



# Bridging the gap between the emergency department and outpatient care: feasibility of a short-term psychiatric crisis intervention for children and adolescents

Idit Dekel<sup>1,2</sup> · Nimrod Hertz-Palmor<sup>1,3</sup> · Shirel Dorman-Ilan<sup>1</sup> · Mor Reich-Dvori<sup>1</sup> · Doron Gothelf<sup>1,2,4</sup> · Itai M. Pessach<sup>1,2</sup>

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## Abstract

Child and adolescent mental health systems are facing limited resources of available psychosocial interventions, often leading to long waiting lists for acceptance to treatment. We describe the feasibility of a short-term (8–10 sessions) psychological crisis intervention (CI) protocol for children and adolescents aged 8–17 years ( $n = 30$ , mean  $\pm$  standard deviation  $12.9 \pm 2.4$  years) who were referred to an outpatient mental health clinic due to suicidal ideation, aggression, severe anxiety, or extreme family conflict. The participants were assessed before and after the CI, and at a 3–6-months follow-up visit. The psychiatric assessments included clinical evaluation by a senior psychiatrist, and the completion of self-report questionnaires by both the participants and their parents. Following the establishment of the CI unit, the waiting lists for urgent cases were reduced from a median of 84 days in the two preceding years to 23 days in the following 3 years ( $H[2] = 18.5$ ,  $p < 0.0001$ ) for patients of the CI unit. A 1-year psychiatric follow-up after the end of the CI revealed that 72% did not require additional psychotherapy. The overall clinical evaluation measures (clinical evaluation, parents-report and child report) improved and had been preserved at the 3–6-months follow-up. Our results demonstrate the feasibility of a short-term CI protocol for expediting admission to treatment for urgent psychiatric cases.

**Keywords** Children · Adolescents · Crisis intervention · Waiting list · Short-term psychotherapy · Suicide prevention

## Introduction

One of the main challenges faced by child and adolescent mental health systems is the limited resources of available psycho-social interventions [1, 2]. In recent years, the number of emergency department (ED) visits for psychiatric illness has been rising worldwide [1, 3, 4]. Part of this rise

includes youths with common psychiatric crises, such as suicidal ideation, aggression, severe anxiety, or extreme family conflict, that are referred urgently to emergency departments (ED) or to psychiatric clinics, where they are invariably confronted by very long waiting-lists for intervention [5]. A "mental health crisis" is a broad term used to describe a variety of psychiatric and psychological conditions, and is defined as "an acute disturbance of thought, mood, or behavior, that requires immediate intervention and the resources available to manage the situation are not available at the time and place of occurrence" [6]. Community-based models have recently been described for the care of youth in mental health crisis that present to the ED [7]. Similar to the world trend, a rise in psychiatric emergencies, such as suicidal behaviors, presenting to pediatric EDs, is well documented in Israel [8]. However, community-based services are scarce. Since the reform in Israeli mental health services in 2015, all psychiatric services are now provided exclusively by Health Maintenance Organizations (HMOs). The majority of these services are provided in outpatient clinic settings that are

✉ Idit Dekel  
dekel.idit@gmail.com

<sup>1</sup> The Child Psychiatry Division, Edmond and Lily Safra Children's Hospital, Sheba Medical Center, Tel Hashomer, Ramat Gan, Israel  
<sup>2</sup> Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel  
<sup>3</sup> School of Psychological Sciences, Tel Aviv University, Tel Aviv, Israel  
<sup>4</sup> Sagol School of Neuroscience, Tel Aviv University, Tel Aviv, Israel

overloaded. In case of psychiatric emergency patients are referred to EDs. At the Edmond and Lily Safra Children's Hospital-Sheba Medical Center-Tel Hashomer, a tertiary pediatric hospital in Israel, the annual number of psychiatric emergencies presenting to the ED increased in recent years and now stands at about 350 cases annually. This increase has led to an overload of the psychiatric outpatient clinic at our hospital, with an average of a 6 months wait time to treatment overall, and about 4 months for urgent cases referred from the ED.

