Background:
In 2015, a leadership team from Holland Bloorview Kids Rehabilitation Hospital (HB), the University Health Network (UHN) and the Centre for Interprofessional Education (CIPE) came together in the Collaborative Change Leadership program to develop the first Student-Led Environments (SLEs) within the Toronto Academic Health Sciences Network (TAHSN). Driven by the passionate purpose of "unlocking the infinite potential of interprofessional students to advance health," the team developed and implemented two SLE pilots in an outpatient concussion clinic (HB) and in an inpatient general medicine unit (UHN). To support this initiative, a SLE Steering Committee was formed to guide the work across the three original partners.

Over the past year, there have been a number of discussions at the Steering Committee about the concept, scope and definition of SLEs, particularly given the emerging interest in project-oriented opportunities for student teams within practice settings. SLEs, for our local context, have been defined as environments where students from different health professions collaborate to manage patient or client care under the supervision and support of preceptors and facilitators from multiple health professions.

The purpose of this briefing note is to provide updated literature review, compare and contrast common models/definitions of SLEs in the literature, and provide considerations for an evolving discussion about SLEs (See Appendix A for Search Methodology).

Key Definitions from Literature Search:
Though a variety of definitions and terms were found in the literature, two models of SLEs were most prevalent: Interprofessional Training Units (IPTU) and Student-Run Clinics (SRC).

> **IPTU** is defined as an in-patient training unit or clinical ward, where students from more than one health care profession (e.g. medical, nursing, physiotherapy, occupational therapy, and pharmacy students) are collaboratively responsible for patient care (Oosterom et al., 2018). IPTU may also be known as Interprofessional (IP) Training Ward, IP Clinical Ward.
>
> **SRC** is defined as a student-led clinic healthcare environment where students are leading the care under the supervision of licensed health care professionals, often in a volunteer role. Its goal is to find areas of need in the existing healthcare system and utilize students to fill in the gaps (Berlin & Purdy, 2018). There are three fundamental values common to all Canadian SRCs: health equity, interprofessionalism, and student leadership (Holmqvist, et. al., 2012). SRCs may also be known as Student-Led Clinics, Student-Run Free Clinics, or Student-Led Health Initiatives.

Key Findings of Process and Outcomes from Literature Search:

The IPTU concept is well established in the literature and it has grown in Sweden, Denmark, the United Kingdom and Australia since the mid-1980s. A recently published literature review in 2018 examined 37 articles from twelve different institutions from 1990–June 2017 focusing on IPTUs with student teams of medical and other health professions (Oosterom et al., 2018). The IPTUs were organized with groups of 2–12 students (i.e. medical, nursing, physiotherapy, occupational therapy, and pharmacy) involved in patient care, usually for a period of two weeks, supervised by a facilitator or staff supervisor. This review shows promising results in short-term student learning outcomes and patient satisfaction rates. Past literature reviews from this author and others identified additional outcomes such as real-life accountability, professional role development, identity, independence, self-esteem of students, staff satisfaction, enhanced cost effectiveness, decreased length of stay and costs (Oosterom, 2018, Brewer, 2013, Hylen, 2007, Lind Falk, 2013, Hansen, 2009). A variety of patient populations (e.g. orthopaedic, medicine, palliative and geriatric) and supervision models (unit supervisors, uni or interprofessional preceptors, facilitators) were noted. Key challenges include facilitator/supervisor workload/support, relevance of care activities to profession, scheduling, and faculty/program support to ensure stable influx of students (Oosterom, 2018). The latter challenge was identified as the rationale for the common two-week rotation in literature, which may be too short to ensure collaborative team development, (Reeves, 2002).

