A Retrospective Evaluation of a Pilot Youth Community Assessment and Treatment Service

Chinar Goel, F.R.A.N.Z.C.P., M.B.B.S., Reem M. A. Shafi, M.B.B.S., B.Sc., Adrian J. Conner, M.B.B.S., Flavie Waters, Ph.D., Paul E. Croarkin, D.O., M.S., Patrick McGorry, M.D., F.R.A.N.Z.C.P.

Objective: Targeted, highly accessible early intervention for youths with emerging and complex psychiatric presentations is increasingly needed. The Youth Community Assessment and Treatment Team (YCATT) multidisciplinary service was established to provide intensive intervention for youths in Perth, Australia.

Methods: The authors conducted a retrospective evaluation to examine YCATT's impact on emergency department (ED) visits, psychiatric inpatient admissions, and provision of care for youths in the transition period between adolescent and adult psychiatric services. Demographic, clinical, and service utilization data for all referrals over the pilot period (2016–2017) were collected and analyzed with descriptive statistics.

Results: During the pilot period, 308 referrals were accepted. All referred youths had a trauma history and presented with acute or complex conditions, and most (66%) were between 16 and 18 years old. The admission rate to a psychiatric inpatient unit was <7%. Of 61 youths specifically referred to YCATT as an alternative to psychiatric admission, 90% were successfully diverted from psychiatric or ED admission. After discharge from YCATT, youths had improved scores on the Health of the Nations Outcome Scale and 10-item Kessler Psychological Distress Scale.

Conclusions: These findings suggest that YCATT is an accessible and effective service for the population of transition-age youths. It appears that YCATT, in collaboration with other community services, contributed to diverting psychiatric inpatient admissions, facilitated outpatient treatment, and enabled continuity of care for vulnerable youths. The results underscore the need for more accessible, individualized treatment approaches for youths who transition to adulthood.

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Youth psychiatry treatment teams have increasingly recognized that the service transition between adolescence and adulthood is not a smooth, linear process. An arbitrary cutoff of 18 years has traditionally defined child and adult psychiatric populations and is commonly used to determine access to service (1). This cutoff fosters myriad problems at a critical developmental period for adolescents, such as loss to follow-up, delays in referral, lack of continuity in health care systems, and limitations on access (1–4). Demands for psychiatric services continue to outpace resource availability, and this demand is accentuated in transition-age youths (5). Traditional models of care for youths ages 17–18 appear to be suboptimal, exacerbating mental health and societal burdens (4–6).

Most psychiatric disorders emerge between ages 12 and 24 (7). In Australia, 20%–25% of all youths ages 16–24 have experienced a psychiatric disorder (7–9). In all-cause mortality data from the Australian Bureau of Statistics (10), suicide accounted for 36% of deaths among 15- to 19-year-old males and for 28% of deaths among females. Among 20- to 24-year-olds, suicide accounted for 38% of deaths among men and 33% among women (8, 10). This public health problem is not restricted to Australia. In the United States, the Centers for Disease Control and Prevention has reported that suicide is the second leading cause of death among 15- to 24-year-olds (11). Adolescence and early adulthood are strategic periods for intervention because 75% of psychiatric conditions emerge before age 25 (5, 12).

HIGHLIGHTS

- The Youth Community Assessment and Treatment Team (YCATT) service was established to provide intensive psychiatric intervention for youths in Perth, Australia.
- Referrals to YCATT as a possible alternative to psychiatric hospitalizations were successful in 90% of cases.
- YCATT reduced inpatient psychiatric admissions, facilitated outpatient treatment, and enabled continuity of care.

YOUTH COMMUNITY ASSESSMENT AND TREATMENT TEAM: A PILOT SERVICE

In April 2016, the pilot service Youth Community Assessment and Treatment Team (YCATT) was developed to run alongside the Fiona Stanley Hospital Mental Health Youth Unit in Western Australia in order to bridge inpatient and established community services. Emphasis was placed on providing comprehensive follow-up care, urgent community assessments, and interventions for the youth population in both urban and rural areas. YCATT was developed with every effort to adhere to the guiding principles outlined by the Victoria State Department of Health–sponsored Youth Mental Health Community of Practice initiative (13).

The overall aim of YCATT was to increase access to psychiatric care for the vulnerable population of youths, reduce emergency department (ED) visits, and decrease inpatient readmissions. This goal can be divided into the following service objectives: reduce psychiatric admission and facilitate early discharge from mental health inpatient units, provide youths with preadmission and postdischarge community care, improve the mental health outcomes and life circumstances for youths, and enhance partnerships and service provision with community services. This study was a retrospective evaluation of the mental health care provisions and outcomes of the YCATT service. Information is provided on the service structure, demographic characteristics, as well as clinical and service utilization variables for all youths referred to the service during the 14-month pilot period (from April 26, 2016, to June 30, 2017).

