TEST, LINK, CALL PROJECT

SUSTAINABILITY REPORT

FINDINGS AND RECOMMENDATIONS

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The work to develop these program recommendations was carried out on the unceded, ancestral, and continually occupied territories of multiple First Nations, including but not limited to the xʷməθkwəy̓əm (Musqueam), Sḵwx̱wú7mesh Úxwumixw (Squamish Nation), and səlilwətaɬ (Tsleil-Waututh Nation), in what is colonially known as British Columbia (BC).

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1. Executive summary

1.1. Background

The Test, Link, Call (TLC) program aims to address digital health inequities by improving access to sexually transmitted and blood-borne infections (STBBI) care for people who experience criminalization (PWEC), a population with a high prevalence of STBBIs and low percentages of cell phone ownership in British Columbia (BC). By providing participants seeking STBBI care with a free cell phone, a free talk & text plan, and optional connection to peer support, participants have increased access to health and social services, connection to loved ones, and improved wellbeing.

TLC currently operates within a time-limited funding environment that is common for innovative, equity-focused health interventions, and is navigating a challenging economic context and high telecommunications costs. A sustainability plan is therefore important to support informed, strategic growth and long-term viability.

1.2. Recommendations Introduction

This document contains sustainability recommendations for the TLC program in three different sustainability domains: stability, expansion, and adaptation. These recommendations were developed from an environmental scan conducted of cell phone-based interventions worldwide, along with an internal program sustainability assessment tool (PSAT) assessment done with internal staff affiliated with the BC Centre for Disease Control (BCCDC) and the Pacific Public Health Foundation (PPHF).

1.3. Core Recommendations Summary

The main purpose of these recommendations is to provide a foundation to inform future discussions about TLC's future development. The "core" recommendations are summarized below, with more details to be found in sections 3-5.

1.3.1. Reinforce TLC's strong partnerships and evaluation cycles

TLC is unique from other cell phone-based interventions because it is a long-term program backed by a research team capable of running regular evaluation cycles. This allows the program to maintain connections with community partners and identify and solve emerging problems; reinforcing these strengths will allow the program to continue running, even when funding shortfalls arise.

1.3.2. Grow and diversify community partnerships

TLC has many partners, but many of them are centered around STBBI care; by reaching out to other community organizations focused on other social determinants of health, TLC can reach more people and increase its presence in communities across BC.

1.3.3. Expand scope of inquiry

There are many knowledge gaps in this area of research, including gaps in provider acceptability, wellness impacts on participants, and Indigenous ways of knowing and being. TLC should consider leveraging its exceptional evaluation methods to deepen the knowledge base in this area of research.

2. Introduction

2.1. Digital exclusion in Canada

The Canadian telecommunications industry has attracted attention internationally for being dominated by three telecommunications companies who provide most telecommunication services in Canada. In 2023, the "big three", TELUS, Rogers, and Bell, held a combined mobile wireless subscriber share of 86.9% across Canada and nearly 90% of all retail mobile phone revenues [1]. If looking at the Canadian mobile market from a country-wide lens, it is easy to conclude that the Canadian wireless market is primarily distributed between these three companies; however, province-to-province market analysis suggests that many provincial phone markets are functionally monopolies or duopolies, particularly in rural areas [2,3]. Rewheel, an independent Finnish telecommunications research firm, described British Columbia in a 2019 study as an effective duopoly between TELUS and Rogers outside the largest cities, with Telus holding a monopoly on cell tower infrastructure across the province [2].

Economists and policy researchers have theorized that this "oligopoly" on the Canadian telecommunications industry is compounded by a lack of modern federal pro-competitive laws and policies that allow governmental bodies such as the Competition Bureau to push the telecommunications industry in a more competitive direction [4–6]. Though the Canadian government has taken steps to address this through cost reduction efforts and the proposal of pro-competitive policies [7], little competition exists that incentivizes the "big three" to keep costs low and affordable. While the Canadian Radio-television and Telecommunications Commission and Innovation, Science, and Economic Development Canada (ISED) have reported that phone plan prices have overall declined since 2020 [1,8], 2023 data from the Organization for Economic Co-operation and Development (OECD) and ISED both suggest that Canada's cheapest phone plans are still expensive compared to the rest of the world [8,9].

It is possible that when these high phone prices are paired with Canada's overall high costs of living and the persistent barriers people who experience criminalization (PWEC) face to employment and security, cell phone access becomes precarious for PWEC. We see this reflected in provincial data; while the knowledge base is small, past studies and surveys done within British Columbia have seen low percentages of cell phone ownership or mobile wireless plan subscription among participants. For example, 42% of the 503 people who use drugs (PWUD) that participated in the 2022 British Columbia Harm Reduction Client Survey and 40% of the 130 young Indigenous PWUD who participated in the 2020 Cedar Project WelTel mHealth study reported having a cell phone or a mobile wireless plan [10,11].

Though digital tools and digital literacy are now recognized as critical determinants of health [12,13], digital health equity remains an underexplored determinant of health. PWEC are especially vulnerable to digital health inequities, especially as healthcare continues to shift toward digital services and care modalities; in the past, PWEC have reported difficulties with booking health appointments or adhering to treatment due to their healthcare providers requiring phones or access to digital services [14–16]. This has been exacerbated with the shift to digital healthcare amid

the COVID-19 pandemic; for example, the primary way of accessing your health records in British Columbia now requires 2-factor authentication, which is impossible without the BC Services Card App installed on a personal phone [17,18].