In this study we describe the feasibility of a psychiatric crisis intervention (CI) model aimed at offering immediate psychiatric evaluation and treatment with short-term psychotherapy for diverse common psychiatric emergencies in an outpatient psychiatric clinic setting. The main objectives were to reduce waiting time for urgent treatment as well as to evaluate treatment dropout rates and the need for additional treatment during the first year following CI. We employed standard clinical assessments to measure clinical improvement. We hypothesized that a short (8–10 sessions) psychotherapeutic intervention will result in improvement of psychiatric symptoms that will be maintained at a 3–6-months follow-up, and that the instigation of this protocol will lead to a reduction in waiting time for therapy for urgent cases.

## Methods

### Population

Cases referred to a child psychiatry clinic at a tertiary medical center in Israel during 2016–2019 were classified as urgent and referred to the CI unit according to the following criteria: 1. Clinical Global Impression Inventory-Severity scale (CGI-S)  $\geq 4$ ; 2. Children's Global Assessment Scale (CGAS)  $\leq 60$ ; 3. at least one of the following: suicidal risk, defined as a recent suicide attempt during the last month; Columbia-Suicide Severity Rating Scale (C-SSRS)  $\geq 3$ ; violent outbursts and severe oppositional and defiant behavior, severe anxiety, obsessive–compulsive symptoms, or major life events (e.g., recent divorce, physical illness, loss of a family member) leading to a severe adjustment disorder.

During 2016–2019, approximately 120 cases were referred to the initial psychiatric evaluation. Cases with mild psychopathology (CGI-S  $< 4$  at the time of initial assessment) were deferred to routine psychiatric follow-up or other interventions in the clinic and were excluded from the CI and from this study. In the majority of the remaining cases not treated in the CI unit, the parents were not interested in the intervention offered. Less common reasons for exclusion were cases of eating disorders that were referred to a specialized unit at our center.

### Procedure

Children and adolescents who met the inclusion criteria were referred to the CI unit in the outpatient clinic at Safra Children's Hospital after an initial psychiatric evaluation by a senior child psychiatrist. We developed four brief intervention protocols based upon principles from well-established types of psychotherapy: 1) cognitive–behavioral therapy (CBT) for adolescents with anxiety disorders or obsessive–compulsive disorder, and parent training based upon the Supportive parenting for anxious childhood emotions (SPACE) protocol for anxious children under 12 years; 2) CBT-suicide prevention for suicidality; 3) parents training for aggression, violent outbursts, or school refusal based upon non-violent resistance treatment; and 4) time-limited psychotherapy for adolescents based upon James Mann's time-limited psychotherapy principles for adolescents facing major life events leading to severe adjustment disorders [9–14]. A multi-disciplinary team, consisting of a senior child psychiatrist, social workers and a psychologist, planned an 8-session intervention for each case after the initial psychiatric assessment. A focus for intervention was defined based on the information collected in the initial assessment, and the treatment protocol was selected accordingly. The focus of intervention was communicated to the patient and family in the first therapy session. In addition, psychiatric follow-up visits were scheduled as needed: in cases treated with pharmacotherapy and/or in cases with suicidal behaviors, psychiatric visits were scheduled in 2–4-week intervals. In other cases, psychiatric follow-up was conducted at the termination of the psychotherapeutic intervention, and in 3-months intervals thereafter.

### Measures

In this study we used the self- and parent-report questionnaires Children's Depression Inventory (CDI) and State–Trait Anxiety Inventory (STAI) [15, 16]. A senior child psychiatrist completed the Clinical Global Impression Scale, rating the severity of the main diagnosis (CGI-S), the Children's Global Assessment of functioning Scale (CGAS), and the Columbia-Suicide Severity Rating Scale (C-SSRS) [17–19]. The participants were assessed pre- and post-treatment, and at a 3–6-months follow-up visit since the final session.

### Data analysis

Kruskal–Wallis test was conducted to compare the time on waiting list before and after the implementation of the CI unit (both for patients who admitted to the unit, and patients

who declined CI treatment). Linear mixed-effects models were applied to compare pre-therapy (as reference), post-therapy, and follow-up clinical reports, including clinician assessments (CGI-S, CGAS, C-SSRS), parents' reports (CDI, STAI-State, STAI-Trait), and participants' self-report (CDI, STAI-C Trait). We controlled for interpersonal variance and missing data by modelling the participants as random factors, and compared baseline differences between participants with full and missing data to assure that our results were not affected by survivorship bias. Baseline differences were tested using the non-parametric Mann–Whitney test, due to the small number of participants on each group. We set the significance level at  $\alpha < 0.05$ . Analyses were conducted with R's lmerTest package [20].

