Technology-Enabled Hubs in Remote Communities
A REVIEW OF RESEARCH AND PRACTICE

Prepared for
Community Safety Knowledge Alliance

Prepared by
Centre for Forensic Behavioural Science and Justice Studies

March 2016

This literature review was prepared for Community Safety Knowledge Alliance by the University of Saskatchewan's Centre for Forensic Behavioural Science and Justice Studies. Funding for this project was provided by Defense Research and Development Canada – Centre for Security Science.

For further information on Community Safety Knowledge Alliance, please contact:

Shannon Fraser-Hanson
Manager
(306) 384-2751 sfraserhansen@cskacanada.ca

For further information on the Centre for Forensic Behavioural Science and Justice Studies, please contact:

Dr. Joanie Crandall
Coordinator
joanie.crandall@usask.ca

Project Lead: Dr. Chad Nilson
Inaugural Research Fellow
Centre for Forensic Behavioural Science and Justice Studies
University of Saskatchewan
(306) 953-8384 chad.nilson@usask.ca

Project Supervisor: Dr. J Stephen Wormith
Director
Centre for Forensic Behavioural Science and Justice Studies

To reference this work, please use the following cite:

Nilson, C. (2016). *Tech-Enabled Hubs in Remote Communities: A Review of Research and Practice*. Saskatoon, SK: Centre for Forensic Behavioural Science and Justice Studies – University of Saskatchewan.

Acknowledgements: Special thanks to staff at the Centre for Forensic Behavioural Science and Justice Studies (Dr. Lisa Jewell, Dr. Krista Mathias, Dr. Myles Ferguson, Amy Pilon) and Living Skies Centre for Social Inquiry (Keri Okanik) for assistance finding and sorting literature resources.

TABLE OF CONTENTS

TECHNOLOGY-ENABLED HUBS IN REMOTE COMMUNITIES

A REVIEW OF RESEARCH AND PRACTICE

By
Dr. Chad Nilson
Centre for Forensic Behavioural Science and Justice Studies
University of Saskatchewan

1.0 INTRODUCTION

This review has been completed in support of a larger feasibility and planning exercise to implement technology-enabled Hubs in remote communities. The overall aim of the lager project is to identify a pilot-ready opportunity for information and communication technologies (ICT) to enable application of collaborative risk-driven intervention (CRDI) in remote Saskatchewan communities. Driving the larger project that this review aims to support, are four main objectives:

1) Develop understanding for how the Hub model can be applied in remote communities by intersecting collaborative risk-driven intervention with advanced information and communication technologies.

2) Develop a body of knowledge on information and communication technologies that have enabled similar collaborative interactions in Canada and beyond.

3) Determine how a virtual environment for cross-sector collaborative risk-driven intervention can occur in Saskatchewan.

4) Provide a go-forward plan for community safety and well-being stakeholders to consider in piloting a technology-enabled Hub for remote communities.

Reviewing what has been learned and experienced in other fields and jurisdictions will help provide a solid foundation for this project's development and implementation. As community consultations and expert opinions are sought over the coming months, additional literature and supportive documents may be revealed. As such, this current literature review will remain a work in progress until the final deliverable in January, 2017. That being said however, there has already been a lot gained from the literature reviewed herein. Much of the main themes and lessons learned in other fields and jurisdictions will help support the development of a pilot project for tech-enabled Hubs in remote Saskatchewan communities.

The opening section of this review introduces the overall methodology of the literature review process. This methodology explains how the literature was scanned, and presents an organization of the key topics within the literature review. The next section of the review introduces the Hub model of collaborative risk-driven intervention. While still quite limited, this body of reporting and evaluation-based literature provides a solid understanding of the Hub model and how it has been applied across Canada. The third section of this literature review explores adaptations of other human service models in remote communities. The final section of this literature review explores the field of information and

communication technology, and how various applications of ICT can be used to support the coordination, collaboration and delivery of human services.

2.0 REVIEW METHODOLOGY

This review of research and practice was shaped to identify key themes and lessons learned in three major areas: collaborative risk-driven intervention, adaptations of other human service models in remote communities, and applications of information and communication technology in the human services. Due to the diverse nature of these three topics, a few different search strategies were employed.

Much of the literature on the Hub model is confined to a few trade journals and direct evaluation reports to government. While conventional web-based searching was also used for researching the Hub model, most of the available literature was gathered through direct communication with Hub practitioners, evaluators and strategists in the provinces of Saskatchewan, Ontario and Alberta.

The literature reviewed on past adaptations of other human service models was identified through web-based searches using a number of key terms: 'remote human service options'; 'rural care practices'; 'remote community program adaptations'; and 'adjusting for rural service delivery'. Some reference-based snowballing techniques were used to find additional works cited within the first few resources that were reviewed.

Finally, with respect to identifying relevant literature on information and communication technology, the researcher focused on web-based searches in peer-reviewed journals, along with scans of government and community-based organization resources. Key search terms included: 'ICT applications in human services'; 'technology solutions in remote communities'; and 'web-based communication'. Once an initial search using these general terms produced a few relevant documents, more specific search terms were applied: 'web-based care'; 'telehealth'; 'videoconferencing'; 'telepsychology'; 'virtual human service delivery'; 'human service teleconferencing'; 'doc-in-a-box'; and 'remote presence technology'.

In reviewing the literature on all three topics, thematic analysis was conducted to highlight major themes and widespread agreement in evidence-based practices concerning both the Hub model and information and communication technology. Since the literatures on 'remote adaptations of human service models' was used to provide illustrative examples, rather than derive best practices, no specific analyses or sorting technique was used.

3.0 COLLABORATIVE RISK-DRIVEN INTERVENTION

Collaborative risk-driven intervention is the process of risk-detection, which leads to disciplined and limited information sharing, and that is followed by a mobilization of multiple human service providers to intervene and mitigate risk before harm occurs (Nilson, 2016a). The core manifestation of this process in Canada is the *Hub Model*. In short, the Hub is "an evidence-based collaborative problem-solving approach that draws on the combined expertise of relevant community agencies to address complex human and social problems before they become policing problems" (McFee & Taylor, 2014:2). As the first evaluation of the Hub model in Canada describes:

> *The Hub is structured as a venue for human service professionals from a variety of human service disciplines, to meet and collaborate on interventionist opportunities of addressing situations of acutely-elevated risk. The Hub itself is inherently risk-driven, and lends itself to both secondary and tertiary efforts of prevention. The Hub meets Tuesday and Thursday mornings for up to 90 minutes each day. The focus of these meetings is to identify complex risks of individuals or families that cannot be addressed by a single agency alone. When situations are brought to the table by one of the partner agencies, the appropriate human service professionals become engaged in a discussion, which results in a collaborative intervention to connect services and offer supports where they were not in place before. The goal of the Hub is to connect individuals-in-need to services within 24 to 48 hours.*
>
> (Nilson, 2014a:9)

3.1 Formation of the Hub Model

The Hub model of collaborative risk-driven intervention was designed and first implemented in Prince Albert, SK. Driven by a general consensus among human service providers that "we can do better", a variety of police, health, education, justice, social work, addictions, mental health, and victim support professionals first started exploring their options in 2009 (McFee & Taylor, 2014). During this exploration, findings from the *Institute for Strategic International Studies* revealed that accounting for both risk factors and partnerships can help build capacity in policing (ISIS 2008; 2009). Similarly, the development of Saskatchewan's *Future of Policing Strategy* also called for a multi-sector alignment, integration and mobilization of human services (Taylor, 2010). These findings influenced the focus and direction of the Prince Albert partners to explore existing models that relied upon risk detection and partnerships.