When all these barriers are combined, seeking care for sexually transmitted and blood-borne infections (STBBIs) can become next to impossible. PWEC have a high prevalence of STBBIs, such as hepatitis C virus (HCV), human immunodeficiency virus (HIV), hepatitis B virus (HBV), and syphilis [19–22]. This is driven by the barriers to care mentioned prior, and further compounded by stigma [14,23,24], difficulties navigating the healthcare system (even when digital health equity is not considered) [14,23,25], and the challenges that come with unstable housing and substance use [14,23]. Cell phone-based interventions are a promising avenue to address these barriers to care, reduce health disparities, and improve relationships between PWEC and healthcare providers.

2.2. Test Link Call (TLC) Project Overview

To address digital health inequities in accessing sexually transmitted & blood-borne infection (STBBI) care, the Test, Link, Call (TLC) quality improvement program was developed. Launched in October 2021, TLC is a unique collaborative effort between government agencies, STBBI care providers, prison services, and peer organizations that addresses digital health barriers by providing participants seeking STBBI care with a free cell phone, an unlimited 6 month talk & text plan, and optional connection to a peer health mentor [26].

Initially, TLC was focused on supporting access to care for hepatitis C virus (HCV) for people leaving custody. This happened after discussions with people in custody, peer health mentors, and healthcare providers working in BC correctional centers highlighted the digital health inequities PWEC face to essential services; many of them noted how difficult it was for people living with HCV to connect to treatment after they are released from custody, especially because they often do not have a cell phone or stable contact number upon release that would make it feasible for them to maintain contact with a healthcare provider.

In 2022, TLC expanded its eligibility to include people experiencing housing stability or using unregulated substances seeking HCV care. In 2023, it expanded again to support connection to HIV care, and in 2024 it expanded again to support connection to care for viral hepatitis and syphilis. Since launching, TLC has engaged over 25 healthcare providers across all BC health authorities and served over 600 clients across the province.

Evaluations done to date have found TLC to be an effective intervention that addresses digital exclusion among PWEC seeking STBBI care. TLC participants demonstrate higher STBBI treatment uptake compared to provincial estimates, which may reflect improved continuity of contact and care facilitated by the program. Compared to 40% of people who inject drugs (PWID) identified in the BC administrative base in 2020, 57% of PWID eligible for TLC began curative treatment. When stratified for time elapsed since TLC enrollment, this increased to 67% for participants involved in TLC for over one year. In addition, TLC also effectively addressed barriers to healthcare access for PWEC and fostered a more holistic and continuous relationship between participants and healthcare services. Healthcare providers noted the increased ability to maintain contact with their

clients, while participants highlighted the trust and motivation to initiate care built through positive healthcare experiences facilitated by nonjudgmental clinic and peer support provided by TLC [26].

As TLC achieves its goal of improving STBBI care for PWEC in British Columbia, it is crucial to investigate ways to keep the program running and determine what the optimal way of delivering the model would be if TLC were to be adapted for other health conditions or geographic locations. While "feedback loops" involving TLC clients and staff have helped improve TLC and address emergent problems such as phone theft or digital literacy issues, no formal program sustainability assessments have been done for TLC.

2.3. Project design & method

This sustainability plan contains recommendations and suggestions designed specifically for TLC's program design but can be adapted for other programs that provide cell phones as a healthcare intervention. This document's main purpose is to improve the future viability and effectiveness of TLC, and provide a foundation that can inform the program's future development.

The foundation of this sustainability plan is made up of three sustainability domains: stability, expansion, and adaptation. These domains are broken down into "core questions" regarding TLC's future development. Each recommendation and suggestion in this sustainability aims to answer "core questions" raised by the topics of stability, expansion, and adaptation.

Stability, expansion, and adaptation were central to the methods used for this sustainability plan; to begin answering these "core questions", an environmental scan was conducted to present an overview of cell phone support programs worldwide and identify strengths, weaknesses, opportunities, and risks relevant to TLC. Concurrent to the environmental scan were a series of interviews with key informants who had experience running cell phone-based interventions in Canada.

In addition, an internal survey analyzing perceptions of the TLC program was conducted among staff in the BC Centre for Disease Control (BCCDC) and the Pacific Public Health Foundation (PPHF) using the Program Sustainability Assessment Tool (PSAT) framework. Findings from the PSAT assessment provided staff consensus on what TLC's strengths and weaknesses were. The PSAT findings also informed how to interpret the environmental scan findings and determine which findings were actionable and of particular concern for TLC internal staff.

2.3.1. Stability

Stability, in respect to TLC's program delivery, asks (1) how TLC can continue running long term, and (2) how can TLC expand its scope sustainably.

While stability primarily concerns itself with funding stability, as funding stability can often be a deciding factor on whether a program is able to run or not, it also concerns itself with program capacity and scoping.

2.3.2. Expansion

Expansion asks how TLC can expand for different health conditions, geographic locations, target populations and modalities with the resources *currently available to the team*.