## Results

### Participants

Fifty-three patients (29 girls, 54.7%) were treated in the CI unit between 2016 and 2019. Twenty-three were referred directly from the ED (43%). The final analytic sample included 30 patients (mean age  $\pm$  standard deviation =  $13.1 \pm 2.4$ , 20 girls [66.7%]) who completed baseline and endpoint assessments (Table 1). Seventeen patients completed follow-up assessments (Fig. 1). Of the 30 patients that were included in the analysis, 6 (20.0%) were on psychopharmacological treatment prior to their referral to the unit, while 14 (46.7%) additional patients were prescribed psychiatric medications during the CI treatment. All patients adhered to their medications until the end of the intervention, and 4 (20.0%) discontinued pharmacotherapy during the first 6 months following the treatment endpoint (see Table S1 in the supplementary materials for detailed description of pharmacotherapy during the intervention).

### Time on waiting list

The median time on waiting list among referrals from the ED was 84 days prior to the establishment of the CI unit (2014–2015). This time was significantly shortened after the CI unit was establishment (2016–2019) with a median of 23 days for patients that were treated by the unit, and 52 days for patients who declined CI treatment. Group differences were significant ( $H[2] = 18.5$ ,  $p < 0.0001$ ,  $\eta^2 = 0.19$ ). Post-hoc comparisons using Mann–Whitney test (corrected for multiple comparisons with FDR correction [21]) revealed that the time on waiting list among CI patients was significantly shorter compared with the waiting list time of patients treated prior to the unit's establishment (during 2014–2015) ( $U = 854$ ,  $p < 0.001$ ) as well as the waiting list time of patients who declined

**Table 1** Sociodemographic characteristics of the study sample

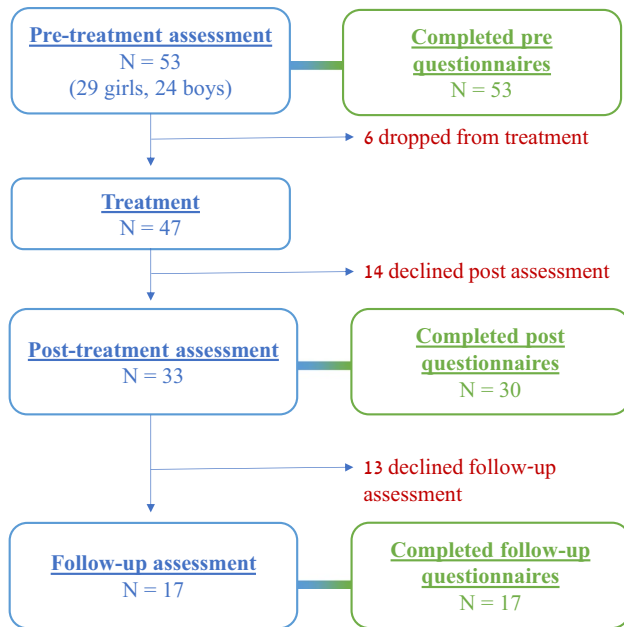
Characteristics	
<i>n</i> (%)	30
Age, mean $\pm$ SD (range)	$12.9 \pm 2.4$ (8–17)
Male/female, <i>n</i> (%)	10/20 (33.3%/66.7%)
Parents training only	16 (53.3%)
Parents training + child therapy	14 (46.7%)
Main problem (may be multiple)	
School attendance refusal	9 (30.0%)
Suicidal ideation/attempt, self-harm	9 (30.0%)
Violent outbursts	8 (26.7%)
Anxiety	3 (10.0%)
Major life events	2 (6.7%)
Psychiatric diagnoses	
Adjustment disorder	12 (40.0%)
Oppositional defiant disorder, conduct disorder	10 (33.3%)
Major depression, dysthymia	9 (30.0%)
Attention deficit/hyperactive disorder	7 (23.3%)
Generalized anxiety disorder	5 (16.7%)
Social anxiety disorder	2 (6.7%)
Panic disorder	1 (3.3%)
Post-traumatic stress disorder	1 (3.3%)
Dissociative and conversion disorders	1 (3.3%)
Gender dysphoria	1 (3.3%)
Medications	
Antidepressants	14 (46.7%)
Antipsychotics	11 (36.7%)
Stimulants	7 (23.3%)
Benzodiazepines	1 (3.3%)
None	7 (23.3%)