In 2010, a group of human service professionals from Prince Albert visited the *Scotland Violence Reduction Unit* to confirm that multiple human service professionals can work together in an effort to reduce harm (McFee & Taylor, 2014). Evidence from Boston's *Operation Ceasefire* (Braga & Wesiburd, 2012) and other applications of the *Pulling Levers Deterrence Strategy* (Engel, 2013; Mcgarrell & Chermak, 2003; Papachristos, Meares & Fagon, 2007)—although quite different than Saskatchewan's Hub model—did show that multiple human service professionals can reduce harm by mobilizing supports around higher risk individuals.

At the time of these explorations, additional evidence gathered through *Saskatchewan's Police and Partners Strategy* demonstrated that not only was collaborative risk-intervention both promising and possible in Saskatchewan, but there was a clear path forward—should all the appropriate human service providers make that commitment (SPPS Enterprise Group, 2011). The work through this strategy group also initiated the beginning of long-term interest and support by the Government of Saskatchewan (Ministry of Corrections, Public Safety & Policing, 2011).

By 2011, the human service partners in Prince Albert came together and launched the *Prince Albert Hub*, a multi-disciplinary team that met twice weekly for the identification, rapid development and immediate deployment of real-time interventions (Nilson, 2014a). Early in the process, participants of the Prince Albert Hub saw the benefits of information-sharing, cooperation and collaborative risk-driven intervention. These observations triggered broad support from police and community leaders alike (Taylor, 2010).

In 2012, members of the Prince Albert Hub met with Saskatchewan's *Information Sharing Issues Working Group*. These meetings helped to refine the discussion process during Hub meetings, and ultimately, better protect the privacy of individuals discussed among Hub participants. Eventually, community partners in Prince Albert prepared and submitted a privacy impact assessment to Saskatchewan's Office of the Privacy Commissioner (Nilson, 2014a).

Finally, in 2014, the University of Saskatchewan released its Preliminary Impact Assessment on the Hub model in Prince Albert (Nilson, 2014a). That report helped to better articulate, conceptualize and strengthen understanding and measurement of the Hub model (Russell & Taylor, 2015). It also laid a foundation for how evaluators in other provinces approached and designed their own program theory and evaluation design (Babayan, Landry-Thompson & Stevens, 2015; Brown & Newberry, 2015; Ng & Nerad, 2015).

3.2 Principles of the Hub Model

The Hub model has grown to become a highly-replicable process for detecting risk, sharing limited information and mobilizing a multi-sector intervention around individuals with composite needs. The continuity and strength of the model lies in four key principles that are the cornerstone of every Saskatchewan-style Hub in Canada.

The first key principle of the Hub model is the *protection of privacy*. In their extensive examination of privacy and information-sharing within the context of collaborative risk-driven intervention, Russell and Taylor (2014a) highlight that protecting the privacy of individuals is paramount, even during the Hub discussion process. Although the purpose of a Hub is for agencies to share information about clients, there are very strict and inflexible expectations that participants of the Hub will do their absolute best to protect the privacy of individuals. Where certain criteria are met, human service professionals can rely upon the exceptions to information sharing in their respective privacy regulation frameworks to share information with other human service professionals (Nilson, 2016d).

To guide practitioners of collaborative risk-driven community safety and well-being, Russell and Taylor (2014a:8-13) offer eight framing principles of information-sharing within community safety and well-being. These principles are listed and explained in Table 1.

Table 1. **Eight Framing Principles of Information Sharing within Community Safety and Well-being**

PRINCIPLES	DESCRIPTION
Do no Harm	Try your best to help others without harming them through information sharing.
Duty of Care	Sometimes information sharing is required to protect life, safety, property, etc.
Professional Discipline	Work within the given professional regulations of respective professions.
Consistent Purpose	Information should be shared in ways that is consistent with the role of the information holder.
Expressed Versus Implied Consent	Seek expressed consent where possible. However implied consent is acceptable where there is a deficiency in care or a significant probability of harm that can be remedied through limited information sharing.
Precise Rules are Neither Possible nor Appropriate	It is not possible to design definitive rules on information-sharing. Every situation is different. Therefore, professional judgement and discretion play a significant role.
Due Diligence and Evolving Responsible Practice	Professionals have a responsibility to act, but should also share their decision-making processes to build a stronger and broader base of experience and evidence in information sharing.
Opportunities for Reform do Exist	Most privacy legislation has been crafted over a period of several years. Emerging insights into information sharing may very well shape new practices and policies in the future.

The second principle of the Hub model is *commitment*. Early on, it became clear through the results of evaluation (Nilson, 2014a) and professional reflection (McFee & Taylor, 2014) that a successful Hub requires a full commitment of human service providers and their agencies. At the table, Hub discussants must be committed to one another, to the client, and to the process of intervention. Agencies who send representatives to the table must show commitment by not only allowing their staff to attend Hub meetings, but freely participate in the planning and deployment of interventions that happen outside of regular Hub meetings. Lastly, Hub discussants and their agencies must be committed to innovation, to doing things differently, and to striving to meet their shared client's composite needs.

The third principle of the Hub model is *collaboration*. Belonging to the same Hub and attending the same meetings does not constitute collaboration. As feedback gathered in past evaluations (Nilson, 2014a; Nilson, 2016a) shows, working together across the diverse sectors at the Hub table is absolutely critical. Seeing and understanding the perspectives of others, and being willing to change your own perspective of the world are critical ingredients to collaboration (Kalinowski, 2016). It is this type of collaboration which allows for innovative, rapid supports to be mobilized.

