Appendix IV: Childhood Trauma Research Network (CTRN)

Magnitude of the concern in Texas

Traumatic experiences during childhood are widespread. In 2018, there were over 3.9 million child maltreatment reports filed with state child protective service agencies in the US, resulting in 2.4 million confirmed cases including 60.8% classified as neglect, 10.7% as physical abuse, 7.1% as sexual abuse, and 15.5% as multiple forms of maltreatment (US Department of Health and Human Services, 2020). Texas reported 198,449 confirmed cases of child maltreatment in 2018 with a similar distribution. However, a survey of Texas adults reporting that 26.7% had experienced some form of physical, sexual or emotional abuse as a child (Dube et al 2010) suggests that the vast majority of incidents of maltreatment affecting Texas' 7.4 million children remain unreported.

Moreover, childhood traumas are not limited to maltreatment. Other traumatic events experienced by US children include witnessing serious violence in their community (38%) or in their homes (9%), loss of a loved one to a violent or accidental death (18%), online victimization (9%), serious motor vehicle accidents (21%), natural disasters (22%), animal attacks, and falls (Saunders & Adams, 2014). The survey of Texas adults revealed that as children 20.7% grew up in a household affected by addiction, 19.3% by mental illness, 10.5% by domestic violence, and 8.7% by incarceration. In addition, medical procedures have been emphasized by The National Child Stress Network (2020) as a common source of emotional trauma for children.

A history of childhood trauma is a key risk factor for various mental illnesses throughout life including depression, posttraumatic stress disorder, bipolar disorder, and anxiety disorders, as well as substance use disorders, eating disorders, and personality disorders (Heim et al 2010). Childhood trauma also dramatically increases the risk for later suicide attempts (Dube et al 2001) and renders those struggling with anxiety or depression more resistant to treatment (Zlotnick et al 1997).

CTRN Objectives

The overarching goal of the Texas Child Mental Health Care Consortium (TCMHCC) Research Initiative is to examine highly impactful areas in child mental health, where great need exists and where we think health services research can make a significant contribution to child mental health care in areas aligned to the Texas Statewide Behavioral Health Strategic Plan (Texas Health and Human Services, 2019).

To achieve this objective, the TCMHCC authorized two research networks each constituting a Learning Healthcare System focusing on identified health priorities in Texas, yielding evidence-based actionable data leading to improvements in care delivery, building upon the foundation of existing research, and seeking additional federal or foundation research funding to further broaden its scope.

The Childhood Trauma Research Network (CTRN) will be instrumental in realizing the objectives of the TCMHCC Research Initiative with respect to the profound impact of trauma upon the well-being of children in Texas. The work of the CTRN is directly responsive to guiding principles for healthcare reforms delineated in the Texas Statewide Behavioral Health Strategic Plan (Texas Health and Human Services, 2019) including:

- "Be trauma-informed and acknowledge the widespread impact of trauma, understand potential paths for recovery, and seek to actively resist re-traumatization."

- [In response to HB 4056] "to include research-based practices in . . . physical or emotional trauma intervention".

To achieve these ends, the CTRN is establishing a state-wide registry, i.e., the CTRN Participant Registry, which will serve as a data repository enabling characterization of risk profiles among Texas children following a traumatic experience as well as the efficacy of systems and interventions that will, in turn, facilitate analysis of statewide population health outcomes for children who have experienced traumatic life events. In order to accomplish this goal, during the initial phase of the network, we are recruiting 2,400 children and adolescents, ages 8-20 years, from across Texas, who have been exposed to trauma, broadly defined, into a longitudinal observational study. The specific aims of the CTRN are to:

1. Establish a research network of academic medical centers across the State of Texas that is comprehensively trained and equipped to implement research studies in children with histories of trauma.

2. Conduct a longitudinal observational study for youth in the year following a traumatic life event to contribute to a child trauma research registry.

3. Develop predictive models for short- and long-term outcomes for children in the aftermath of one or more traumatic life events.