The concept of program expansion concerns itself with how a program operates and its intrinsic "strengths" that allow it to expand and broaden without taking on significant costs, or with minimal adjustments to the core program design. It also concerns itself with the program's gaps and limitations, as those provide insights into areas in which the program's design or resources are insufficient.

The environmental scan sought to answer the core question of expansion by primarily looking at areas in which the program benefitted from existing resources already available to the organization. These include success factors such as federal programs that provide subsidized phones to low-income populations and strong academic-community partnerships.

2.3.3. Adaptation

Adaptation asks how TLC can change to accommodate different health conditions, geographic locations, target populations, and modalities?"

While expansion is focused on expanding TLC without large changes to its project design or operational logistics, adaptation is concerned with how TLC's project design can be changed or altered to succeed in novel or unexpected conditions. For example, TLC did not require significant restructuring when expanding to include participants seeking care for HIV in 2022. However, TLC may require some sort of restructuring or adjustment if it plans to include other health conditions that may require different health interventions, such as substance use disorder.

The environmental scan assessed cell phone-based interventions' adaptability by looking into areas where the program demonstrated, or did not demonstrate, flexibility and an ability to respond to problems and limitations that arise during program delivery. The rigidity of a program was given considerable focus as well, as a program's inability to effectively hit its stated goals, objectives, or improve other areas of wellbeing can provide insights into how a project's design may be too rigid to help its clients.

2.4. Overview of findings

Findings from the PSAT and environmental scan found that TLC excels in maintaining partnerships across BC with healthcare providers and peer support workers. TLC's program evaluation and adaptation capacities are also very strong and are facilitated by its unique status as a long-term quality improvement program with the resources to maintain long-term contact with partners and its target populations. The program's regular feedback cycles also allow for the program to effectively address and remain effective for different health contexts across BC (e.g., phone theft, accommodating different STBBI conditions).

TLC's staff capacity was also identified a key strength of the program, as its administrative team has the capacity to oversee the program's day-to-day operations and support healthcare providers and peer health mentors working with TLC participants when needed. Opportunities for growing further relationships with service providers across BC and expanding the program's evaluation scope of inquiry were highlighted.

An important area for continued strengthening identified through the PSAT and environmental scan relates to long-term financial sustainability. Many weaknesses and risks stem from this lack of financial

certainty, such as the lack of a long-term strategic plan and limited staff capacity. Other weaknesses identified were the lack of community outreach to rural communities and Indigenous communities across BC and limited knowledge mobilization capacity.

The primary risk identified through the environmental scan and some PSAT assessments were the knowledge gaps surrounding a program like TLC; because the "prescription" of a cell phone is an underexplored area of research, the program must reinforce its key strengths and invest in developing the knowledge base for mobile health (mHealth) programs like TLC by using its exceptional program evaluation capabilities to look into knowledge gaps such as service provider acceptability, logistics, and wellbeing benefits. Other risks to the TLC program included digital literacy challenges among people who experience criminalization, a lack of diversity in partnerships outside of STBBI treatment and care, and mHealth security and privacy concerns.

3. Stability Findings & Recommendations

3.1. General findings

TLC faces risks from a lack of long-term funding certainty and logistic uncertainties stemming from deficient research in this area. Digital health equity and "prescribing" cell phones remain underexplored areas of research [27,28], and this uncertainty can pose a risk to TLC as mHealth programs are particularly vulnerable to failing due to the program not knowing or underestimating potential issues (i.e. staff capacity, cost effectiveness, operational logistics) that could arise and cause a program to fail [29].

However, TLC's deep connections to healthcare providers across the province allows it to continue operating for current participants, even when funding shortfalls arise. For TLC to remain stable and effective, TLC must reinforce its connections with community partners and take the time to "tune" the project for different health contexts and populations (e.g., people seeking treatment for substance use disorder, people in different provinces).

As with any device-based health intervention, proactive attention to cybersecurity is required, including routine review of pre-installed applications. External examples from other jurisdictions[30] were reviewed to inform proactive mitigation strategies. No known cybersecurity incidents have occurred within the TLC program to date.

3.2. Findings on long-term funding feasibility

TLC is currently supported through time-limited grant funding and periodic renewal processes. TLC has experienced funding shortfalls in the past that affected the administrative team's ability to send out phones to newly registered clients, leading to waitlists and a limited ability to expand to other healthcare regions. The lack of long-term funding stability has impacted TLC's ability to plan for the future; in the words of one PSAT respondent, "[because] we only get time-limited funding, it's hard to have a long-term vision for TLC".

With funding stability ranked as the weakest sustainability domain in the internal PSAT assessment, it is safe to say that the TLC team is aware of the weak funding stability of the program. This is not a weakness unique to TLC. Long-term funding stability appears uncommon

among comparable cell phone-based interventions identified in the environmental scan. While securing long-term funding remains an aspirational goal, sustainability planning will benefit from diversification of funding sources and integration pathways.

3.2.1. Achieving stability by integrating the program into healthcare systems

While TLC enjoys close partnerships with healthcare providers throughout BC, it is not closely embedded into a healthcare system and is not formally recognized by BC healthcare authorities. It does not enjoy the funding stability that could come with being integrated into a healthcare authority and is unable to apply for internal BCCDC funding opportunities or carry over costs due to internal policies. A lack of integration into a larger organization was a weakness highlighted by several respondents of the PSAT.