The fourth principle of the Hub model is that it is an *action* table. When determining who should sit at the Hub table, whether it be government or community-based organizations, potential participants must accept that the Hub is an action table that requires their full involvement (Kalinowski, 2015). Human service professionals, as well as the communities they serve, must be willing, ready and able to take action to reduce risk. If care and logic are not enough motivation to take action, then privacy and due diligence should be. Identifying personal information is only allowable where the threat of harm is both real and imminent. Therefore, if information is shared, the responding agencies must take action promptly (Russell & Taylor, 2014c).

3.3 Process of the Hub Model

The Hub was designed to be a venue for risk detection, limited information sharing, and collaborative intervention planning. It is not an entity or an organization, but simply a forum for multi-sector collaboration (Nilson, 2014a). The Hub was not created to coordinate case management nor provide intensive follow-up to families in need. These are the responsibilities of agencies after a Hub discussion (Russell & Taylor, 2014a). Instead, the Hub model brings human service providers together in a very efficient, disciplined discussion process to simply identify client risk factors, determine the best possible supports for the client, and plan an intervention that offers these supports. Once an intervention is deployed, the relevant human service agencies involved in the discussion take over outside of Hub (McFee & Taylor, 2014).

Considering this, one of the most important aspects of the Hub model is process. Within the Hub model, there are two processes: the *discussion* process and *intervention* process.

Discussion Process

One of the key contributors to continuity of the Hub model across Canada has been its very disciplined discussion process. Through participation in evaluation, consultations with privacy and information sharing stakeholders, and simple reflection and debrief, Hub practitioners have arrived at an informed, consistent and disciplined discussion process (Nilson, 2016a).

The general discussion process at a Hub table begins with a brief, de-identified summary of a situation brought by one of the table discussants. If based upon the risk factors presented, the Hub table feels the situation is one of acutely-elevated risk, the name of the individual is shared and the table pauses for recognition. At this time, any other agencies with relevant information on the discussion subject are invited to share. Following this, the Hub chair asks the table which agencies would be most appropriate to form an intervention team. After a team is identified, only those relevant agencies meet after the Hub meeting to plan an intervention. Following their intervention, the team briefly reports back to the rest of the table whether they were able to lower acutely-elevated risk or not. If acutely-elevated risk is lowered, they close the discussion. If it is not lowered, they regroup and identify an alternative strategy for moving forward (Nilson, 2014a).

Within the Hub discussion process, there are two key components that truly demand conformity to the Hub model. The first of these is *The Four Filters*. The Four Filters is a commonly-recognized term for four thresholds of decision-making in the interest of client privacy. These filters largely direct the activity of Hub discussants before and during a Hub discussion. As past observers (Nilson, 2014a; Russell & Taylor, 2014a) note, the Four Filter process is the means by which Hub discussants can share information without violating privacy and information sharing regulations.

According to Nilson (2016a:20),

> *The first filter involves the originating agency exhausting all options currently available within their own agency, to meet the needs of the client. The second filter is the actual consideration of the four factors of acutely-elevated risk* [described below]. *Once acutely-elevated risk is determined, the table moves to filter three. This is where basic identifiable information is shared about the individual or family for the purposes of triggering any additional agency involvement. Finally, the fourth filter is a separate discussion among those agencies suggested by the table to*

participate in the intervention. During this discussion, participants share additional information about the situation and plan their intervention.

As alluded to in the passage above, the second key component of the Hub discussion process is *acutely-elevated risk*. According to Russell and Taylor (2014a), acutely-elevated risk is "deliberately distinct from other operating thresholds that might trigger a much more limited range of unilateral response and enforcement options by one or more of the agencies involved, often characterized by common terms such as crisis, imminent danger, violent threat, or criminal activity in progress"(p.19).

When Prince Albert first implemented the Hub model, discussants around the table relied upon a shared consensus of what acutely-elevated risk would mean. To develop a more global understanding of that concept, Nilson (2014a) worked with some of the model's original architects to arrive at four criteria of acutely-elevated risk. These include:

- Significant interest at stake
- Probability of harm occurring
- Severe intensity of harm
- Multi-disciplinary nature of elevated risk

Where all four of these criteria are present, a situation is said to be one of acutely-elevated risk. Where uncertainty occurs within the Hub table, each of the four criteria is individually discussed and examined further.

Intervention Process

The second process within the Hub model is the intervention process. This is where members of the Hub table plan their offering of services and support to the individual or family in a situation of acutely-elevated risk. According to past evaluators of the Hub model (Brown & Newberry, 2015), the intervention process is a largely non-scripted, custom-made opportunity to offer client supports. In fact, the Hub intervention process offers considerable opportunity for human service providers to work outside of their traditional mandates, in ways that effectively deliver the type of support needed by clients with composite needs.

During the actual intervention (i.e. door knock), members of the Hub approach the client in a non-coercive manner. Typically, the team shares their concerns for this client's risk factors and offers support and service access to reduce those risk factors. Should the client accept services, then those service providers take over from there. If the client refuses services, the team would reassess the level of risk and determine whether they should approach the client a second time (Nilson, 2014a).

With respect to the Hub model, there are almost no studies on the intervention process to date. One early attempt to capture what goes on during a Hub intervention involved interviews and focus groups with Hub discussants throughout Saskatchewan. Results from that preliminary research identified three stages of the intervention process. As Table 2 illustrates, these include *intervention planning*, *intervention execution* and *intervention assessment*.

Table 2. **The Stages and Components of Hub Intervention**

STAGE	COMPONENTS
Intervention Planning	Assemble the Team
	Share Information
	Determine the Approach
	Prepare for Intervention
	Choose Time/Location
Intervention Execution	Collaborate
	Communicate with the Client
	Identify Concerns
	Offer Services and Supports
	Safety Planning & Motivational Interviewing
	End the Intervention
Intervention Assessment	Post-Intervention Consultation
	Verify Connection/Engagement
	Report Back to Hub

(Source: Nilson, 2014b)

In an effort to support Hub practitioners in the intervention process, a recent scan of collaborative intervention methods elsewhere revealed that participants to an intervention should be aware of service options, be flexible in what they expect from the client, and work to the client's needs and at the client's level. Since not all intervention opportunities are alike, participants must take the time to plan strategically and debrief after the intervention (Okanik & Nilson, 2016).

3.4 Replication of the Hub Model

Starting back in 2011, community safety and well-being stakeholders from across the country began asking questions about the Prince Albert Hub, its operations, design, function and purpose. Shortly after its launch, several communities visited the Prince Albert Hub. In fact, a recent analysis of outreach activities at *Community Mobilization Prince Albert* revealed the COR (Centre of Responsibility) team to have hosted 36 communities from across Canada and the United States. In addition to this, the team provided 117 presentations to 128 government officials, 204 agency leaders, 65 community members, 330 potential Hub practitioners, 161 post-secondary students, and 883 frontline workers (Nilson, 2015a).