CTRN accomplishments to date

Beginning work in mid-May 2020, the achievements of the CTRN have been remarkable: organizing and staffing the research hub and twelve 12 research nodes across the state; implementing a network communication center to ensure timely dissemination of information; finalizing the study design and obtaining requisite institutional approval to conduct research across the network; implementing a multimodal training and reliability program to ensure the integrity of collected data; constructing a system for electronic capture and storage of data; AND LAUNCHING RECRUITMENT.

A. Established Network Structure

This is a state-wide multi-site research data repository in which the Hub, located at the University of Texas at Austin Dell Medical School, provides oversight to 12 Nodes.

CTRN Hub. The Network Leadership team was established first within the Hub to provide overall guidance to the development of the research program in consultation with leaders at each of the network's 12 nodes. In addition, Network Monitoring teams were appointed to oversee 1) regulatory compliance, 2) training, 3) data management, 4) statistical analysis, and 5) fiscal management.

CTRN Node Leadership & Research Teams. All 12 institutions participating in the TCMHCC have agreed to participate as research nodes in the CTRN. To date, all 12 nodes have appointed a Node Leader and hired research staff. Each Node Leader is responsible for local research oversight, including safeguarding the well-being of the children and their families who agree to participate in the study and supervising the activities of trained research staff.

CTRN Oversight Committees. Three committees, each comprised of staff from the CTRN Hub and two or more CTRN Nodes have been established to provide additional supervision. This include the:

- Protocol Committee – This committee reviews the effectiveness of the research protocol on a continuing basis, considering and/or approving protocol modifications as warranted.

- Acculturation, Ethnicity & Participant Advocacy Committee – This committee promotes inclusivity of the research by ensuring that the research activities are culturally sensitive. For example, this group led the work in producing translations for several research scales that were previously unavailable in Spanish and has begun to produce Vietnamese translations as

well.

- Pilot Projects & Extramural Grants Committee – This committee considers and provides authorization for the implementation of ancillary projects envisioned to expand the scope of the CTRN's work. For example, this group approved the application for funding obtained from the Hogg Foundation to test the delivery of evidence-based trauma-informed psychotherapies on a telemedicine platform.

B. Debuted Network Dashboard

The CTRN Dashboard (cf. Figure 1) was created to ease dissemination of network information across the network, and ultimately, to the community. Accessible online here, the Dashboard provides ready access to:

- CTRN Progress Reports – Charts and reports detailing study progress towards recruitment and other study targets.

- General Information – Key Hub personnel, study updates, etc.

- Document Library – Copies of the study protocol, consent forms, rating scales, regulatory forms, network meeting minutes, etc.

- Team Directory – Photographs and contact information for staff at CTRN Hub and CTRN Nodes.

- Learning Center – Library of videos, slide presentations, PDF documents providing instruction in the REDCap data capture application, administration of the rating scales, and regulatory responsibilities.

- Community Q&A – Bulletin board for network team members to exchange information.

C. Implemented Statewide Research Infrastructure

Central Institutional Review Board (IRB). Critical to the success of the CTRN is consistent administration of the study at all 12 CTRN Nodes distributed across the state. This requires approval of a uniform protocol at all study sites. To do so, a central IRB was established at UT Southwestern to service the entire network with IRB reciprocity agreements enacted between the central

Figure1. CTRN Dashboard

IRB and all 12 nodes. Although the implementation of the central IRB was an arduous task, it will reap dividends moving forward. After only six weeks, the network master protocol was finalized and submitted on July 29, 2020; it was approved on August 31, 2020. Thereafter, IRB Reliance Agreements were approved on September 29, 2020, authorizing the launch of research activity at the study sites.