CI treatment ( $U = 586.5$ ,  $p = 0.005$ ). The time on waiting list for patients who declined CI treatment was similar to that of patients treated prior to the CI unit establishment ( $U = 172.5$ ,  $p = 0.64$ ). The distribution of time on waiting list before and after the implementation of the CI unit is depicted in Fig. 2.

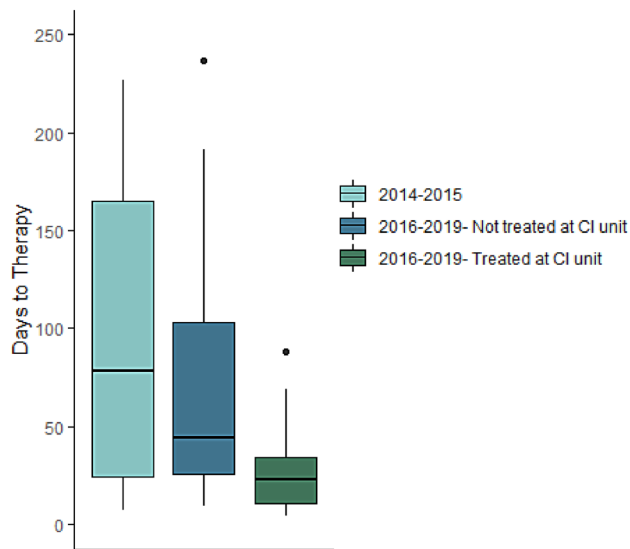
There were no baseline differences in any of the outcome measures between participants who completed all three timepoints ( $n = 17$ ) and participants who participated in baseline and post assessments but did not complete follow-up ( $n = 13$ ).

### Need for post-CI treatment

At the 1-year post-intervention follow-up, two patients (3.8%) required admission to a closed psychiatric ward, two (3.8%) were referred to a psychiatric daycare service, and 38 (72%) did not require any additional psychotherapy. These



**Fig. 1** Consort diagram for the crisis intervention patients. We enrolled 53 patients and acquired complete data for 30 patients



**Fig. 2** Time on waiting list for patients who were referred from the ED prior to the establishment of the CI unit (2014–2015, Median=84 days), patients who were treated by the unit (2016–2019, Md=23) and patients who referred from the ED between 2016 and 2019 but declined CI treatment (Md=52). Time on waiting list for CI treatment was significantly shorter for CI treatment, compared to waiting time in 2014–2015 ( $p < 0.001$ ), but was no different for patients who declined CI treatment ( $p = 0.64$ )

data were collected from the electronic medical records of all patients that completed the CI intervention, including

those that did not complete the research questionnaires ( $N = 53$ ).

### Clinician assessments

There was a significant improvement between pre- and post-interventions in CGI-S (pre-CI=4.9, post-CI=3.5;  $p < 0.0001$ ) and CGAS (pre-CI=41.2, post-CI=52.3;  $p < 0.0001$ ) scores. The improvement was preserved at the 3–6-months follow-up (Table 2).

### Parental reports

The parental reports showed a significant decrease in the participants' depressive symptoms (CDI; pre-CI=22.2, post-CI=16.8;  $p < 0.0001$ ) and state anxiety (STAI-S; pre-CI=48.6, post-CI=40.0;  $p = 0.001$ ), with no change in trait anxiety symptoms. Improvement was preserved at follow-up (Table 2).

### Participants' self-report

The participants' self-reports showed a significant decrease in depressive and anxiety symptoms between pre- and post-CI (CDI: pre=22.5, post=18.2,  $p = 0.042$ ; STAI-C: pre-CI=44.0, post-CI=40.8,  $p = 0.024$ ). Improvement in those traits was not preserved at follow-up (Table 2).