YCATT PROGRAM DELIVERY

YCATT consists of a multidisciplinary team with psychiatrists, nurses, social workers, pharmacists, school teachers, aboriginal liaison officers, and clinical psychologists. During the pilot period, the service operated Monday to Friday, 8:30 a.m. to 4:30 p.m., with one additional evening (4:30 p.m. to 6:30 p.m.) clinic per week. All referrals were triaged by a clinical nurse specialist, and youths with urgent referrals were assessed within 2–4 hours. All referrals were discussed at the daily consultant psychiatrist–led intake meeting, with an assessment arranged by the designated clinician (case manager) within 72 hours.

The initial comprehensive assessment included a risk assessment as well as an evaluation of symptomatology, social circumstances, relationships, substance use, and comorbid general health conditions of the referred youth. The case manager devised an initial management plan, which was discussed with the consultant psychiatrist. This psychiatrist provided up to three 30- to 60-minute medical reviews within the first week of the service episode depending on complexity, which included further assessment, formalizing of the diagnosis, and commencement and review of psychotropic treatment (e.g., antidepressants, mood stabilizers, or antipsychotics). Further medical reviews were 30 minutes long and included evaluation of response and adverse effects and finalizing discharge from the service. General health was also monitored in close liaison with the youth's general practitioner.

The team psychologist would develop an individualized treatment plan for the youth and provide 4–6 sessions (of 45–60 minutes each) of cognitive-behavioral therapy or problem solving in addition to motivational interviewing, supportive psychotherapy, or crisis support provided by the case manager. The team social worker addressed any challenges with living accommodations, referral to disability services, obtaining government financial support if eligible, and involving child protective services if indicated. Teachers who worked with YCATT liaised with the youth's school or college to address concerns regarding attendance or performance and prepared behavior management plans to facilitate a smooth transition of the youth back to academic studies after treatment.

Assessments and follow-up appointments were conducted in outpatient clinic, home, or other community settings. The frequency of visits ranged from 1–2 times per week to daily. Case managers provided psychoeducation and psychotherapy; they also engaged youths in formulating a tailored treatment plan focused on needs, strengths, relapse indicators, and crisis management tools, including available after-hours support (i.e., helplines or ED as needed). The youth and a family member (with the youth's consent) were offered a copy of the treatment plan. Approximately half of the appointments were home visits, which allowed assessment of the home environment and of the youth in his or her home, provided opportunities for engagement of the family, and helped minimize stigma. Family members were allowed to attend any of these appointments to encourage their and the youth's involvement in treatment, relapse prevention training, and discharge planning. The YCATT team also liaised with other relevant agencies, services, and nongovernmental organizations as appropriate in the design of individualized treatment plans.

METHODS

The Fiona Stanley Hospital Institutional Ethics Approval Committee considered this study exempt from review because it was a retrospective chart review conducted as part of a South Metropolitan Mental Health Service Quality Assurance project. All study procedures followed Declaration of Helsinki guidelines.

Participants

Young people ages 16–24 without established public sector mental health services were eligible for YCATT services. There were no diagnostic or behavioral exclusion criteria, aligned with YCATT's aim of maximizing accessibility for youths and minimizing related stigma. For example, assessments were provided for individuals with eating disorders, intellectual disabilities, substance use disorders, and

complex general health problems, as well as with those with a forensic history. Data from youths identified for the retrospective review from the pilot period (in 2016–2017) were collected from a service database from July to October 2018 and analyzed. Each team member was responsible for completing the database analysis for their designated youth cases. The database was used by the team for regular clinical review meetings and audit purposes.

Outcome Measures

Health of the Nation Outcome Scales (HoNOS). The HoNOS is a clinician-rated scale instrument completed at admission and discharge by the youth's case manager (a member of the team) (14). HoNOS is a standardized tool, which assesses mental health with 12 items on a 5-point scale (ranging from 0 to 4, with higher scores indicating higher severity of the factors assessed). Traditional domains include behavior, impairment, symptoms, and social functioning (14). For the purposes of this study, HoNOS scores were calculated per the proposed four-factor HoNOS model by Speak et al. (15) designed to capture HoNOS items more accurately for mental health services. Scores were assessed along the four factors of personal well-being, emotional well-being, social well-being, and severe disturbance to help guide treatment and to establish clinical severity (15).