One of the first replicators of the Prince Albert Hub was an initiative in Toronto known as *FOCUS Rexdale* (Furthering Our Communities, Uniting Our Services). This initiative adapted the Prince Albert model of collaborative risk-driven intervention as a tool in its broader strategy to improve community safety in high risk neighbourhoods of Toronto (Ng & Nerad, 2015).

Another early adapter of the Prince Albert Hub model was Samson Cree Nation in Alberta. This was a significant move because it was the first Hub mobilized on-reserve in Canada. A recent evaluation of the Samson Cree experience with the Hub model indicated that the Hub is an effective and appropriate tool for First Nation human service providers to build better relations with one another and with their clients (Nilson, 2016a).

Within Saskatchewan, replication of the Hub model was supported through the Government of Saskatchewan's *Building Partnerships to Reduce Crime* (BPRC) initiative (BPRC Implementation Team, 2013). Housed within the Ministry of Justice, the BPRC team of consultants helped communities prepare and develop their application of the Hub model through onsite visits, online mentoring and ongoing follow-up. By March of 2016, 13 Hubs are operating in Saskatchewan – including Prince Albert (BPRC, 2016)

Just as the Hub model became heavily replicated in Saskatchewan, the province of Ontario witnessed a dramatic increase in application of the model between 2013 and 2015. Some early replicators of the model in Toronto, Sudbury, Waterloo and Mississauga, inspired development of the *Ontario Working Group on Collaborative Risk-Driven Community Safety*. This working group received funding from the Ontario Ministry of Community Safety and Correctional Services to further advance and support replication of the Hub model throughout Ontario (Russell & Taylor, 2014b). As of February 2015, initiatives have begun or were being planned for Amhertsburg, Bancroft, Barrie, Belleville, Brantford, Chatham, Durham region, Fort Frances, Guelph, Haliburton, Kingston, London, Napanee, Port Hope, Cobourg, Niagara Falls, North Bay, Orillia, Ottawa, and York region (Russell & Taylor, 2015).

Outside of Saskatchewan and Ontario, the Hub model has been replicated in Surrey, British Columbia and Brandon, Manitoba. Additional efforts are underway to replicate the Hub model in Nova Scotia and Prince Edward Island (Norm Taylor – personal communication, 2016).

3.5 Adaptations of the Hub Model

Across Canada, the Hub model, for the most part, has been implemented as very close replication of the original model in Prince Albert. Much of this continuity has to do with training and mentoring provided by some of the original architects of the Prince Albert Hub (Global Network for Community Safety, 2016). Another catalyst for close replication of the Hub model has been a series of guides produced for Hub discussants and chairs. These guides facilitate strong discipline to the model by aligning the Hub discussion process with data entry during Hub discussions (Nilson, Winterberger & Young, 2015a; 2015b).

However, despite this consistency, there have been a few minor adaptations to the Hub model. One example is in Samson Cree Nation, Alberta. Although the discussion process is very similar to the Prince Albert Model, deployment of their interventions are slightly different. While some interventions do involve multiple agencies selected during the discussion process, most start with an Elder approaching the individual or family and asking if they would like a support circle formed around them. Upon acceptance of this offer, the Hub's justice worker organizes a support circle around the individual/family—which may include community members, family, or professionals outside of the Hub table (Nilson, 2016a).

A second adaptation of the Hub model is in Chatham, Ontario. Stakeholders in Chatham believe that an ad hoc approach would better serve the needs of the community. Whereas the traditional Hub model brings discussants together once or twice a week, Chatham's *Fast Intervention Risk-Specific Team* will mobilize only if a situation is referred to the chair person. The Hub meeting itself may occur over the phone or in-person (Family Service Kent, 2015).

Two more adaptations of the traditional Hub model have not necessarily changed the application of the model, but rather, have strategically linked the model to other collaborative initiatives in their community. In Ottawa, the *Multi-Agency Elevated Risk Intervention Team* (MERIT) formed a conceptual

and practical relationship with Ottawa's *Multi-Stakeholder Approach to Problem Addresses* (MSAPA). Fundamentally, where excessive problems linked to a specific address require human service support, the problem address team can refer individuals to MERIT (Hub table) in the hopes of reducing risk. Reversely, when MERIT comes across a problem address that requires ongoing monitoring and support, it can send that situation to the MSAPA team (Nilson & Taylor, 2016).

Finally, Muskoday First Nation in Saskatchewan, developed the concept of the Muskoday Intervention Circle. Members of this circle are human service providers from all of the typical sectors at a Hub table (e.g. police, child and family services, mental health, addictions, education, justice, social welfare). Where there is no consent to share information, the Muskoday Intervention Circle strictly adheres to all principles and practices of the conventional Hub model. However, where the lead agency is able secure client consent to share information, a longer-term multi-sector coordinated support process is put in place. In fact, even during a conventional intervention under the Hub model, if a client were to provide consent, the Hub process would officially end, and Muskoday's multi-sector coordinated support process would take over (Nilson, 2016e).

3.6 Evaluation of the Hub Model

Since 2012, a number of evaluations have been completed on the Hub model. Each evaluation has contributed to a better understanding of the model's application and overall efficiency in mitigating risk. The very first evaluation of the Hub model was Nilson's (2014a) Preliminary Impact Assessment of the Prince Albert Hub. The main findings of that report indicate that the Hub was effective at breaking down long-standing institutional silos and gaining clients quicker access to services.

In 2015, the Ontario Working Group on Collaborative Risk-Driven Community Safety commissioned the development of an evaluation framework to help support future evaluations of collaborative risk-driven community safety and well-being initiatives in Ontario. In the development of that framework, Nilson (2015b) reached out to the broader evaluation community currently engaged in evaluating applications of the Hub model. By March of 2015, evaluations were underway in Brantford, Cambridge, Guelph, Halton Region, Port Hope, North Bay, Sudbury, Toronto, Kitchener, and Sault Ste. Marie. Consultations with these evaluators identified a variety of themes, including service access, collaboration, risk mitigation, process, and satisfaction, to name a few.

As other evaluation findings of the Hub model became available, the literature on collaborative risk-driven intervention became enriched by improved understanding on Hub outputs, outcomes, process, challenges and potential improvements. Table 3 provides some examples of themes covered in past and current evaluations of the Hub model.