### Discussion

As urgent pediatric mental health issues and subsequently pediatric ED visits for mental health problems are on the rise worldwide, healthcare systems struggle to meet the increasing demand for pediatric psychiatric services [1]. In many cases, pediatric psychiatric outpatient resources are limited and as a result, urgent cases face exceedingly long waiting lists for intervention, leaving children in acute crisis untreated for long periods of time. This phenomenon is becoming a real public health concern, leading to a rise in morbidity, increase in complexity and eventually requiring longer intervention and even more resources [1, 22]. Therefore, brief interventions aimed at stabilizing and reducing risk in these acute situations are crucial. The findings of this study demonstrate the feasibility and utility of a novel psychiatric CI model for children and adolescents. To the best of our knowledge, this is the first model that offers short-term intervention for diverse common psychiatric emergencies in the setting of a child and adolescent psychiatric outpatient clinic. Our intervention integrated principles from well-established treatment protocols, and dramatically reduced the waitlist time for treatment of acute cases. Furthermore, dropout rates were low, and most of the patients (72%) did

**Table 2** Comparisons of clinician-rated and parent and participant-reported measures between pre-treatment, post-treatment, and follow-up assessments

MEASURE	Observations	Pre	Post			Follow-up		
		M (SD)	M (SD)	Non-standardized B	<i>p</i>	M (SD)	Non-standardized B	<i>p</i>
Clinician-CGI-S	77	4.9 (0.8)	3.5 (1.3)	−1.4	<b>&lt;0.0001</b>	3.1 (1.3)	−1.9	<b>&lt;0.0001</b>
Clinician-CGAS	76	41.2 (11.1)	52.3 (12.4)	10.9	<b>&lt;0.0001</b>	56.6 (14.1)	14.8	<b>&lt;0.0001</b>
Clinician-C-SSRS: suicidal ideation	77	1.6 (1.8)	0.2 (0.6)	−1.4	<b>&lt;0.0001</b>	0.1 (0.5)	−1.5	<b>&lt;0.0001</b>
Clinician-C-SSRS: suicidal behavior	76	0.8 (1.4)	0.0 (0.0)	−0.8	<b>&lt;0.001</b>	0.1 (0.2)	−0.7	<b>.0008</b>
Parent-CDI	66	22.2 (7.5)	16.8 (8.1)	−5.9	<b>&lt;0.0001</b>	15.5 (5.8)	−6.3	<b>0.002</b>
Parent-STAI S	66	48.6 (11.9)	40.0 (12.9)	−8.7	<b>0.001</b>	37.4 (11.1)	−10.3	<b>0.005</b>
Parent-STAI T	66	47.1 (10.8)	44.8 (9.7)	−2.4	0.35	47.7 (11.9)	1.6	0.67
Child-CDI	58	22.5 (8.8)	18.2 (8.5)	−4.1	<b>0.042</b>	20.9 (9.1)	−3.3	0.23
Child-STAI C	48	44.0 (8.3)	40.8 (9.3)	−3.6	<b>0.024</b>	43.2 (7.5)	−3.0	0.18

Bold indicates significant

*CGI-S* Clinical Global Impression-Severity, *CGAS* Children's Global Assessment Scale, *C-SSRS* Columbia-Suicide Severity Rating Scale, *CDI* Children's Depression Inventory, *STAI* State-Trait Anxiety Inventory, *STAI-S* STAI-State, *STAI-T* STAI-Trait, *STAI-C* STAI-Children

not require further psychotherapy at the 1-year follow-up. We also found significant improvement in the patients' symptoms that were mostly maintained at 3–6 months after CI treatment ended based upon clinician assessment, and parental and patient reports.

In recent years, accumulating research in children and adolescents support the utilization of models of intervention during crisis that are implemented early and prevent the escalation of mental health issues through community-based approaches [23]. However, most of the recently published brief interventions are aimed at specific psychiatric emergencies, such as suicidality [8, 24] and trauma exposure [25, 26]. Others focus exclusively on youth in acute crisis and are not for younger children [27]. To the best of our knowledge our model is unique as it addresses a variety of common emergencies in children and adolescents and does not exclude complicated cases with psychiatric comorbidities.

