leading cause of disability. SMI refers to a primary psychotic or mood disorder with prominent symptoms of psychosis.2,\* Schizophreniaspectrum disorders comprise a substantial proportion of SMI. Lifetime prevalence of schizophrenia-spectrum disorders vary across studies, some as high as 2.3\%, and are highly comorbid with other disorders.<sup>4,5</sup> The first episode of psychosis typically occurs between the ages of 16 and 25 years. Treatment is often delayed (i.e., median duration of untreated psychosis is 196 weeks<sup>7</sup> or not sought, which contributes to excess, premature mortality. 8,9 This case study describes the Early Onset Treatment Program (EOTP) at the University of Texas Health Science Center at Houston-Harris County Psychiatric Center (UTHealth-HCPC), which aims to decrease the duration of untreated psychosis, coordinate continuity of care, and reduce readmissions.

Early interventions for psychosis (EIP) are shown to improve outcomes, such as reducing rehospitalization rates, for individuals with SMI. EIPs have unique foci from standard of care, including early detection of psychosis and phase-specific treatment. Organizations with early intervention programs (also referred to as first-episode psychosis or FEP) are now dotted across the United States. <sup>10</sup> Many EIPs use Coordinated Specialty Care (CSC), a multidisciplinary team-based service delivery model comprising the five key provisions: case management; medication/primary care; psychotherapy; family services; and supported employment and education. 11 Yet, pharmacological treatment (e.g., clozapine) remains the most utilized, often without psychosocial provisions (e.g., supported employment and cognitive behavioral therapy or CBT). 12 The literature on early interventions remains in its infancy; a 2011 Cochrane systematic review concluded that, overall, there is "emerging but as yet inconclusive evidence" for early interventions to prevent or reduce the impact of psychosis.<sup>13</sup>

The mental health system of Texas lacks the capacity to meet its population needs. Texas has a high prevalence of SMI, but low rates of service utilization. <sup>14</sup> Texas also has the second highest mental healthcare professional shortage area, resulting in excessive unmet mental health needs. 15 Public psychiatric hospitals address population's acute mental health needs, but incur high costs among those with SMI because, while frequently utilized, services are short-term and aimed at stabilization. 16,17 Texas state hospitals have poor infrastructure. 18 This is against a backdrop of mental health and substance abuse infrastructure that is fragmented, overburdened, and underfunded in the United States. 19 The Health and Specialty Care System has established a statewide psychiatric hospital reform with bedrock principles aligned with those of EIP initiatives. <sup>7,20</sup> UTHealth-HCPC, in contract with The Harris Center for Mental Health and IDD ('The Harris Center'), is the ground on which one of ten evidencebased EIP treatment programs in Texas is operating.<sup>10</sup> The challenge is to design and iteratively redesign the EOTP to meet biopsychosocial needs of people with SMI.

# The Goal

Our goal is to develop a new paradigm for the organization, financing, and delivery of services for people with psychosis in the greater Houston area. EOTP's multidisciplinary team aims to provide intensive treatment while maintaining strong relationships with The Harris Center, which operates an outpatient Early Onset—First Episode Psychosis Program and an Assertive Community Treatment (ACT) program. Here, we recount the experience of testing this intensive treatment and continuum of care model and iteratively customize it to patient needs so it is ultimately sustained and scaled in a particular therapeutic environment. Our hope is to continue experimenting with this model to accelerate its diffusion across Texas.

# The Execution

# The Setting and Initial Programming

UTHealth-HCPC is the main provider of acute inpatient psychiatric services for the greater Houston area and the second largest academic psychiatric hospital in the nation. As a safety-net hospital, UTHealth-HCPC serves populations with the highest rates of emergency service utilization: individuals with SMI, ethnic minorities, those with low socioeconomic status, and persons experiencing homelessness. 21-23

In 2013, the Texas Health and Human Services Commission allocated funds to increase access to mental health care. A portion was allotted to UTHealth-HCPC for the Early Onset Pilot Project (EOPP), EOTP's precursor, to fund six extended-stay beds (not to exceed 90 days) to "indigent" or uninsured adults with a recent onset of SMI. A clinical psychologist was hired to develop programming and direct the program with the support of a treatment team including a psychiatrist, a social service clinician, and a recreational therapist, with nursing support. All providers' provide clinical services for EOPP and acute patients, and are salaried by UTHealth. The treatment team collectively determined the primary aim of the program.<sup>‡</sup> Treatment initially included psychopharmacology, social services, and psychological interventions (testing and psychotherapy only for select patients).

