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Clinical observations

COVID-19 Outbreak Among Adolescents at an Inpatient Behavioral Health Hospital

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Article history: Received May 1, 2020; Accepted July 9, 2020

Keywords: COVID-19; Mental health; Adolescent; Child; Emergency services; Psychiatric; Public health



A B S T R A C T

Purpose: We report on a coronavirus disease 2019 (COVID-19) outbreak among adolescents at an inpatient behavioral health facility that was identified within 5 weeks of known viral transmission in the surrounding community.

Methods: Clinical records were reviewed for all inpatients aged <18 years with laboratory-confirmed COVID-19 between March 23 and April 21, 2020.

Results: A total of 19 COVID-19–positive patients aged 11–17 years were identified. Patients most commonly presented with sore throat (37%) and nausea/vomiting (32%). Only 26% of patients presented with cough, shortness of breath, or fever. The most common medical comorbidity was asthma (32%), and the most common psychiatric comorbidity was posttraumatic stress disorder (63%). Infected patients were colocated and managed together on a separate COVID-19 unit to maintain a therapeutic group milieu. Mental health treatment was modified to limit staff exposure. Patients received daily medical assessment by an in-house pediatrician. One patient required intravenous fluids. No patients required transfer to a medical facility.

Conclusions: Adolescents in psychiatric inpatient settings may be especially vulnerable to COVID-19 infection. Close collaboration between medical and psychiatric care providers is needed to optimize care for this population and to address admission and disposition options for infected patients.

IMPLICATIONS AND CONTRIBUTION

Inpatient behavioral health facilities provide unique challenges for COVID-19 infection control. The difficulty of enforcing physical distancing complicates efforts to minimize transmission among adolescents in this setting. Strategies to optimize care may include onsite testing and the provision of concurrent medical and psychiatric treatment.

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Conflicts of interest: C.A.F. is the Editor-in-Chief of the Journal of Adolescent Health but was not involved in peer review of this article. The other authors have no relevant conflicts of interest to disclose.

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COVID-19 has infected more than 2.5 million Americans and resulted in the death of more than 125,000 as of June 30, 2020 [1]. This global pandemic has negatively impacted the mental health of adults and children around the world [2–4], but little is known about its impact on youth admitted to psychiatric hospitals. Two previously published reports of COVID-19 disease among adult psychiatric inpatients, from Wuhan, China [5], and Lombardy, Italy [6], identified challenges of disease control in the psychiatric inpatient setting, including the risk of person-to-person contact in shared units and the difficulty

of symptom identification in patients with psychiatric disease. These reported challenges may be exacerbated by pediatric manifestations of COVID-19. Emerging data suggest that children are less likely to present with typical symptoms of cough, shortness of breath, or fever than adults [7] and have additional attachment and developmental needs that benefit from close interpersonal contact [8–10]. In this report, we provide observations of a COVID-19 outbreak among adolescent patients at a behavioral health facility, which occurred in the early stages of community transmission in the U.S.

Methods

Clinical records were reviewed for all inpatients aged <18 years with laboratory-confirmed COVID-19 hospitalized at Belmont Behavioral Hospital between March 23 and April 21, 2020. This standalone psychiatric hospital serves up to 109 child and adolescent patients aged 5–17 years on five units, distributed by age and psychiatric diagnosis. Seventy-one adult patients are hospitalized in separate units in the same building. At least 75% of yearly admissions are covered by public insurance. The facility has contracted with a local children's hospital to provide onsite medical care since 2018, which involves assessment of all patients at admission and additional consultation per psychiatrist discretion. Institutional review board exemption was granted by the Children's Hospital of Philadelphia Institutional Review Board.

Clinical Observations

In March 2020, after the onset of community spread of COVID-19 in the U.S., Belmont Behavioral Hospital convened a multidisciplinary crisis response and management team. On March 11, the facility restricted admission to asymptomatic and unexposed patients, initiated frequent deep cleaning, and limited patient use of shared dining and gym spaces. Complete visitor restriction and daily staff symptom screening were implemented on March 13. Viral transmission was confirmed in the local community on March 17.

On March 23, the hospital's first case of laboratory-confirmed COVID-19 was identified in a symptomatic 30-year-old male on an adult unit. Subsequently, five staff members who had contact with this patient were found to be COVID-19 positive. Although there was no staff member cross-over between the adult and pediatric units, on March 24, a strategy was adopted of performing polymerase chain reaction–based COVID-19 testing for all hospitalized pediatric patients with cough, gastrointestinal symptoms, fever, or high-risk exposures. Staff were required to wear face masks at all times starting March 25.

The first adolescent with COVID-19 infection was identified on April 5 after developing symptoms of cough, sore throat, and nausea. Although contact tracing did not identify a source for the index infection, this patient had been admitted to the hospital for more than 6 months before the onset of community transmission and was likely infected by a staff member or another patient. Between April 5 and 21, 29 pediatric patients with symptoms or high-risk exposures underwent testing for COVID-19, of which 19 were positive for the disease (65.5%). The local health department guided management of this outbreak, recommending symptom and exposure-based testing. Universal testing strategies were not recommended or available to the facility.