One avenue to improved stability could be through the integration of TLC into BC healthcare systems. One promising opportunity for this is the You Matter Lab's Bridge2Care project, which aims to improve quantitative data collection in areas current data collection systems struggles to access through an in-development mobile app intended to come pre-installed on TLC phones. If the Bridge2Care project is successful, it may be possible to justify TLC as a necessary program for areas and populations that traditional healthcare systems in BC struggle to reach.

Other cell phone-based interventions in Canada have benefited from some sort of integration into a healthcare system, as the resources that come with healthcare environments become readily available for them to use for program staffing and data evaluation. For example, PHONE-CONNECT and Michael Garron Hospital (MGH)'s Phone Equity Program are both programs that have provided donated cell phones to digitally excluded patients discharged from emergency departments across Ontario.

While neither program achieved long-term funding stability, both programs had access to their respective hospital's resources and were able to leverage eager hospital staff, access hospital records for program evaluation and analysis, and maintain contact with its target population, with little additional funding or resources required to do so [31,32]. Additionally, PHONE-CONNECT appears to have benefitted from the visibility that comes with being integrated into a frontline healthcare environment as it enjoys media coverage and regular donations [33].

However, it is important to maintain a dedicated team and clearly outline staff roles and responsibilities if the program is to become "absorbed" into a pre-existing system. Several programs, as well as respondents of the PSAT, mentioned lack of staff capacity as a barrier that can undermine program effectiveness [29,34–36].

3.2.2. Reducing program costs by offering different phone models

While flip phones and old donated phones are often provided in cell phone-based interventions [34,37–39], Canadian cell phone programs have previously bought budget smartphones in bulk for use. Passerelle C, a program that has adapted TLC's model for PWEC seeking HCV care in Quebec, has previously bought the TCL 20 phone model in bulk for 110 per phone from Walmart [40]. Care Connections, a program in Hope, BC that links people with disabilities to employment by providing

them with a free phone, has also previously bought phones in bulk for no more than 200 dollars per phone during Black Friday and Cyber Monday sale specials [41].

The equipment costs per TLC participant is $300. This includes providing participants with a Samsung Galaxy A16, which can go for around 270 dollars per phone. With the success other programs such as Passerelle C and Care Connections have had buying cheaper phones, it is worth exploring cheaper phone models to reduce TLC program costs or sourcing donations of used smartphones.

Acceptability is unlikely to be a concern if switching to different smartphone models, as cell phone-based health interventions have been found to be highly acceptable regardless of model provided [32,34,39]. However, it is still important to assess how convenient the phone is and how much agency it gives participants, especially as those metrics are not explored within the current literature.

Both Passerelle C and Care Connections underwent trial and error while finding a phone model that worked for their participants; Passerelle C reported that clients would remark that the TCL 20 was too big to fit in their pockets, leading to a change in phone models, while Care Connections had previously bought cheap phones that lacked the processing power required to execute basic tasks like sending an e-mail to a doctor.

Another important point of consideration is finding a balance between the phone's price and capabilities; other cell phone support studies have given their participants with extremely limited phone models (such as a flip phone without camera capabilities) that help achieve the objectives defined by the study, but risk preventing the client from connecting to resources outside of the study scope [37].

3.3. Reinforcing TLC's capacity and stability by strengthening and growing relationships

Strong community partnerships are one of the biggest facilitators to a cell phone program's stability, as the partnerships allow the program team to lean on what their partners can provide when resources or funds are low [42,43]. TLC is in a unique position where its program structure allows the program to continue running for current participants, even when funding deficiencies prevent the TLC administrative staff from sending out new phones or UTG from providing peer support. TLC also enjoys high environmental support, with advocates across BC championing the program and other research teams in different regions in Canada adapting the TLC program model for their own use.

The healthcare providers TLC is partnered with are not directly funded by the grants TLC receive; thus, as long as a participant does not lose their phone, they will continue to have access to service providers and a pre-paid phone plan. In a sense, this acts as a "safeguard" against resource gaps that may arise due to funding shortfalls. Except for Passerelle C (as it directly adapts TLC's model), no other cell phone program has this "safeguard"; programs that have experienced funding shortfalls or exhausted funding have had to completely stop all services because all services provided were being funded from the same sources [34,44,45].

It is important to preserve TLC's core program structure should TLC transition from "pilot to program" and work on strengthening and growing relationships across BC, as those partnerships

may be able to cover resource gaps that stem from funding shortfalls. For example, should TLC experience a funding gap that prevents the administrative team from sending out new phones, a partnership with a community organization capable of conducting a "donation rally" for used smart phones could help cover that resource gap.

This recommendation is closely related to recommendation 5.3, strengthening and growing community relationships; for more information on *how* the TLC program can connect with more community organizations, see section 5.3.