Ten-item Kessler Psychological Distress Scale (K10). The K10 (16) is a self-reported measure of psychological distress completed by the youth. The K10 has 10 questions about emotional states, each with a five-level response scale. Higher scores indicate more severe distress.

Clinical measures. These outcome measures included data routinely collected by services and retrieved from data sets of mental health services (the National Outcomes and Casemix Collection, The Open Patient Administration System) and YCATT. As an indicator of service utilization, data were composed of the number of admissions to mental health inpatient units and ED visits.

Analyses

Data were analyzed with IBM SPSS Statistics, version 23. Admission and discharge data were descriptively analyzed. Pre-post contrasts with repeated-measures t tests and analysis of variance were used to examine increases or decreases changes in HoNOS and K10 scores from admission to discharge.

RESULTS

Demographic Characteristics

During the 2016–2017 period, 410 referrals were received and triaged, with reasons for referral to the service falling into four main categories. The largest category was clinical assessment and management (48%, N=198); approximately one-third of these referral types (31%, N=61 of 198) pertained to requests for acute crisis management, including suicidal intent. The second largest referral category was for prevention of inpatient hospitalization or early support for discharge from inpatient psychiatry units (32%, N=130 of 410). A third category was for follow-up care after an ED admission or inpatient stay (20%, N=80 of 410). A fourth category sought transition care while the patient awaited an appointment with a traditional psychiatric service (1%, N=2 of 410).

TABLE 1. Summary characteristics of the 308 youths in the 2016–2017 YCATT sample[a]

Characteristic	N (N=308)	%
Age in years		
16–18	203	66
19–21	72	23
22–24	33	11
Referral source		
Emergency department	79	26
Inpatient service	58	19
Self or friend	46	15
CAMHS or youth mental health service	42	14
Community mental health or other support service	37	12
School, GP, or psychologist	33	11
General hospital	10	3
Missing	3	1
Primary diagnosis (N=308)[b]		
Mental and behavioral disorders due to psychoactive substance use (F10–F19)	26	8
Schizophrenia, schizotypal, and delusional disorders (F20–F29)	24	8
Mood disorders (F30–F39)	77	25
Neurotic, stress-related, and somatoform disorders (F40–F49)	51	17
Disorders of adult personality and behavior (F60–F69)	25	8
Other (organic disorders, eating disorders, disorders associated with puerperium and developmental disorders)	53	17
Unspecified mental disorder (F99)	52	17

[a] CAMHS, child and adolescent mental health services; GP, general practitioner; YCATT, Youth Community Assessment and Treatment Team.
[b] F codes are from the *ICD-10*.

After triage, YCATT accepted 308 youth referrals (75%) between April 26, 2016, and June 30, 2017. Youths who were deferred included those in established public sector services or who could be treated by primary care services (e.g., community psychology). The mean±SD age of the 308 accepted youths was 18.2±2.1 (range 16–24) years, with 66% (N=203) between 16 and 18 years and 34% (N=105) between 19 and 24 years old (Table 1). A slightly greater proportion of females versus males (62% [N=192] vs. 38% [N=116]) accessed YCATT services, and 3% (N=8) identified as members of the transgender and gender-diverse population. Most of the sample was White (96%, N=297), Aboriginal or Torres Strait Islanders accounted for 2% (N=6) of the sample, and 2% (N=5) belonged to a culturally and linguistically diverse group of Somali, Asian, and Maori ethnicities.

TABLE 2. Comparison of HoNOS scores at admission and discharge for the 308 youths in the 2016–2017 YCATT sample[a]

	Admission score		Discharge score		Repeated-measures test results	
HoNOS	M	SD	M	SD	t	p
Total score	11.4	4.9	6.3	4.2	12.2	.001
Factor 1: personal well-being[b]	2.2	2.4	1.1	1.6	6.98	.001
Factor 2: emotional well-being[c]	5.0	2.5	2.3	2.2	13.1	.001
Factor 3: social well-being[d]	3.5	2.4	2.0	1.9	7.40	.001
Factor 4: severe disturbance[e]	1.2	1.3	.5	.8	6.90	.001

[a] Higher scores indicate higher severity of problems in the specific factor assessed (15); df=156 for all factors. HoNOS, Health of the Nation Outcome Scales; YCATT, Youth Community Assessment and Treatment Team.
[b] Sum of item 4 (cognitive problems), item 5 (physical illness or disability problems), item 10 (problems with activities of daily living), and item 12 (problems with occupation and activities); maximum factor score=16.
[c] Sum of item 2 (nonaccidental self-injury), item 7 (problems with depressed mood), and item 8 (other mental and behavioral problems); maximum factor score=12.
[d] Sum of item 3 (problem drinking or drug taking), item 9 (problems with relationships), item 11 (problems with living conditions), and item 12 (problems with occupation and activities); maximum factor score=16.
[e] Sum of item 1 (overactive, aggressive, disruptive, or agitated behavior) and item 6 (problems associated with hallucinations and delusions); maximum factor score=8.