As with most hospitals, UTHealth-HCPC has limited space for a specialty unit, so EOPP is housed within a 23-bed acute inpatient unit. In an effort to reduce restrictions inherent within acute inpatient settings, a tiered system was created to gradually allow patients more freedom, including supervised community outings, day and weekend passes, and independently attending the hospital cafeteria for meals.

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## **Hurdles**

# **Broad Inclusion Criteria**

Initially, EOPP was dedicated to young adults with "SMI," which was broadly interpreted to include most disorders. EOPP referrals were frequently made when treatment teams encountered barriers to recovery and discharge planning (e.g., chronic suicidality, frequent relapses, and placement difficulties). Consequently, EOPP served a large proportion of individuals with substance abuse and personality disorders. Faculty and staff noted a pattern of some of these individuals obstructing other patients' progress, participating in unit altercations, and fostering high rates of contraband seizure. As another consequence of broad inclusion criteria, patients received generalized treatment (e.g., anger management and general coping skills) as opposed to targeted, empirically supported treatments (e.g., CBT for psychosis, Dialectical Behavior Therapy).

# **Program Modification**

Before 2017, there was high turnover of program directors and psychiatrists. In late 2017, a new program director (a psychologist) was hired with specialized training in SMI and worked with the treatment team to develop specialized programming. Consistent with the majority of early intervention research, inclusion criteria were modified to solely include individuals with a recent onset of a schizophrenia-spectrum or mood disorder with psychotic features. Exclusionary criteria were expanded to include primary substance use disorders (i.e., substance induced psychosis), due to limited availability of comorbidity services, and personality disorders, with the exception of some Cluster A personality disorders. To determine eligibility, the director and/or social service clinician communicate with the

acute treatment team and review records, and further interview the referred patient to determine eligibility (onset of psychosis within five years; substance and medically-induced psychotic symptoms are ruled out; uninsured; no prior utilization of IDD services from the Harris Center due to EOTP funding limitations; and patient consent to engage in treatment components). The gathered information is then shared with the EOTP treatment team for final determination. Pathological personality traits are difficult to rule out during active psychosis, so the team agreed that in the event such traits emerge after stabilization and negatively impact others' treatment or create unit emergencies (i.e., threats to staff), a contingency plan is made with the patient, and if violated, are discharged with indicated follow-up resources. Following program modifications, the Early Onset Pilot Project (EOPP) was renamed as the Early Onset Treatment Program (EOTP).

Treatment team members with specialization in early psychosis have been utilizing evidence-based treatments and promising practices. Components of CSC were adapted from clinical guidelines' treatment recommedations, <sup>24,25</sup> as well as effective practices found within the SMI literature to the extent that their implementation is feasible within UTHealth-HCPC. Programming now includes recreation therapy (including community outings), specialized psychiatric treatment, individual CBT, group psychotherapy, case management, and family services. A schematic diagram of EOTP is shown in Figure 1.

## Family Services

Family services are effective for patient recovery and reduced rehospitalization rates.<sup>25</sup> Although EOTP offered family meetings, mainly to provide psychoeducation, families/care givers attended one to two meetings on average. Families

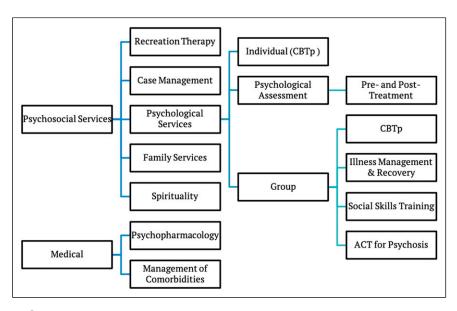


Figure 1. EOTP Services Overview.

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Table I. Preliminary Treatment Outcomes.