CTRN Training. Study consistency is dependent not only upon the approval of a uniform network-wide protocol but also upon uniform administration of the study measures by teams across the network. A multimedia training program (cf. Figure 2) was thus developed to train study coordinators at each node in their regulatory responsibilities and research interviewers at each node in the administration of the psychometric instruments and the use of the REDCap electronic data capture system. These training materials can be found at the CTRN Dashboard. Team members across the network are must complete the requisite training for their respective roles to obtain certification by the CTRN Hub in order to participate in the study.
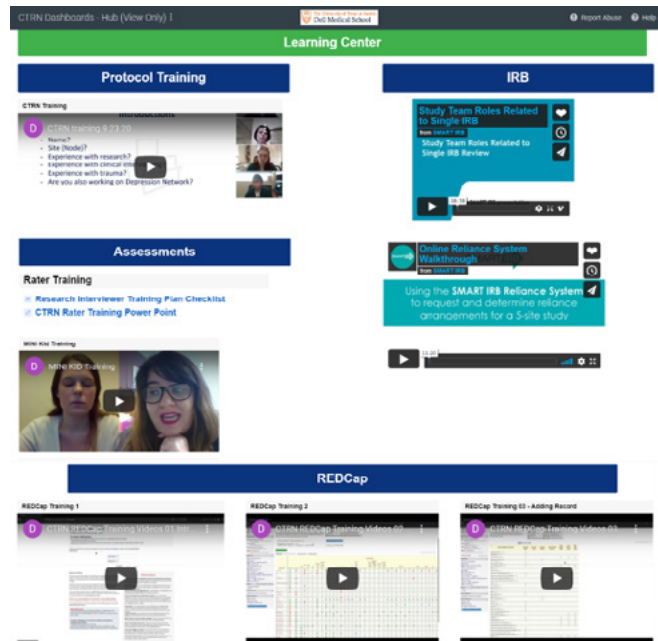

Figure2. Training Components on CTRN Dashboard

In addition, the Interrater Reliability Monitoring program provides regular on-going training to ensure consistent administration of the study. The CTRN Hub Training Director convenes regular network wide virtual meetings during which the research interviewers view and score a recorded interview of the study scales. Results are immediately reviewed, focusing the discussion upon any items in which there was a discrepancy in the submitted scores. Following the meeting, results will be used to compute kappa coefficients, a common index of agreement between raters. If the target kappa score of 0.8 is not achieved, then the meeting frequency will be adjusted.

CTRN Data Management. All research data is collected into a centralized data repository using the REDCap electronic data capture system. The CTRN Hub developed a customized REDCap application to serve as the network's portal for automated data collection. The CTRN Hub will soon finalize implementation of an SQL compliant relational database to serve as the final data repository. Data will be automatically transferred on a regular weekly basis from the REDCap application to the relational database that is also custom-designed for the CTRN. Both the REDCap files and the CTRN SQL database database reside at the Texas Advanced Computing Center, a state-of-the-art secure data facility of the University of Texas at Austin. Real-time data validation procedures such as range checks are programmed into the REDCap application. In addition, data are regularly queried for accuracy and completeness.

D. Launched Study Recruitment

As noted above, IRB authorization to open the network to enrollment was obtained on September 29, 2020. The first participant was enrolled that very day. During the network's first seven weeks, 66 child / parent pairs have been consented for participation and 42 have completed the baseline assessments.

Enrollment is presently on a trajectory of exponential growth. Among the current 66 study enrollees, 23 enrolled in the study during October (5.2 enrolled per week). During the first sixteen days of November, the pace of enrollment quadrupled with 46 new enrollees (20.1 enrolled per week). The children who have completed the baseline visit are demographically diverse with 19 (45.2%) from an ethnic or racial minority. Eleven children (26.2%) are from 8-11 years old, 21 (50%) from 12-17 years old, and 10 (23.8%) from 18-20 years old.

The 42 children who have completed the baseline visit have also reported a wide array of traumatic experiences (cf. **Table 1**). All but three of the children experienced a trauma sufficiently severe to place them at risk for developing posttraumatic stress disorder (PTSD). Moreover, most

of the children described multiple types of traumatic experiences. In addition, one-half (21) of the children reporting experiencing a trauma in the month leading up to their enrollment in the CTRN network, and 17 (40.5%) reported that their worst trauma occurred during the preceding month.