Clinical Characteristics and Vulnerabilities

The most commonly managed primary conditions were affective disorders, alongside other diagnostic groups summarized in Table 1. Suicidality was identified for 41% (N=126) of YCATT participants; 22% (N=69) were identified as highly vulnerable and at risk for neglect or for abuse or exploitation by others. Substance abuse or dependence was an issue for 36% (N=112) of youths (cannabinoids=59%, N=66 of 112; alcohol=26%, N=29 of 112; stimulants=13%, N=15 of 112; benzodiazepines=2%, N=2 of 112). Of all youths, 8% (N=26) had a physical disability, and 9% (N=29) had an intellectual impairment. All youths reported at least one type of trauma or negative life event, such as sexual or physical abuse during childhood or adolescence, and 78% (N=239) reported at least two. In addition, 19% (N=57) had witnessed domestic violence.

Service Utilization

Youths with a categorized referral source (N=305) entered services mainly from local EDs (26%), and 19% were from inpatient wards (Table 1). Other referrals came from community services (12%) and public mental health services (14%). For 15%, the referrals were by the youth him- or herself or by a family member.

The mean length of YCATT service provided was 60.6±44.3 days (median=49 days). Longer service lengths than the planned 6–8 weeks were linked to efforts in finding appropriate services for medium- to long-term care. At the time of the pilot period of the service, Western Australia had limited youth community mental health services. When young adults were identified as needing longer-term care because of continued risk or ongoing treatment needs, they were transitioned to services in the community, but the number of available services was limited.

Clinical Outcomes

HoNOS scores. The HoNOS scores significantly decreased between admission and discharge (Table 2). At the start of an episode of YCATT-delivered care, 63% (N=194) of youths were classified as "moderate" or "very severe" (one or more item scored as 3) on the HoNOS. Altogether, 84% (N=258) of youths had improved functioning after discharge from YCATT. Youths had significant improvements in all four factors, with the greatest gains occurring in emotional well-being (an average decrease of 2.7 points, indicating fewer emotional problems) and social well-being (a decrease of 1.5 points).

K10 scores. At initiation of YCATT care, 69% (N=63 of 91) of youths who completed the K10 had high or very high levels of psychological distress (Table 3). At completion of the care episode, K10 scores significantly improved, as indicated by a 30% reduction in distress scores (from 30.9 to 21.3, $p<0.01$).

Inpatient psychiatric admissions during and after the YCATT. YCATT successfully averted hospital visits in 93% (N=287 of 308) of cases. During an average care episode with YCATT, the admission rate to a psychiatric inpatient unit was <7% (21 of 308). For the 61 patients with acute symptoms who were specifically referred to YCATT to prevent hospitalization (as opposed to being referred for other reasons such as follow-up care), 90% (N=55) were successfully diverted from ED admission or direct psychiatric admission. These data were ascertained from a screening question during the YCATT referral process that queried the referring provider's disposition plan if YCATT services were not available. Thirty days after completion of YCATT care, the admission rate to a psychiatric inpatient unit was <8% (N=23).

Disposition Following Completion of YCATT Care

After completion of YCATT intervention, the most common discharge destination was to primary care, with 37% (N=114) being discharged back to their general practitioner. Other common discharge destinations included community psychology and support services (23%, N=71). All YCATT

participants were discharged with individualized relapse prevention plans.

Overall, 46% (N=143) of the youths were referred for ongoing support by mental health services. These services varied from adult community mental health teams, child and adolescent mental health services, to private psychiatrists or psychologists. The YCATT service allowed transition into the care of stand-alone private psychiatrists who did not always have the capacity for treating high-acuity patients. YCATT provided crisis resolution and a stabilizing period and also supported the provider to whom the youths were transitioning. This process optimized family satisfaction with the service because it enabled them to access a private care provider who otherwise may not have had the capacity to accept the patient.

Those who met criteria for dependence on or harmful use of substances (36%, N=112) were offered medications to help with withdrawal symptoms as appropriate, psychoeducation, harm reduction, and assessment and motivational interviewing by practitioners with training in co-occurring disorders. Among these individuals enrolled in YCATT, 2% (N=7) needed additional support from specialized drug and alcohol services because they were considering to reduce or abstain from drug and alcohol use. During this process, a model of joint care was developed with local drug and alcohol treatment programs. For 41 of the 308 youths (13%), only admission information was available; they had not attended any of the follow-up appointments or had declined the service after referral. This level of follow-up treatment disengagement is in keeping with previous research indicating the challenges of retaining youths for psychiatric follow-up (17).