Table 3. **Themes of Past and Current Evaluations of the Hub Model**

COMMUNITY	CITE	THEMES
North Bay, ON	North Bay Parry Sound District Health Unit (2014)	risk factors, agency involvement
Brantford, ON	Babayan, Landry-Thompson & Stevens (2015)	risk mitigation, service provisions, collaboration
Barrie, ON	Nilson (2016b)	client satisfaction, stakeholder satisfaction, services mobilized
Toronto, ON	Ng & Nerad (2015)	service connections, reduced harm, removal of communication barriers
Cambridge, ON	Brown & Newberry (2015)	process, benefits to clients, service connections, reduction in police calls
Kitchener, ON		
Samson Cree Nation, AB	Nilson (2016a)	community relationships, client engagement, applicability on-reserve
Guelph, ON	Litchmore (2015)	multi-sector relationships, process, improvements
Chatham-Kent, ON	Nilson (2016c)	stakeholder satisfaction, service mobilization
Prince Albert, SK	Nilson (2014a)	collaboration, service access, process

4.0 ADAPTATIONS OF OTHER HUMAN SERVICE MODELS IN REMOTE COMMUNITIES

When it comes to adapting the Hub model to fit the needs of remote communities in Saskatchewan, there are a couple of lessons we can learn from adaptations of other human service initiatives. Some of the factors to consider in adapting an initiative in a remote community include capacity, resources, language, culture, infrastructure, transport, and technology, to name a few. In some cases, the delivery structure of a program or initiative had to be altered to accommodate adaptation in a remote area. In other cases, local implementers were provided with additional support to achieve their goals and objectives.

The following sub-sections present 5 short case studies on the remote implementation of human service initiatives that were originally designed for more urban environments. Each of these case studies provides a learning opportunity for implementers of the Hub model in remote Saskatchewan communities.

4.1 Mental Health Crisis Intervention

In the United States, Crisis Intervention Teams (CIT) have become an increasingly common tool to address mental health crises in the community. Typically, an CIT will involve police and mental health professionals, who maintain ongoing communication and collaboration before, during and after police calls for service that involve mental health concerns. These teams require specialized training and continuous dialogue between the partners (Watson, et al., 2008). While past research has examined the application of CITs in several urban environments (Canada et al., 2010; Ritter et al., 2010; Teller et al., 2006), very few (Skubby et al., 2013) have examined CIT in rural areas.

In their examination of CIT applications in rural Ohio, Skubby and colleagues (2013) explored process, challenges and success in several communities. Through focus groups and interviews, the research team learned of a number of barriers that implementers encountered in rural communities. One was a lack of funding and resources to specially train and allocate one or two police officers to the CIT. Another was different perceptions of mental health problems between police and mental health workers. A third problem was the accessibility to training for police in rural areas.

Results of the study revealed that these barriers were overcome in a couple different ways. First, despite these barriers, the community felt that CIT was a major need. This served as a driving force for additional barrier reduction—including increased communication on roles and expectations, shared ownership over the initiative, and increased collaboration around trouble-shooting, planning and leadership. Finally, one logistical move to accommodate CIT implementation in rural communities was a change in training targets. In most urban environments, a smaller number of police officers is specially trained and deployed on the CIT. However, in a rural policing environment, where resources are much more limited, many communities provided a more general training to all of their officers, so that the entire police service had the ability to participate in a CIT deployment (Skubby et al.,2013).

4.2 Family Violence Programming

In 2015, the Saskatchewan Ministry of Justice – Victim Services Branch reached out to the Keewatin Yatthé Regional Health Authority (KYRHA) to design and implement programming under the former's Children Exposed to Violence mandate. Typically, when communities receive funds from the Ministry for family violence programming, it is for a single delivery point, to one or two group cohorts a year (Tutty, LeDrew & Abbott, 2008). However, when KYRHA received the funds, they did not feel that a single community application would be fair—for they serve at least four major communities in the North. They also did not receive any more funds to deliver a truly multi-site application of children exposed to violence programming. Determined to provide preventative support to families in different communities throughout the region, KYRHA set out to find a way to make it work (Suadh Abubaker – personal communication, 2015).

Through an extensive community consultation process (Nilson, 2015c), KYRHA learned of the potential assets already existing in the communities of La Loche, Beauval, Buffalo Narrows and Île-á-la-Crosse. During these consultations, human service professionals at the frontline and management level responded favourably to the notion that the families exposed to violence in their communities, were often simultaneously on the caseload of multiple human service providers. Therefore, from the standpoints of both efficiency and continuity of care, it was believed that human service professionals from multiple agencies could participate in the facilitation of an evidence-supported program—as part of their day to day jobs. This would not only help overcome program resource limitations in northern communities, but it would more deeply imbed human service professionals in the development of protective factors against violence—much of which they do within their existing mandates already.

Backed by considerable research on family-centred, cognitive support programming (Nilson & Okanik, 2015), KYRHA developed and trained human service providers in *The Strength of Our Family: A Home-Based, Family-Centred, Multi-Sector Program for Helping Children and Families Exposed to Violence* (KYRHA, 2015). The uniqueness of the training of course, was that rather than train one or two staff members to implement the program centrally, KYRHA trained human service professionals from several different agencies, in four different communities, to deliver the program to families in need. Ultimately,

this strategy helped catapult what was intended to be a single community resource, to four larger communities throughout the Northeast corner of Saskatchewan (KYRHA, 2015)

4.3 Homelessness and Housing

Across Canada, communities are brought together, supported and funded through the *Homelessness Partnering Strategy* (HPS). Administered by Human Resources and Skills Development Canada, HPS funding goes out to communities for the purposes of supporting locally-tailored activities and services under a *Housing First* approach. A Housing First approach generally involves getting people who are homeless a place to live, and then providing the necessary supports to help them stabilize and recover (Economic Action Plan, 2014). Past research (Coleman, 2015; Groton, 2013; Nelson et al., 2015) has shown great success for this model's application in larger urban settings. Less known however, is the extent to which a Housing First approach can be effective in communities where human service providers are either already overworked, stretched across large geographic boundaries, or completely non-existent.

To explore how Housing First has been adapted in rural and remote communities, Waegemakers-Schiff and Turner (2015) conducted case studies of rural housing and homelessness in 22 communities across Canada. A major theme in their work was the feasibility of applying the Housing First model in rural and remote Canada.

Through their research, Waegemakers-Schiff and Turner highlighted a number of challenges with implementing a traditional Housing First approach in rural and remote communities. One challenge is that rural and remote homelessness has several distinct dynamics compared to urban homelessness. Some of these include stigma, lack of privacy, culture, and denial. Another challenge is that the services required to support clients of the Housing First model are often underdeveloped, lack stable funding, and are patchy at best. A fourth problem in rural and remote communities is the lack of sufficient housing stock that is accessible and affordable to vulnerable people. Finally, one of the biggest challenges to implementing a Housing First approach in rural and remote communities is the inability to reach efficiencies of scale due to low client density in a large geographic area. This challenge is complicated by the fact that in Canada, many individuals who are at-risk for homelessness, migrate to larger urban centres where they can more easily access services and supports—not to mention better conceal their current situation (Christensen, 2012).