SRCs were the most prevalent model from our literature search from 2016-18, 2018-19, and are typically housed or led at universities. The United States has approximately 110 SRCs as of 2014, while Canada has only 12 clinics operating dispersed across multiple provinces and settings (Meah, Smith, & Thomas, 2009). Through the combination of stakeholder interviews and a literature review in SRCs, three models were identified in a Student-Led Clinics Toolkit in 2018 developed by the Canadian Federation of Medical Students (CFMS) & Ontario Medical Student Association (OMSA). 1) **Collaboration with an Existing Site** through partnership between the SRC and clinics or health centres to share various resources, such as space, staff, and equipment (most prevalent in Canada, ie. UT IMAGINE clinic). 2) **Stand-alone SRC** that does not depend on an existing clinic but often requires extensive funding to start-up/operate (most common in US with different funding sources to support, Holmqvist et al., 2012) 3) **Street Medicine** model through an outreach model of care, where students go into the community to provide services for underserved clients that could not attend a clinic for services.

The SRC toolkit (CFMS, OMSA, 2018) and systematic review of student outcomes (Schutte et. al., 2015) summarize positive impacts of SRCs, including acquisition of knowledge/clinical skills, collaboration skills, improved IP attitudes, and comfort with underserved populations in student outcomes. Furthermore, the SRC approach has been shown to create a greater level of patient satisfaction, greater treatment compliance, increased diagnostic accuracy, and fewer return visits than comparator clinics (Cepeda, et al., 2008, Arntfield et al., 2013). However, some studies suggest that there is no difference in the quality of clinical care provided by SRCs (Schutte et. al., 2015). Review of the literature on systemic impacts of SRCs suggested that they are cost effective, decrease hospitalization rates, decreased hospitalization rates and emergency department usage (Stuhlmiller and Tolchard, 2015, Arenas et. al., 2017 Trumbo et. al., 2018, Kramer et. al., 2015. Opening a student-run clinic requires extensive work, dedication and support from educational institutions, host clinics, and health regions. The biggest challenges include securing funding and faculty recruiting (Smith et. al., 2014).

Wellness and Health Promotion Models:
Mostly in SRCs, there was recent evidence of interprofessional models for students providing wellness and health promotion. Some examples of this include: interprofessional student teams provided smoking cessation services to the underserved population with increased role awareness (Tsu et al., 2018). A student-led primary mobile clinic demonstrated high client satisfaction and improved access to resources (Asanad et al. 2018). Numerous student-led "wellness" programs also provided underserved populations with pelvic exams, pap tests, breast exams, urinalysis, and low complexity infectious disease testing (Rogers et al., 2017, Vandewiele et al., 2016, Smith et al., 2016). McGuire R, 2011, describes a 3 pillar model of student-led services based on the UT IMAGINE clinic beyond 1) health clinic services, they further identify student-led initiatives in 2) health promotion: delivery of education sessions on topics such as healthy eating, alcohol use, bedbugs and 3) community awareness sessions.

Key Considerations:

- There is opportunity to further map future SLE opportunities for service needs, within UHN, HB or other TAHSN partners, which client/patient populations may not otherwise access
- Beyond direct care , examples of additional "pillars" of wellness, health promotion, community awareness, education initiatives have been successful elements of SLEs (McGuire, 2011, CFMS, OMSA, 2018). Furthermore, areas for potential health system innovations and improvement (ie UHN RESTORE, other practice/QI projects), may be more agile to plan around varying levels of facilitator, student recruitment with less cost, risk than developing stand-alone SRCs or IPTUs.
- Another opportunity may be to further explore Street Medicine model, Mobile Health promotion, building off IMAGINE health promotion IPE and other outreach initiatives.
- Collaboration and/or partnership with existing community clinic sites for SRC or closer alignment to IMAGINE Clinic could be leveraged to scale SRC with existing staffing and resources

Appendix A: Literature Search Methodology

This literature review examined literature from 2018-19 (D.Lising), 2016-2018 (E. Hanna), conducted by Jessica Babineau, UHN IS Specialist, as well as considered a 2013 literature review reviewing past literature (C. Chalmers). Key words included interprofessional, interdisciplinary, multiprofessional, multidisciplinary, student clinic, bed or ward, student run or led or teach, training. Databases included Medline, Embase, CENTRAL, Joanna Briggs, CINAHL, ERIC, Emcare.

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