3.4. Be aware of outdated apps and cybersecurity risks

It is important that the apps pre-installed on TLC are continually maintained and removed if the app is defunct or no longer updated. Cell phones provided through previous programs, such as the United States Federal Communications Commission's Lifeline Program for Low-Income Consumers, have come pre-installed with malware and intrusive apps that prevented phones from ensuring people receiving income assistance remained connected to vital services [30]. Though rare, While no known cybersecurity incidents have occurred within the TLC program to date, routine review of pre-installed applications is a recommended standard risk-mitigation practice,[46] and as with many digital health interventions serving populations facing structural barriers to digital literacy, proactive cybersecurity practices are particularly important. Continuing to host defunct apps can also pose a risk for participants; for example, the Brave app, an overdose prevention app intended to be used by PWUD using alone, is no longer in service [47]. If unsupported applications are not uninstalled, participants may mistakenly depend on them.

4. Expansion Findings & Recommendations

4.1. General findings

TLC has successfully expanded to all six BC health authorities and has expanded its eligibility to include people seeking treatment for HIV, hepatitis B virus, and syphilis. This is a celebrated strength of the program among TLC staff and makes TLC stand out from other cell phone programs in the environmental scan, as only 2 programs identified in the environmental scan demonstrated an ability to expand without becoming embedded in a government body or corporation [39,48].

TLC's existing program structure has proven to be a solid foundation for the program to expand. TLC should consider using this foundation to cover the gaps observed in TLC's service in rural areas across BC by involving more community organizations in registering clients.

The program should also consider improving and refining its knowledge mobilization strategies as the program continues to expand. TLC has the opportunity to effectively communicate its value to the public by leveraging its successes with participants and healthcare providers and diversifying the mediums the program does knowledge mobilization through.

4.2. Involving more community organizations in the TLC registration process

Healthcare providers are closely involved in administering the TLC program model to participants, and the program design makes it very easy for healthcare providers to get involved in the program

as the only requirements are a consent form and an email or fax directed to the TLC administrative team.

The one community organization closely involved with TLC, Unlocking the Gates Services Society (UTG), is a unique and important TLC partner for a lot of reasons, but one thing of note is the existing infrastructure that allows UTG to refer clients to the TLC program despite not being a healthcare provider. With how UTG can refer clients on their own, TLC may already possess the infrastructure required to register clients referred by other community organizations. If TLC were to increase intake and coverage in rural areas where community organizations were present, service gaps in rural service could be filled.

This recommendation is closely related to recommendation 5.3, strengthening and growing relationships. For recommendations about *how* to achieve this, refer to section 5.3.

4.3. Strengthening knowledge mobilization

The PSAT assessment results suggest that while TLC's program evaluation methods are among its key strengths, TLC's ability to communicate its value to the public is relatively weaker compared to its other sustainability domains. As one respondent puts it, most of TLC's partnerships are with organizations focused on STBBI support. Other respondents have noted that TLC's knowledge mobilization strategies are limited and not as diverse as they could be. Like many harm reduction and equity-oriented initiatives, TLC operates within a complex and evolving policy and political environment.

Public misunderstanding or mischaracterization of programs that provide material supports can pose risks if proactive communication strategies are not in place. Harm reduction policy stigma is among some of the largest obstacles harm reduction initiatives face [49–51] and can pose a threat to a program's ability to run.

It is important for TLC to stay ahead of the curve, build capacity for diverse methods of knowledge mobilization, and be equipped to convey the program's successes to different audiences with varying perceptions of free phone programs.

4.3.1. Collecting more participant testimony

The Pacific Public Health Foundation (PPHF) has previously cited a lack of participant testimony as something they have had to work around while applying for grants for TLC. Finding ways to get participants interested in providing testimony, as well as making these testimonies more accessible for grant writers involved with TLC, could help TLC continue to receive grant funding from different sources.

Collecting more participant testimony for TLC would involve building a strong rapport between the TLC administrative team and TLC participants or leveraging the rapport service providers have with their clients. As such, to allow for a multidimensional approach to building participant rapport and increase respondent numbers, this recommendation likely requires the successful implementation of other recommendations listed in this sustainability report. These include increasing program staff capacity, building community partnerships with more peer support organizations, and involving healthcare providers in collecting participant testimonies.

4.3.1.1. Releasing surveys in-between evaluation cycles

TLC's methodology for collecting qualitative data from participants is among its biggest strengths, but consideration should be given to releasing surveys in between evaluation cycles. Surveys have previously helped collect data from a variety of people involved with TLC, with some seeing higher response rates than TLC does for its qualitative data evaluations. They can provide insight and participant testimony that can be used to demonstrate TLC's value to the public and to funders.

While the qualitative data TLC collects is rich in quality and insight, it is also a high-resource evaluation process that is potentially impacted by participant burden. Currently, data is collected through online semi-structured interviews. This form of evaluation may exclude participants who do not feel comfortable providing feedback through online and/or phone interviews, or participants who have precarious access to Wi-Fi or their phone. PHONE-CONNECT saw low sample sizes for their semi-structured interviews; researchers attributed this to phone insecurity [31].

Furthermore, the most recent qualitative data cycle was March 2024, meaning that there is over a year of the TLC program that we do not have data on. Intermittent surveys in between in-depth evaluation cycles may help us develop an understanding of how the program is working for participants in the meantime and identify participants who may be interested in collaborating with TLC to tell their stories and communicate the program's value to the public.