Through an interview process with key community stakeholders, the research team identified a number of ways that rural and remote communities have been able to adapt a Housing First approach. One way is to leverage what resources communities actually do have to support case management, housing location and rental supports. For example, some communities pooled together resources for a liaison to help the client navigate appropriate services. Other communities trained volunteers to offer a *safe couch* in a separate room within their own home. This reduced the demand for a costly emergency shelter, while giving clients a more humane support network.

Another way is to regionalize implementation of the Housing First approach to expand availability of resources and housing. One community in particular was able to find housing for clients in a separate community down the road. They were able to mobilize volunteer drivers to help clients overcome the transportation barrier to accessing services in their originating community. A different community did not have available housing. Instead of making clients wait for housing to get supports, they put services in place to at least make the clients stable enough to seek support from a friend or family member.

A third way to overcome the challenges associated with resource limitations was communication technology. Based on the Housing First experience in Vermont, USA (Stefancic et al., 2013), Waegemakers-Schiff and Turner recommend that additional services could be mobilized and engaged through the use of web-based videoconferencing, such as *Telehealth*.

4.4 Home Visiting

In 2010, the United States Administration for Children and Families provided funding for federally-recognized Native American tribes to become consistent with the requirements of the *Maternal, Infant, and Early Childhood Home Visitor Program*. The goal of the initiative is to strengthen and improve maternal child health programming, improve service coordination for at-risk communities, and provide comprehensive home visiting services to families who live in at-risk communities.

Del Grosso et al., (2011) completed an assessment of evaluation studies focused on the application of the home visitor program in tribes throughout the United States. A major focus of their systematic review was to identify ways in which the base home visitor model was successfully adapted in rural Native American communities. The research team found that there was a clear continuum of adaptations. On one end of that continuum are adaptations that stick to the basic content of the standard program model, but make minor adjustments to the peripheral components of the program so that it is more appealing to the target population. On the other end of the continuum are adaptations that reject standard models in favor of developing, in conjunction with the target population, services that build upon the cultural traditions and knowledge of the community.

To mitigate some of the challenges associated with implementing the standard home visitor program in their community, several tribes included the involvement of tribal leaders, the use of native personnel, and specific efforts to build upon community tradition and strength. Stemming from this, Del Grosso highlights two key lessons: a) culture counts; and b) there is considerable variation in adaptation results across multiple native communities.

4.5 Healthy Learning

In an effort to improve health and health literacy among British Columbia school children, *Action Schools! BC* promotes a school-based assortment of activities to increase student engagement in physical, nutritional and pro-social activities. The model encourages educators to develop a six-part action plan in the following areas: school environment, scheduled physical education, classroom action, family and community, extracurricular, and school spirit. Teachers receive training, ongoing support, and a variety of learning resources and equipment to facilitate action activities (Healthy Families BC, 2016).

In 2009, researchers (Naylor et al., 2009) from the University of British Columbia wanted to determine if the existing Action Schools! BC model was feasible and appropriate for schools and children in rural and remote Aboriginal communities. Through a multi-site focus group process, Naylor et al., revealed a number of challenges with application of the model in First Nation communities. These challenges included lack of time, staff turnover, demanding reporting instruments, student behavior and low levels of staff knowledge on healthy living practices. Despite these challenges, several communities were able to mitigate negative impact and implement the model effectively.

In reflecting on their implementation of the model in First Nation communities, focus group participants explained that implementation was made easier for three reasons. One, the model was relatively easy to implement. Two, the schools received ongoing support and encouragement from Action Schools! BC staff. Three, cultural adaptations of the model created local ownership, teacher buy-in and student engagement. In closing, the researchers recommended that to improve application of the model in First Nation communities, Action Schools! BC may wish to consider building community partnerships, offering parent education and adapting the model to have a more First Nations focus (Naylor et al., 2009).

4.6 Lessons Learned

These brief case studies provide a number of different lessons to consider in moving forward with adaptation of the Hub model in remote Saskatchewan communities. While some of these lessons may be more applicable to tech-enabled Hubs than others, they all have significant value for the planning process required to implement a Hub. The following lessons were gleaned from the above case studies:

1) Be prepared to adjust expectations and roles.
2) Strive for equal ownership and a shared value of the initiative among community partners.
3) Allow for more time in the preparation stage than in other less remote environments.
4) Be willing to adjust training and logistical needs to meet service provider capacity and need.
5) Look within the community to find and mobilize what resources are available (as opposed to focusing on resources that are not available).
6) Consider a regional perspective for expanding service access and resource availability.
7) Implement video communication technology to overcome limitations in service access or quality.
8) Incorporate culture and tradition into delivery of the model.
9) Be prepared for variation in the adaptation practices across rural and remote communities.
10) Keep the model simple and easy to implement.
11) Make sure ongoing support is accessible and responsive to community needs.
12) Allowing cultural infusion, which will foster community ownership, stakeholder buy-in, and target group engagement.

In preparing to adapt the Hub model to fit the needs and capacities of Saskatchewan's remote communities, the preceding review provides some good guidance on careful adaptation practices. One additional way to mitigate some of the pressure of adaptation is through Information and Communication Technology.

5.0 INFORMATION AND COMMUNICATION TECHNOLOGY

The field of Information and Communication Technology (ICT) is complex and ever-changing (Unhelkar, 2011). Early declarations (Masuda, 1980) that the world was entering an *information age*, likely never predicted the pace and expansion of ICT today. In fact, much of the innovations in service delivery and product development can be attributable to communications and sharing made possible through ICT (Nardelli, 2012). Of course, such rapid-changing innovations can put pressure on business and government leaders to invest in ICT development and continue to train their staff so that the positive outcomes of effective ICT applications are sustained (Rehman & Khilji, 2014).

5.1 Defining ICT

One of the challenges with understanding ICT is that defining the term *Information Communication Technology* becomes tedious in light of the diverse applications of the term within several different contexts and treatments. Some experts (Rouse, 2005) define ICT as an umbrella term that includes any variety of communication devices such as radio, cellular phones, computers and videoconferencing. Others (Christensson, 2010) explain ICT as a term that refers to technologies that provide access to information through telecommunications in real-time, such as instant messaging, voice over Internet, video conferencing or social media.

Several observers see ICT as a useful tool for education (Trucano, 2005), economic growth (Avgerou, 2003) and social development (Kozma, 2005). In fact, some researchers (Caperna, 2010) argue that ICT is not simply a tool, but a crucial aspect of sustainable policy, that is capable of mitigating various community challenges such as literacy, community involvement in planning, geography and service access.