DISCUSSION

The findings of this study suggest that YCATT appropriately diverted patients from psychiatric units and reduced ED visits. Current arbitrary age cutoffs related to child and adolescent specialization contribute to the fragmentation of mental health services. Adolescents and young adults struggle to navigate existing systems to access care. This barrier prevents receiving psychiatric treatment during a critical developmental period. YCATT's individualized approach was designed to address this issue and to assist individuals with finding care during difficult times. Other Australian and international programs have also successfully targeted age-transitioning youths with strength-based and community-focused frameworks (4, 18). The YCATT program has unique features, including encouragement for self-referral and a focus on relapse prevention work. The YCATT program also emphasizes informal preparation for specific treatments, transition planning, and collaborative meetings to facilitate transfer of care. These elements often require >8 weeks to ensure effective transfer of care.

The findings from our retrospective service evaluation suggest that in addition to providing community assessment and management, YCATT helped prevent ED visits and inpatient psychiatric admissions and enabled timely discharges from the hospital. The YCATT framework provided an opportunity for individuals to be treated in their own home or other familiar environments, facilitating improved engagement and family involvement. Overall, <7% of accepted referrals were admitted for inpatient psychiatric admission after assessment or during the intervention period because of high complexity and imminent risk for harm.

TABLE 3. Kessler Psychological Distress Scale (K10) distress levels of the youths at the start and end of YCATT care[a]

	Start of care (N=91)		End of care (N=40)	
Distress level	N	%	N	%
Very high	45	49	7	18
High	18	20	11	27
Moderate	16	18	12	30
Low	12	13	10	25

[a] Psychological distress scores on the K10 are rated on a five-level response scale and range from "very high" to "low." YCATT, Youth Community Assessment and Treatment Team.

We note that we found that a YCATT care episode was slightly longer than the stipulated target of 6–8 weeks (average=60 days). The longer than intended length of YCATT care highlights the need for youth-focused community mental health services in Western Australia. YCATT continues to align with other youth-focused community mental health teams in order to enable early intervention and facilitate transition to longer-term support when clinically appropriate. Currently, most YCATT referrals are from the ED and inpatient units. Future efforts will strengthen community links to increase the proportion of referrals from less acute settings to allow vulnerable youths to access a youth-friendly mental health service. Furthermore, as a history of trauma was universal among the YCATT participants in this study, future efforts should continue to focus on innovative prevention approaches and interventions that address trauma among youths.

This study had some limitations. It used a retrospective approach that inherently affects external and internal validity. The demographic characteristics of the youth sample in Perth may not be generalizable to other cities or states, and a comparison group was not included in this study. Future studies should evaluate data from other Perth hospitals without a YCATT service. The HoNOS was completed by an unblinded case manager, which likely contributed to rater bias. The related improvement in the K10 score is important to consider because it is a self-reported measure; additional objective measures would have been valuable to further evaluate the service. Future studies should include blinded raters and efforts to enhance the reliability of clinician ratings.

CONCLUSIONS

Considering the scope of psychiatric morbidity among youths, a wider acknowledgment of their particular needs

is required, with services specifically built to address the increasing psychiatric burden among youths and to positively influence their mental health prognosis and trajectory. Suboptimal transition between adolescent and adult services has been consistently shown to result in disrupted care, poor clinical outcomes, and disengagement of patients (19). The results of this study of the YCATT pilot service suggest the need for this specific type of acute and subacute service as an alternative or complement to current psychiatric services. YCATT provides a continuum of service options that address the needs of the community as well as those of inpatient and outpatient mental health services. In the future, YCATT could be used as a youth triage service to determine appropriate referrals to other community services; it could also be used as an interim service if other service teams are operating at full capacity while providing therapeutic interventions.

AUTHOR AND ARTICLE INFORMATION

Fiona Stanley Hospital, Murdoch, Perth, Western Australia (Goel); Cairns and Hinterland Hospital and Health Service, Queensland, Australia (Shafi, Conner); Department of Psychiatry and Psychology, Mayo Clinic, Rochester, Minnesota (Shafi, Croarkin); Clinical Research Centre, Gascoyne House, Graylands Health Campus, Claremont, Perth, Western Australia (Waters); Orygen, the National Centre of Excellence in Youth Mental Health, Parkville, Melbourne (McGorry). Send correspondence to Dr. Goel (chinar.goel@health.wa.gov.au).

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