Test	Mean	SD	SE Mean	Paired t Test t Value	df	Sig. (Two-tailed)
BDI-II (pre)	18.53	11.08	2.02	5.77	29	.000
BDI-II (post)	7.97	7.98	1.45			
S-OQ (pre)	71.00	33.82	6.28	6.84	28	.000
S-OQ (post)	37.00	24.78	4.60			
WHODAS 2.0 (pre)	15.52	9.47	1.89	5.84	24	.000
WHODAS 2.0 (post)	6.12	7.25	1.45			
PANSS (pre)	85.85	14.21	2.73	7.97	26	.000
PANSS (post)	60.26	15.33	2.95			

Abbreviations: BDI-II, Beck Depression Inventory, Second Edition; S-OQ, Severe Outcome Questionnaire; WHODAS 2.0, WHO Disability Assessment Schedule; PANSS, Positive and Negative Syndrome Scale; SD, standard deviation; SE, standard error; df, degrees of freedom

Table 2. Resources Needed to Create Programs Like EOTP.

Resource	EOTP Experience in Garnering Resource			
Funding	The EOPP/EOTP received seed funding from Texas Health and Human Services Commission.			
Clinical recommendations and guidelines	At UTHealth-HCPC, we continue to strive to match these; for example, many patients gain signific weight during treatment in EOTP, therefore we hope to incorporate more physical activity and nutritional counseling in the future.			
Staffing	The EOTP currently maintains a 4:6 treatment team member to patient ratio, not including nurses working on the unit. If EOTP expands, as optimistically anticipated, we will strive to maintain a maximum of a 1:10 ratio of treatment team members to patients, aligned with general recommendations for ACT, depending on other staff/faculty responsibilities.			
Partnerships	Most patients who graduate from EOTP transition to outpatient care, which may be disruptive in routin and intensity of care. We hope to develop a residential or intensive outpatient program to provious step-down care and gradual community re-integration with the opening of the UTHealth John S. Dur Behavioral Sciences Center.			
Research	Further, the use of automatic tracking would enable automatic tabulation of rehospitalizations to advance research productivity. When EOTP graduates present for readmission to UTHealth-HCPC, the treatment team is rarely notified. Utilization of an EMR flagging system would enable the treatment team to provide fruitful adjunct services to assist patients with problem-solving and further relapse prevention planning during acute readmission. The evaluation and management of the program can benefit from leveraging EMR system.			

tended to voice a level of distress that warranted additional education, effective coping skills, and support, similar to needs of other caregivers of individuals with psychosis. <sup>26</sup> Because of this need and the abundant time patients spent with their families post-discharge, the EOTP team are in the process of designing a curriculum to include psychoeducation and teachable CBT for psychosis skills to provide tools to assist their loved ones at home. We plan to invite caregivers to attend a four-hour group held one weekend every month.

## Need for Additional Services and Continuity of Care

Supportive employment and education are major effective components of CSC, but are unfeasible within EOTP. Relatedly, all EOTP participants lack adequate access to mental health care (the uninsured), which often posed challenges in attaining recommended follow-up services. We therefore partnered with The Harris Center's Early Onset program that provides these

services. To assist with continuity of care, in 2019, we established monthly meetings to exchange treatment-related information that was rarely available due differing electronic medical record (EMR) systems. Although their criteria for recency of onset was stricter, we negotiated a modification so most EOTP graduates met their criteria for step-down EIP services. EOTP graduates are also eligible for ACT, which is now consistently offered.

UTHealth-HCPC provides a seven-day supply of prescribed medications post-discharge and all patients are scheduled for a follow-up visit with a physician. Many patients are rehospitalized soon after discharge and do not attend follow-up appointments or fill their prescriptions. Long-acting injectable (LAIs) improve medication adherence, but are costly. The Harris Center offers multiple LAIs, but UTHealth-HCPC was unable to initiate such treatment. The UTHealth-HCPC Chief Medical Officer consulted with pharmaceutical companies to obtain a set number of starter packs of five LAIs, which are now used regularly

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for agreeable and appropriate patients, furthering our ability to provide initial treatment linked with continuity of care postdischarge.