Even when discussing applications of ICT, there are differences between use in the business (Akomea-Bonsu, 2012), tourism (Dimitrios & O'Connor, 2005), education (Pelgrum, 2001), adult learning (Selwin et al., 2006), community planning (Silva, 2010), social (Wang et al., 2007) and even technology (Cohen et al., 2004) sectors. Overall, this variation in context and application makes defining ICT a difficult endeavour.

To ease this burden, Zuppo (2012) presents a framework for hierarchical classifications of ICT definitions and terms. Her purpose was to not only highlight the truly multi-disciplinary nature of ICT, but to streamline global definitions and applications of the term to help foster more precise keyword searches, resulting in more efficient and effective gathering of information relating to ICT. Relevant to the current research, two of Zuppo's lower level classifications illustrate the difference between *ICT infrastructure* and *ICT devices*. Whereas the former refers to connectivity, access and signal availability, the latter refers to whether users of technology possess devices such as phones, computers or tablets.

Considering all of this, for the purposes of this report, ICT refers to a technology with diverse applications, that—via appropriate infrastructure and device(s)—enables real-time communication between two or more recipients through text, voice and/or video signal.

5.2 ICT Formats

Much easier than arriving at a commonly accepted definition of ICT is understanding the different types of ICT. Some of the more general formats of ICT used in the human service sector include video-conferencing (Bee et al., 2008), tele-conferencing (Stead et al., 2013), web-based interaction (Alkhaldi et al., 2016) and remote presence technology (Petelin et al., 2007). Some of these forms of ICT can be utilized through existing telephone networks, others through cellular mobility networks, or both. In fact, starting over a decade ago, many traditional forms of ICT that used hardwire telephone lines had already started moving towards wireless and mobile configurations (Tachakra et al., 2004).

In definition, a *teleconference* is a telephone meeting among two or more participants involving technology more sophisticated than a simple two-way phone connection. It often involves a conferencing service hosting the various participants from different locations and different telephones (Rouse, 2008). Similarly, a *videoconference* involves participants from multiple locations and portals,

being able to see one another and communicate through the use of linked cameras and screens (TechTarget, 2007).

Slightly more complicated than teleconferences or videoconferences are communications using the Internet. Known generically as *web-based interactions*, this form of ICT can range from basic text-based messaging (e.g. Blackberry Messenger, Windows Live) to live video-streaming (e.g. Goto, Skype) (Chen & Macredie, 2010). Many web-based interactions are facilitated through downloadable apps that can help streamline communication (McNickle, 2012) or even provide opportunities for augmentative communication to those who have difficulties communicating in more conventional ways (Schectman, 2011). Overall, the massive expansion of the Internet has perpetuated the use of apps in many different professional contexts (Haselmayr, 2014; Roberts, 2013; Smallman, 2012).

One of the latest and more advanced ICT formats being implemented in the human service sector is *remote presence technology* (RPT). The concept behind RPT is very similar to videoconferencing. The difference is that the device on the recipient side of the communication is interactive and controllable by the sender. As Reynolds and colleagues explain (2012:507), "the technology used is a semi-autonomous, Internet-enabled, real-time, two-way audiovisual telecommunications platform that moves about in a wireless environment...The devices are casually referred to as robots providing a remote presence". Robotic remote presence applications are now being used across the world to assist business travellers stay connected, help executives monitor remote employees, engage geographically-distributed teams, and allow healthcare professionals to provide care and treatment from different locations (Double Robotics, 2016; InTouch Health, 2016; Suitabletech, 2016).

5.3 Capacity

Two of the most important aspects to consider in applying ICT solutions within a community project are capacity and leadership (Mwawasi, 2014). While markets tend to drive technology, the application of those technologies is dependent upon community leaders to drive change, and ultimately, secure the capacity required for implementing new technologies (Brannigan, 2010).

In their work on ICT strategies in developing nations, Angeleski et al., (2009:266) define the concept of *e-readiness* as "the capacity of a nation to participate in the digital economy or ability of a nation to make connection with the rest of the world". Being e-ready, in this sense, has a significant impact on a nation's ability to benefit from various applications of ICT.

In an effort to measure, monitor and compare developments in information and communication technology, the International Telecommunication Union developed the *ICT Development Index*. This index assesses ICT development through a three-stage model: *readiness*, *intensity*, and *impact*. Out of 152 countries in the index, Canada ranked 26th in 2008 and 2010 (International Telecommunication Union, 2011). By 2015, Canada improved its ranking to 23 (International Telecommunication Union, 2015).

The relevance of the ICT Development Index to the current study is that it encourages us to examine ICT accessibility, development and use from multiple perspectives. Within the index are measurements of several different per capita indicators, including fixed telephone lines, mobile-cellular subscriptions, bandwith, households with computers, households with Internet access, Internet use, wired broadband subscriptions, and mobile broadband prescriptions, to name a few (International Telecommunication

Union, 2015). All of these factors will become important to consider in the pilot project that this literature review supports.

5.4 Application

The broad application of ICT solutions in the human service field is indicative of utility, benefit and reach of ICT. The purpose of using ICT within the human service field differs per agency and sector. For example, the World Health Organization utilizes ICT for public health surveillance (WHO, 2016); the United States Federal Bureau of Investigation uses ICT as a tool in collecting, storing, analysing and disseminating information in support of its various lines of business (FBI, 2015); and the United Nations Educational, Scientific and Cultural Organization considers ICT a major tool for universal access to education, equity in education and the delivery of quality learning (UNESCO, 2016).

Within this literature review, four main formats of ICT have been discussed: teleconferencing, videoconferencing, web-based interactions, and remote presence technology. Table 4 provides examples of ways in which ICT applications may be used to support the delivery of human services.