4.3.1.2. Producing videos and articles about TLC participants and their stories

Past cell phone programs have used individual participant stories while communicating the value of their program to the media. They have helped form the backbone for program leaders to talk about their programs in the media and at conferences, such as with CONNECT Vancouver, a youth-led program that provided free phones and cell service to people experiencing homelessness in Vancouver from 2016 to 2024. CONNECT Vancouver worked closely with participants to develop videos and articles about them to communicate their stories and why phone donations and funding was important for the program [44]. This, along with the novelty of the program being run by high school students, led the program to enjoy moderate visibility and media coverage from different outlets [52,53].

4.3.2. Addressing healthcare provider stigma

While not a specific focus of any study assessed in the environmental scan, past programs have observed or expressed underlying biases and stigmas that may affect the program's effectiveness. For example, healthcare providers involved with PHONE-CONNECT previously expressed concerns of people entering the ER for a free phone and increasing ER wait times; to date, there is no evidence of this happening and no evaluations of PHONE-CONNECT have observed this concern [39].

One key informant mentioned a substance use disorder treatment program that provided free phones for participants that may have been impacted by existing health provider biases and stigma related to substance use. This key informant speculated that providers approached the program with the attitude that should participants lose their phone, that replacing it would not be worthwhile, regardless of what benefits the participants might have experienced from having received the phone in the first place [34]. This was described as a 'tough luck' attitude, which has been frequently documented in qualitative research related to healthcare provider perceptions of

people who use substances [54–58]. These attitudes can compound with preexisting healthcare perceptions that have been identified as a barrier to initiating HIV or HCV treatment among people who experience criminalization; if an individual eligible for TLC is met with a similar kind of coldness they and their friends or families have faced from the broader healthcare system, there is little incentive for them to engage with the program.

TLC has observed high levels of acceptability among service providers. Other cell phone programs have found that providers generally find this program to be acceptable [29,59,60]; knowing this, it is important to incorporate this observed provider acceptability into TLC's knowledge mobilization strategies, along with the solutions TLC has come up with to emergent problems (e.g., phone theft, digital literacy) when communicating the program and its value to healthcare providers that may not be bought in with TLC's program model.

5. Adaptation Findings & Recommendations

5.1. General findings

As discussed in the Expansion section, TLC has demonstrated an ability to adapt for different STBBI conditions and settings across BC. The PSAT reflects this quite nicely with the domain of program adaptation being the third best sustainability domain TLC demonstrates. Findings from the environmental scan suggest that TLC's adaptation capacities are facilitated by cell phone-based interventions generally being highly acceptable and applicable for many different settings [29,60–62], even if done on a basic level where all that is provided to a participant is a cell phone with basic talk & text capabilities.

Furthermore, TLC's unique status as a quality improvement program with a supporting research team allows for strong and recurring evaluation cycles that are not restrained by rigid study design or limitations that come with being embedded in a government program (such as the United States Lifeline Program) or large corporation (such as the TELUS Mobility 4 Good programs). TLC's program model has also been adapted for a Quebec healthcare context by the Centre Associatif Polyvalent d'Aide Hépatite C, a Quebec STBBI organization, who created Passerelle C based off TLC's freely available documentation. Passerelle C's program model closely parallels TLC's model and is an ongoing program [40].

Despite TLC's strong ability to adapt, the knowledge gaps present in this area of research pose a risk to the program. mHealth programs are sensitive to the context they are developed for, and the most successful mHealth programs are those that are properly designed and developed for the population and health condition it is targeting [29]. It is important for the program to expand its scope of inquiry to develop the knowledge base for mHealth programs like TLC by using its exceptional program evaluation capabilities to investigate knowledge gaps such as operational logistics, provider acceptability, and wellbeing benefits.

Digital literacy challenges are something the TLC program has already encountered among participants; such a problem would be exacerbated if TLC expands to include people seeking treatment for substance use disorder, as digital literacy challenges closely overlap with substance

use disorder [63]. Another risk comes in TLC's limited presence in Indigenous communities and rural communities throughout BC.

5.2. Expanding scope of inquiry

Digital health inequity solutions for people who experience criminalization is an underexplored area of research [27,28], and TLC has emerged as a frontrunner in this area of research. The program's evaluation methods and capacity for collecting data, especially qualitative data, is strong and few cell phone studies mirror the extent to which TLC collects qualitative data from its stakeholders. PSAT results suggest that this is a shared sentiment among the TLC staff; across all 7 PSAT sustainability domains, program evaluation ranks as the second-best sustainability domain of TLC.

However, while TLC's evaluation is strong and is a key strength of the program, it still has its limits. TLC does not closely touch on topics underexplored in this area of research, such as the mental health and wellness impacts of cell phone-based interventions. The literature on service provider acceptability is also limited, and this unknown knowledge gap can emerge as a possible barrier should TLC choose to expand the role service providers have in the program [29]. Additionally, the TLC evaluation cycle lacks relevance to Indigenous communities because it does not currently incorporate Indigenous knowledge or methods into its process. As a result, the extent to which we can learn about these topics from data collection rounds is limited and misses the potential to expand the knowledge base in this underexplored area of research.