The theoretical and empirical rationale for the psychiatric CI described in this manuscript, is based on integrating the framework of the crisis intervention model [28, 29], with fundamental principles of evidence-based interventions for children and youth psychiatric emergencies. Specifically, CI principles of a family-focused, strength-based approach, are comprehensively incorporated starting at the first stage of the initial psychiatric assessment. Then, an effort is made to identify the principal problem, not only by inquiring about the precipitating event for the crisis (the proverbial “last straw”) but also prioritizing problems in terms of which to work on in the short intervention offered. After the focus of the intervention is defined, a suitable protocol is selected, choosing essential and suitable tools according to the case formulation. For example, a case of severe violent outbursts

in a 9-year-old diagnosed with obsessive compulsive disorder and attention deficit/hyperactivity disorder. In this child the major problem was defined as the violent outbursts which are secondary to his continuous demand for parents' cooperation with his obsessive rituals. Principles from the SPACE [10] intervention were implemented, with particular emphasis on minimizing parental accommodating behaviors and resisting his demands nonviolently.

The finding that 72% of children did not require further psychotherapy 1 year following the intervention, suggests that it is a beneficial strategy that is likely to work well within a ‘stepped care’ model in routine practice. Hence, children with acute crises can be treated immediately with a short treatment that may prevent “stepping up” to treatments of higher intensity. Roberts et al. stated that “Crisis intervention provides a challenge, an opportunity and a turning point within an individual's life” [29]. We believe that when a family which is struggling with their child's acute crisis is offered immediate professional help, the motivation for treatment and the hope for change are high. In this time frame, it is possible that the therapeutic alliance, central in the success of a therapeutic intervention [30], is built rapidly and perhaps assists in achieving treatment goals in such a short intervention. Therefore, we suggest that the relatively low drop-out rate seen in this study is related to the short interval between the crises and the initiation of treatment.

This study has several limitations: first, this is a single center study with a small sample size; lacking a control group. Furthermore, not all cases referred to an initial evaluation were well documented and not all cases that had been treated in the CI unit were included in the final sample due to incomplete data. However, we feel that this setting still

allows presenting a pragmatic model. In addition, it is possible that unmeasured characteristics affected individuals' willingness to comply with the treatment/experimental protocol, thereby biasing our results [31]. For example, patients who completed the treatment protocol may have been more motivated participants, who adhered more closely to the recommended treatment. Family disorganization may also be an artifact that affects dropout from treatment; children or parents who were not able to attend the treatment sessions on a regular basis were more likely to drop out, therefore, creating a survivorship bias.

In conclusion, we describe a novel intervention for psychiatric emergencies of children and adolescents. We demonstrate this intervention to be feasible and safe and that its implementation significantly shortened waitlist times. The relatively low treatment drop-out rates indicate that the intervention is acceptable. However, future research might add more dimensions to the issue of acceptability using satisfaction questionnaires. We are in the process of expanding the CI unit, focusing on the direct transition from the pediatric ED to the CI unit, and thereby increasing the treatment's accessibility. The necessity for such services is even more vital during these times of emerging unprecedented mental health challenges posed by the COVID-19 pandemic.

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**Author contributions** All authors contributed to, reviewed, and approved the final manuscript. ID study conceptualization and design, clinical evaluation of the participants, administration of the crisis intervention unit, data curation and interpretation, writing the final manuscript. NH-P study conceptualization and design, data curation and interpretation, data administration, data analysis, writing the final manuscript. SD-I study conceptualization and design, conducting therapeutic sessions with the participants, data curation and interpretation, writing the final manuscript. MR-D conducting therapeutic sessions with the participants, data curation and interpretation, data administration. DG study conceptualization and design, clinical evaluation of the participants, reviewing and editing of the final manuscript. IMP supervising, reviewing and writing the final manuscript.

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**Availability of data and materials** The data that support our findings are available upon request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions. Data collected for this study includes individual participants' data. Data cannot be publicly accessible due to Institutional Review Board guidelines. We are open to collaborations with other researchers upon contacting us.

## Declarations

**Conflict of interest** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Ethics approval** This is a retrospective analysis of prospectively collected data. The screening questionnaires were part of the routine assessment of the patients and their parents. The data were coded anonymously prior to the analysis. The Sheba Medical Center Institutional Review Board approved the study and the need for informed consent was waived due to the retrospective nature of the study.

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