E. Secured Pilot Funding to Study Delivery of Trauma-Focused Therapy

Evidence-based therapies exist to address the mental health needs for those who have experienced trauma. Among these are trauma-focused cognitive behavioral therapy (TF-CBT) and cognitive processing therapy (CPT). However, the geographical dimensions of Texas, hinder effective and coordinated delivery of these therapies. Moreover, it remains unclear to what extent demographic attributes, clinical symptoms, or the nature of the trauma, may be used to predict which therapy is preferred for a particular child.

The network has obtained funding from the Hogg Foundation to conduct a small pilot study at two of the network's twelve nodes exploring the utility of a telehealth platform both for training psychotherapists and in delivering these two trauma-focused therapies. Telehealth offers key advantages: 1) overcoming distance barriers to dissemination of training and care; and 2) facilitating a coordinated continuum of care to assure effective treatment outcomes. A search is underway to secure funding to expand this project to all 12 CTRN nodes.

CTRN BENEFITS TO TEXAS

Whereas it is generally recognized that childhood trauma is associated with heightened vulnerability to an array of acute and long-term mental health problems, the available data lack specificity to guide the development of screening and implementation programs. Findings from the CTRN will provide Texas policymakers the requisite data, currently unavailable, to more effectively and more economically allocate resources to prevention, identification, and treatment of trauma-related illnesses. The following representative list of questions, whose

Traumatic Experience	Number of Children Reporting Trauma …		
	Occurred	Severe*	Worst Ever
Severe Accident – Experienced	18	15	5
Severe Accident - Witnessed	18	10	3
Natural Disaster	17	10	2
Acquaintance Severely Ill or Died	29	16	6
Hospitalization / Surgery	30	21	9
Extended Separation from Family	11	3	2
Physically Abused or Attacked	9	6	2
Threatened with Violence	11	5	0
Mugging or Theft	2	0	0
Kidnapped	3	3	0
Animal Attack	9	3	1
Family Violence	7	4	0
Family Verbal Threats	19	3	0
Family Jail or Prison	17	3	0
Community Violence	13	5	0
Community Verbal Threats	14	0	0
Media Violence (Real not Fictional)	19	9	1
Sexually Abused	11	10	7
Bullying	17		
Online Bullying	11		
Other	9	3	1
No Trauma Eclipsed Severe Threshold*		3	3

Table 1. Traumatic Experiences Reported

Severe – During the trauma, the child experienced "intense fear, helplessness, or horror" consistent with PTSD severity criteria.

answers are presently obscure, should be elucidated by the CTRN:

- How do the risks of illness vary by type of abuse (beyond physical and sexual abuse)? For example, what is the likelihood of overall psychiatric illness following particular types of childhood trauma? Is the distribution of psychiatric illnesses distinct for different types of trauma?

- In what ways does serial exposure to different types of trauma interact to heighten vulnerability to subsequent illness?

- What is the time course of emergence of symptoms during the year following a traumatic event? Does the time course lend itself to particular windows when symptom screening would be most fruitful?

- How do the demographic attributes of the child (age, race, ethnicity, socioeconomic status, sex, gender identity, sexual orientation) interact with the nature of the trauma to contribute to vulnerability?

- How does mental illness and/or substance abuse in a parent or other family member contribute to the child's psychiatric vulnerability following a traumatic event?

- What attributes of the child, parent(s), and family environment contribute to resilience against psychiatric illness following a traumatic event?

- What interventions (i.e., types of counseling, social support, medication) can provide symptom relief and/or prophylactic benefit following a traumatic event? What oft-used interventions do not offer relief, or worse, exacerbate vulnerability

Clarifying the answers to these questions will directly benefit children in Texas who experience a traumatic event. Resources can be directed towards more targeted screening measures, and Texas clinicians will be able to provide more patient-centered interventions to children who have experienced a traumatic event.

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