5.2.1. Including mental health & wellness impacts within the scope of inquiry

Though TLC identifies improved participant mental health and wellness as one of the program's many benefits, they emerge as secondary benefits complimentary to TLC's primary objectives; in fact, the findings on mental health and wellness are categorized as "unintentional benefits" in the TLC manuscript. Considering that TLC's current focus is to increase linkage to STBBI care, this is an understandable result of TLC's evaluation process. However, if TLC is to expand to incorporate health conditions that closely intersect with mental health, such as substance use disorder [64,65], it is important to incorporate the mental health impacts of TLC as an intended evaluation metric to ensure TLC is effective and relevant for people seeking care for substance use disorder.

While there are other cell phone-based interventions that have formally incorporated wellbeing into their evaluation, such as the CEDAR Project and PHONE-CONNECT [11,59], the evaluation methods were limited and likely did not capture more than a shallow picture of the program's impact on wellbeing; for example, the CEDAR Project's qualitative evaluation was limited to 40-word responses in a survey distributed to participants [11]. With how strong TLC's qualitative data collection process is, there is potential to further fill this knowledge gap through TLC.

5.2.2. Further exploring staff perspectives

Expanding TLC and adapting it to more healthcare contexts would likely require close collaboration with providers and community leaders. This need for collaboration is addressed by many recommendations in this sustainability plan. However, those recommendations rely on the willingness of TLC staff to become more involved in the program's operations. To better understand

the acceptability of the TLC program among service providers and potential difficulties with "buy-in", the TLC's evaluation process should further explore staff perspectives.

While the current TLC interview guide for service providers is strong and asks questions such as, "Does having a phone create any problems?", there is opportunity to expand on this line of questioning further and ask about their workload and interest in further expanding their presence in the project.

Responses to these questions could inform how the team implements recommendations such as acquiring participant testimony, as well as identify potential gaps that other service providers could fill. For example, TLC healthcare providers have previously reported difficulties navigating the TLC phones themselves (see section 5.3.); including a further exploration of staff perspectives within the scope of inquiry could see this digital literacy barrier emerge as a persistent problem among many healthcare providers. This could be a gap filled by recruiting local community organizations or volunteers to help clients build the digital literacy skills required.

5.2.3. Including Indigenous ways of knowing and approaches to care

A weakness of TLC identified through the PSAT assessment was a lack of reach to rural communities and Indigenous communities. Past evaluations of TLC identified that TLC's overall approach to evaluation and interpretation lacks generalizability to Indigenous communities, as it does not include Indigenous ways of knowing or self-determination in its evaluation processes. This appears to be a knowledge gap in this area of research; only 2 programs identified in the environmental scan intentionally analyzed their programs within the context of colonialism and Indigenous wellbeing.

The CEDAR Project analyzed mHealth programs within the context of colonialism and Indigenous wellbeing, and found that mobile phones can be effective mediums to promote Indigenous approaches to care [11]. TELUS states that its Mobility for Good for Indigenous Women at Risk program addresses the National Inquiry's 231 Calls for Justice, specifically Call for Justice 15, by protecting, supporting, and promoting the safety of women, girls, and 2SLGBTQQIA+ people by providing over 4,535 individuals with a free phone and 1 year of free phone service [66].However there is no specific Indigenous-led evaluation publicly available from this program.

While TLC's current evaluation methods primarily reflect Western academic frameworks and do not yet meaningfully incorporate Indigenous-led approaches or governance, wellness benefits like those identified by programs that focused on Indigenous populations have been observed during TLC's qualitative data collection. An example of this comes from participant testimony about how TLC phones help participants stay connected with loved ones. The CEDAR Project also found that their participants emphasized connectivity to family as a source of strength and resilience, and suggested that phones could build upon the principle of wholistic wellness [11]. Any future expansion of TLC specifically for Indigenous communities would require Indigenous leadership, governance, and community-defined priorities to guide program design and evaluation.

5.3. Enhancing digital literacy

Digital literacy issues were a notable challenge TLC faced. This is a common challenge for cell phone-based interventions; PWEC involved in other studies and programs have previously expressed how digital literacy challenges limit their ability to book appointments or adhere to treatments [39,61,63]. In particular, digital literacy challenges pose a significant barrier for older adults and people who use drugs [63].

As such, it's important to explore ways to provide tailored digital literacy support for clients who need them, especially if TLC plans to expand to include people seeking care for substance use disorder as suggested by the 2023 preprint. Past cell phone programs have seen great success with in-person digital literacy support, but online workshops and pamphlets are also possible solutions.

The few programs that have provided in-person digital literacy training took different approaches to it; for example, Care Connections, a cell phone-based intervention in Hope, BC for people with disabilities seeking employment, provided one-on-one digital literacy support to participants [41]. Another BC program, Connect Vancouver, held group sessions at supportive housing buildings to help participants develop digital literacy [44]. Care Connections regarded digital literacy support as a key facilitator that helped program participants get employed quickly.