#### The Team

The EOTP is operated by UTHealth faculty and UTHealth-HCPC staff: a program director (a clinical psychologist), a recreational therapist, a social service clinician, and a psychiatrist. Team members regularly communicate during team meetings and check-ins throughout the week, and communicate directly with patients.

# Team Decision-Making

EOTP treatment team meetings include all treatment team members. During the EOPP phase, one incident involved a patient who eloped during a community outing. The recreation therapist who supervises community outings was unfortunately excluded from weekly team meetings at that time, so could not inform treatment decisions based on factors such as patient readiness to engage in community outings. After a change in leadership, EOTP treatment team meetings were revised to include *all* treatment team members. Because of this modification to include team building and the use of collaborative decision-making,<sup>27</sup> there have been few to no safety concerns during community outings and the treatment team has experienced a greater sense of cohesiveness.

## **Metrics**

Although state funding intended to decrease the use of emergency services by providing early interventions, the success or failure of the program was not quantified until 2018, when we began measuring patient outcomes using several assessment measures pre- and post-treatment, with six- and 12-month follow-ups. Patients completed four instruments for us to assess the effects of treatment on symptomatology, severity, and functionality. Rehospitalization rates were gathered retrospectively for 2013-2017 participants and continue to be tabulated for EOTP per review of EMR. To evaluate the potential benefit of EOTP on rehospitalization, a comparison group of inpatients at UTHealth-HCPC who received standard treatment were compiled and matched on demographic variables and primary diagnosis.

Preliminary analyses using Poisson and logistic regressions indicate patients that participated in EOTP were significantly less like to readmit at six- and 12-month follow-up compared to patients that received treatment as usual at UTHealth-HCPC. The EOTP group was 4.73 times less likely to have multiple readmissions at six-month (p < .001) and 3.5 times less likely at 12-month (p < .001) compared to the comparison group. Regarding

symptomatology and disability, paired t-test analyses revealed significant improvement across all measures, detailed in Table 1

## Where to Start

Six resources are needed to start a program similar to the EOTP (Table 2):

- Secure funding via grants, state/federal support, allocation of existing funds, and/or third-party payers.
- Reference national recommendations and guidelines and emerging evidence related to CSC model to determine biopsychosocial services.
- Staff team members based on CSC model and train staff on recovery-oriented services for SMI.
- Form partnerships with outpatient providers and community-based programs to ensure the spectrum of biopsychosocial interventions are available.
- Conduct research on EIPs to hone in on the combination of clinical interventions and social support that yields optimal patient outcomes at the lowest cost.

# **Key Takeaways**

- Although there have been initiatives to formulate outlines and recommendations for outpatient programs specifically focused on the provision of early interventions, standards for inpatient services are lacking.
- EOTP was developed in UTHealth-HCPC to accommodate uninsured young adults within the first five years of onset of a SMI.
- UTHealth-HCPC adopted evidence-based treatment and promising practices, then customized them through patient data analysis and program evaluation. Expansion of EOTP is dependent on resources (funding, human, beds).
- Although funding for inpatient facilities tends to be limited, we strengthen EOTP by advocating for our program and adding services within reason to maximize effectiveness, including family services, utilizing evidence-based treatments, and providing support and resources to promote employment and continued education.
- As part of EOTP's growth, UTHealth-HCPC partnered with The Harris Center to ensure continuity of care.

#### **Declaration of conflicting interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## **Funding**

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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#### **Notes**

- \* Hallucinations, delusions, disorganized speech or behavior, and/or negative symptoms.
- † UTHealth-HCPC is slated to be the largest upon the completion of its expansion: John S. Dunn Behavioral Sciences Center.
- ‡ The EOPP primary aim is to provide intensive, multimodal treatment and support for indigent young adults in the early course of psychiatric illness, with the intention of ameliorating psychiatric symptoms, improving long-term outcomes, and reducing rehospitalization.
- § Patients completed the Positive and Negative Syndrome Scale, Beck Depression Inventory, Second Edition, Severe Outcome Questionnaire, and the WHO Disability Assessment Schedule 2.0.
- \*\* We matched patients based on gender, age, and primary diagnosis.

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