Among the 19 test-positive patients, 68% were female, 68% were black, and the average age was 13.9 years (range 11–17 years). Most patients (79%) came from the same mixed-gender general psychiatry unit; others were identified across three other units.

Medical course

Among the 19 positive patients, the most common initial symptoms were sore throat (37%), nausea/vomiting (32%), and cough (26%). Only one patient (5%) presented with fever, defined as temperature greater than 100.4 F. Four of the 19 patients (21%) were asymptomatic at diagnosis and tested on the basis of high-risk exposures. The most common comorbid medical diagnosis was asthma (32%). One 12-year-old required administration of intravenous fluids at the emergency department of the affiliated children's hospital. None of the 19 patients required supplemental oxygen or inpatient medical care. None of the patients had physical symptoms necessitating changes to psychiatric medical management.

Psychiatric course

Among positive patients, the most common psychiatric diagnosis was posttraumatic stress disorder (63%), followed by disruptive mood dysregulation disorder (42%), attention-deficit/hyperactivity disorder (42%), major depressive disorder (37%), and oppositional defiant disorder (32%). Depression and anxiety symptoms were noted to escalate early in the disease course. Externalizing behaviors increased as physical health improved.

Management strategies

The average pediatric census during this time was 81 (range 78–101). Patients under investigation for COVID-19 infection were monitored in a private room on their unit and asked to wear a face mask until test results were obtained. After the first test-positive patient was identified, patients were redistributed to create one mixed-gender general psychiatry unit limited to known COVID-19–positive patients. All test-positive patients were moved to the designated pediatric COVID-19 unit, where patients were not asked to physically distance from one another or wear face masks. Typical group activities such as playing cards, arts and crafts, and video games continued. Patients received daily medical assessment by the onsite pediatrician and were prescribed antipyretics, antiemetics, and oral rehydration as needed. Mental health treatment was unchanged in frequency but used telemedicine for daily 1:1 therapy and evaluation. Music, art, and movement therapies were conducted but modified with appropriate physical distancing from staff.

Discussion

To our knowledge, this is the first report of a COVID-19 outbreak among adolescents at an inpatient behavioral health facility. This outbreak occurred very early in the spread of COVID-19 to the U.S. and highlights important issues to consider as the COVID-19 pandemic continues to unfold. Mental health needs of adolescents are expected to persist or increase, and meeting the needs of high-risk youth, including those requiring inpatient hospitalization, must be a priority.

Reliance on the presence of symptoms to guide COVID-19 testing among youth hospitalized in an inpatient behavioral health facility is challenging. In our cohort, only 26% of positive patients presented with typical symptoms of cough, shortness of breath or fever, and one in five test-positive patients had no symptoms. Somatic symptoms further complicate a symptom-based testing strategy in youth with mental health conditions. The availability of onsite, same-day testing ultimately facilitated our efforts at infection control, although universal testing was not implemented based on the Department of Public Health guidance. Universal testing may be a preferred strategy as test capabilities increase and would allow for improved characterization of COVID-19 in this population. The benefits of broader testing will need to be weighed against the downsides of isolating mentally ill youth as they await test results.

Physical distancing in an inpatient pediatric psychiatric setting is not feasible or therapeutic. Avoiding physical contact conflicts with the attachment and mental health needs of our patients and does not align with research on the positive effects of relational touch on child development [8–10]. Strategies to manage COVID-19 infection within this environment can be informed in part by existing guidance for shared or congregate housing [11], although the development of resources specific for inpatient behavioral health facilities that serve youth should be considered.

Our experience underscores the interdependence of medical and psychiatric care. The stressors of the pandemic may exacerbate demand for inpatient psychiatric resources [3]. Within inpatient psychiatric units, COVID-19 outbreaks may require escalation of medical care, including transferring patients to medical hospitals. In our case, we leveraged an existing collaboration between a behavioral health facility and medical center to implement onsite testing protocols and medical care, thus avoiding unnecessary transfers to the local medical hospital for testing or hospitalization. This allowed for continuity of mental health care for infected patients in the behavioral health setting. Similar strategies may allow psychiatric settings to achieve medical standards of care and avoid overburdening local medical hospitals.

The COVID-19 pandemic has also disrupted the typical inpatient–outpatient mental health continuum of care. Residential psychiatric services were recommended for all 19 of the affected patients at our facility at discharge. Many of these facilities were limiting admissions because of lack of resources to support COVID-19 patients and manage potential outbreaks.

Strategies for remobilizing and maintaining appropriate ongoing care for patients who have COVID-19 infection and mental health needs are needed in this and future pandemics.

In summary, our experience highlights challenges in addressing both medical and mental health needs among young people requiring inpatient behavioral health hospitalization during the COVID-19 pandemic. Innovative treatment models and collaboration between medical and psychiatric health providers are needed to ensure safe and optimal care for this high-risk patient population. These needs will become more urgent as mental health needs of youth escalate within the broader context of COVID-19, and it is critical that strategies are developed that meet developmental needs while achieving appropriate infection control.

Funding Sources

This project was supported in part by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services under T71MC30798 Leadership Education in Adolescent Health (C.A.F.).

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