Steps Towards an Initial Scoping Review of Global Mental Health (MH) Biobanks and Development of an Investigator-Driven MH Biobank Project at BC Children’s Hospital (BCCH)

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Introduction

Psychiatric illness is highly prevalent and impairing among young people, with complex biologic and environmental underpinnings [1]. Diagnosis and treatment of pediatric psychiatric disorders is resource-intensive, time-consuming, and complex - no biologically-based tests in MH have clinical utility in clarifying diagnosis, predicting outcomes or guiding treatment.

At BCCH, a youth and caregiver-informed measurement-based care database, the ‘Family Input Tool’, is systematically used by outpatient clinicians for intake mental health assessments and linked to clinical records.

In the absence of systematic collection of biological samples, our ability to examine the biological underpinnings of MH issues is severely limited.

Gap: Few biobanks focus on pediatric mental health, limiting the biological understanding and treatment of these conditions.

Objectives

To examine the global scope of pediatric biobanks through a scoping review.

To identify initial components of MH biobank development at BCCH.

Methods

We propose the development of a complementary investigator-driven research biobank project, leveraged within the existing BCCH biobank infrastructure that will link clinician- and patient-reported phenomenological and diagnostic variables with genetic, epigenetic and peripheral markers of oxidative stress and inflammation, broadening the impact of the BCCH MH clinical research program.

Results

Six global MH biobanks from a recent systematic review described [3]:

- Diagnostic Foci: anxiety, bipolar disorder, depression (most common), personality disorders, PTSD, schizophrenia, self-harm, substance abuse
- Biospecimens Type: Blood (most common), CSF, saliva, amniotic fluid, cells, faecal samples, hair, and tissue biopsies (placenta, muscle/nerve/kidney)
- None with pediatric focus. Our proposed project attempts to address these gaps.
- Critical steps identified for biobank development include: optimizing recruitment, tissue type selection, collection procedures, linkage with patient-reported/clinical measures and governance and access procedures.

- Interest areas for MH research: genetic, epigenetic and peripheral markers of oxidative stress and inflammation.

Table 1: Overview of Services Provided – MH BCCH

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<th>Type of care</th>
<th>Clinics/Programs/Diagnoses Seen</th>
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<tr>
<td>Inpatient</td>
<td>- Child and Adolescent Psychiatry &lt;br&gt; - These inpatient units are for youth ages 5-11 and 12-18 &lt;br&gt; - Provincial Specialized Eating Disorders Program &lt;br&gt; - Inpatient treatment for youth up to age 18</td>
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<td>Outpatient</td>
<td>- Clinic Appointments: &lt;br&gt; - ADHD &lt;br&gt; - Anxiety &lt;br&gt; - Concurrent disorders (Mental health and substance use related concerns) &lt;br&gt; - Disruptive behaviour disorders &lt;br&gt; - Early childhood mental health problems &lt;br&gt; - Gender Dysphoria &lt;br&gt; - Metabolic mental health support</td>
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<td>- Mood disorders &lt;br&gt; - Neurodevelopmental conditions (i.e. autism, tic disorders, developmental differences) &lt;br&gt; - Obsessive compulsive disorder &lt;br&gt; - Psychotic symptoms &lt;br&gt; - Self-nuurious behaviours &lt;br&gt; - Somatization and mental health symptoms related to medical illness, Post traumatic, stress and grief reactions</td>
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Figure 1: Pediatric MH Biobanking Project at BCCH – Initial Project Components

Figure 2: Ideal Measures Utilized for Long-Term Scope of the Proposed BCCH Pediatric MH Biobanking Project

1. Biological Measures - Biosamples
2. Clinical Data - Electronic Health Records
3. Patient and Caregiver Reported Measures - Family Input Tool
4. Provincial/National-Wide Measures - External Population Datasets

References


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