However, owing to the resource constraints often put on cell phone-based interventions, in-person digital literacy support is oftentimes not a feasible option for programs. Furthermore, the feasibility of getting current TLC service providers involved in enhancing digital literacy is unknown, but past testimony from healthcare providers suggests that providers may lack the digital literacy themselves to help clients navigate TLC phones. One quote from a healthcare provider sums this up well: “I don’t have an Android kind of phone, so it’s hard to help them with the phone”. It could be possible to fill this potential barrier by recruiting local community organizations or volunteers to help TLC clients develop digital literacy (a recommendation expanded upon in section 5.4.). Should TLC explore expanding the role of service providers and having them help out with digital literacy training, it is important to understand provider capacity by including further exploration of provider perspectives in TLC’s formal scope of inquiry.

Digital workshops and videos are also possible ways to provide digital literacy training (for example, TELUS provides free digital literacy workshops through the TELUS Wise program) [66,67], but programs must be careful of the barriers virtual digital literacy education can present to participants. While pre-recorded workshops require less resources than in-person support, the barriers closely intersected with digital health equity, like phone security and difficulties connecting to Wi-Fi networks, could make online digital literacy workshops difficult for TLC clients to engage with.

With resource limitations in mind, it is worth looking at the TLC client handbook provided to clients and potentially expanding or altering it to provide further digital literacy instructions. The “Using your phone” section of the handbook contains a good step-by-step tutorial on turning on the phone’s screen lock; the program should consider expanding this section and provide step-by-step tutorials on basic digital literacy skills such as texting and calling.

5.4. Strengthening and growing relationships

TLC's ability to lean on its partnerships across BC is a key strength of the program. With dozens of healthcare providers connected to TLC across all BC health authorities and regular evaluation cycles that engage stakeholders throughout BC, TLC has excelled in expanding throughout a region in ways few cell phone-based interventions are able to rival. This is a sentiment shared among TLC staff; across all 7 sustainability domains on the internal PSAT survey, partnership capacity was the highest scoring sustainability domain.

TLC's need for partnerships and community engagements is adequately addressed by the program, but that does not mean TLC does not have a need to further strengthen and grow its relationships. One interview with a key informant who ran a cell phone program in rural BC remarked that throughout their time managing the phone program, it felt as though the BCCDC lacked presence in their community. As mentioned in section 5.2.3., TLC also lacks relevance to Indigenous communities because it does not meaningfully incorporate Indigenous ways of knowing and being into its evaluation and interpretation cycles.

Furthermore, TLC participants, peer support workers, healthcare providers, and PSAT respondents have all commented on the need for more local community resources like those that Unlocking the Gates provide. One peer navigator described this need quite well during an interview conducted as part of TLC's regular evaluation cycles:

> ...when I started working for [Unlocking the Gates], like the only [provider] that [I] could get a hold of was Vancouver Clinic. That's like a horrendous amount of time out of my way. You have clients who are, you know, full on users, and I take the chance every single time to take them to Vancouver... If they get dope sick, I'm gonna lose them in Vancouver.

If TLC is to continue to expand and include more health conditions, it is imperative that TLC begin developing relationships with communities TLC has service gaps in. It must look more for healthcare providers present in health authorities that serve rural communities, and build capacity to engage with rural community organizations that may be able to fill service gaps that could arise from a lack of healthcare providers in the area (see recommendation 3.1., involving more community organizations in TLC recruitment). TLC should also consider evaluating the program's relevance and effectiveness in rural communities in a close fashion similar to the ongoing two-eyed seeing project.

6. Conclusion

These recommendations are the result of an environmental scan and internal program sustainability assessment tool (PSAT) survey intended to provide the Test, Link, Call (TLC) program with a framework that informs future discussions about TLC's development. All recommendations were categorized into one of three sustainability domains: stability (how to keep the program financially afloat and maintain stable organizational capacity), expansion (how to expand the program with the resources currently available), and adaptation (how to cater the program to

specific healthcare contexts). All recommendations touch on identified strengths, weaknesses, risks, and opportunities for each domain.

Within the domain of stability, TLC was identified to possess strong partnerships across BC. The primary weakness identified in not only this domain but the program's sustainability as a whole was a lack of long-term financial stability; while the program should not rely on the chance to receive long-term funding in the future, the program has an opportunity to reinforce its strong partnerships and reduce costs by integrating itself in larger healthcare systems or providing cheaper phone models with the same capabilities as the currently provided TLC phones. Cybersecurity and outdated apps were an identified risk to TLC's stability and safety for participants; it is important that the apps pre-installed on TLC phones are routinely monitored and removed if no longer supported, so that participants are not accessing obsolete apps or made vulnerable to privacy breaches by default.

TLC was identified to have succeeded in the domain of expansion, having successfully expanded to all six BC health authorities and to other STBBI health conditions. This success sets it apart from other cell phone-based interventions, as only 2 programs identified in the environmental scan demonstrated an ability to expand without being embedded in a government body or a large corporation. The main risk identified for this domain was TLC's limited knowledge mobilization capacities. TLC has the foundation to address this through its strong partnerships and findings from evaluation cycles. Other opportunities arose from TLC's strength in this domain, such as using its existing partnership foundations to further grow and expand its reach to target populations.

TLC also demonstrated strong adaptation capabilities stemming from its strong evaluation and adaptation capacities. However, key uncertainties relate to adapting the TLC model to health conditions beyond STBBIs, reflecting broader knowledge gaps in mHealth implementation.

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