Table 4. **Examples of ICT Applications by Format**

FORMAT	DESCRIPTION	SOURCE
Teleconference	Telephone counselling—in particular—telepsychotherapy, has become a widely used practice around the world. Telephone communications provide a sense of client security, reduce anxiety, increase anonymity and avert stigma.	Barnett & Scheetz (2003)
	Crisis hotlines are a phone number that people can reach for emergency telephone counselling and/or intervention. Crisis lines exist for victims of sexual assault, those contemplating suicide, children in trouble, bully victims, and vulnerable adults—to name a few.	Seeley (1996)
Videoconference	In several Canadian provinces, home telehealth provides patients experiening travel barriers, the opportunity to interact with health care providers from their own home; and allow the latter to monitor vital signs such as pulse, blood pressure, blood sugar and weight.	COACH (2013)
	First Nation communities in Canada are using videoconferencing for more than just healthcare. Applications for civic engagement, education, training, community development and governance are having positive results.	O'Donnell et al. (2013)
Web-Based Interaction	Voice recognition software used by the Florida Department of Children and Families automatically transcribes case interviews conducted with clients; saving time, cost and putting more attention on the client as opposed to the notebook.	Gill et al. (2014)

	Several U.S. States have a Network Emergency Response Vehicle (NERV) that is a rapidly-deployable mobile command and communications resource that establishes interoperable communications for public safety personnel in mass-emergency situations. It can convert different radio frequencies, facilitate live video conferencing and offer wide-reaching Wi-Fi so that all responders stay connected.	Wyllie (2011)
	Scan of mobile apps in healthcare revealed five uses for apps: secure messaging between patient and doctor; request appointments; share lab results; document personal health information; provide voice communication.	McNickle (2012)
	Several pilot projects in the USA suggest that web-based technologies allow mobile smart-devices to be a more accessible, more affordable, and lower-threshold opportunity for live video interactions between clients and care providers.	Chan et al. (2014)
Remote Presence Technology	Robotic (clinic) and mobile (field) devices are located in several of Saskatchewan's northern communities to facilitate speciality care, emergency consultation and diagnostic testing. Northern care providers can take mobile devices to patient homes for increased access to medical professionals.	Primary Health Care (2014)
	In New Delhi neighbourhoods, where it is difficult to attract quality teachers, RPT has been used to offer quality learning opportunities for students in the classroom.	Mitra (2009)
	To offer nursing education based in northern communities, the University of Saskatchewan provides instruction and mentoring through robotic remote presence platforms. Students in isolated communities are able to receive clinical supervision and support from instructors in Saskatoon.	College of Nursing (2015)
	Florida police are piloting surveillance robots that have facial recognition, can scan 1,500 licence plates per minute, capture audio, tests the air for chemicals and can distinguish suspicious activities from normal activities based on internal data processing.	Gardner (2015)

5.5 Evaluating ICT Applications

One of the most objective ways to view ICT applications in the human services is through an evaluative lens. Much of the research on ICT applications to date have been evaluation-focused. The most recurrent themes in these evaluations are that ICT applications in the human services increase client access to service, reduce service provider workload, and bridge geographic distances. Through interviews with over 100 experts involved in human service and technology, researchers (Gill et al., 2014) from Harvard University identified five specific kinds of benefits to ICT applications in the human services. These include automation, integration, empowerment, analysis and accountability. Table 5 summarizes their findings.

Table 5. **Five Benefits of ICT Applications in Human Service Delivery**

BENEFIT	DESCRIPTION OF ICT BENEFIT
Automation	Allows agencies to remove inefficiencies in workflow, focus on the provision of services and concentrate on core programmatic functions.
Integration	Increased flow of information provides workers with a more complete picture of a situation, and more in-depth understanding of client needs and opportunities to improve supports.
Empowerment	Gives clients greater control of managing their own services and benefits, while also providing increased privacy, comfort and ownership over their care.
Analysis	Provides administrators and frontline staff access to data they can use to monitor and evaluate service delivery, while also gaining a more accurate understanding of client needs and progress.
Accountability	Increases transparency around program performance and enhances the scrutiny of decision-makers concerning human service delivery and priority outcomes.

(Source: Gill et al., 2014)

Much of what Gill et al., identify as major benefits to ICT applications in the human services is supported in evaluation of actual applications. Table 6 below summarizes the results of 11 different evaluations of ICT applications. It demonstrates that applications in the four main ICT formats have both merits and challenges for the human service sector. Generally, these findings reveal that access, comfort, control, and efficiency are the major benefits of ICT applications in the human services.

Table 6. **Evaluation Findings of ICT Applications in the Human Services**

FORMAT	EVALUATION FINDING	SOURCE
Teleconference	Randomized control trials on youth in Utah's juvenile justice system showed that youth with ongoing telecommunication with their workers were slightly less likely to commit felonies compared to the control group. Telecommunications provided more frequent and accessible communication between the offender and justice worker.	Fowles (2009)
	Interviews with 186 counselling clients in Texas reported that convenience, accessibility, control, and inhibition were the most attractive attributes of receiving counselling via telephone. Over 95% would seek telephone counselling again while 58% prefer telephone counselling over face-to-face.	Reese et al. (2006)
Videoconference	Examination of public opinion in Montana revealed that although most patients are amenable to applications of telemedicine, they prefer face-to-face care from a physician. Public awareness on the adoption process was identified as a potential opportunity to increase patient buy-in.	Call et al. (2015)
	Systematic review of 29 evaluations on applications of home-based telehealth showed positive outcomes in patient access to care, lower hospital visits, and reduced travel costs.	DelliFraine & Dansky (2007)
	National review of telemental health services in Canada demonstrates broad application of videoconferencing for clinical and education purposes. However a lack of local community capacity to operate equipment and sufficient bandwidth have impacted successful implementation.	Health Canada (2004)
Web-Based Interaction	Random control trials on smoking cessation interventions revealed increased success where lung health professionals could facilitate ongoing monitoring and motivational support through client data updates and instant messaging.	Ehrenreich et al. (2011)
	Meta-analysis of past studies on mobile mental health apps showed that web-based interaction can help care providers track client behavior, treatment compliance and their general emotional experience during the therapeutic period. The strength in this approach stems from client comfort and consistency with cell phone use.	Gaggiolo & Riva (2013)
	Studies on the use of mobile phones in mental health therapy show increased engagement of hard-to-reach clients, particularly youth and adults facing anxiety, transportation and economic barriers.	Jones et al. (2014)
Remote Presence Technology	Pilot study involving remote presence robot at an Inuit community in Newfoundland found considerable patient, nurse and physician satisfaction with the application. RPT helped improve patient care, ease workloads and increase job satisfaction.	Mendez et al. (2013)

	Study of paramedics with no experience in performing ultrasounds found that paramedics were able to successfully perform ultrasounds in the field while receiving live instructions from emergency physicians who were monitoring the images remotely.	Boniface et al. (2009)
	Nurse feedback during an experiment of RPT used in after-hour intensive care unit rounds, revealed increased physician availability, reduced delay in physician presence during acute emergencies, and sufficient time to have questions answered by specialists.	Rincon et al. (2012)

Overall, a diverse array of ICT applications have been shown to increase client access to services and supports (Mendez et al., 2012). They've also been shown to provide care providers with better information to help their clients (Gaggiolo & Riva, 2013). However, their effectiveness is limited by a community's capacity to provide and manage these technologies (Brannigan, 2010). Furthermore, ICT can also have an effect on the client-caregiver relationship. Where a care provider may be comfortable with ICT, clients may either not be comfortable with ICT applications, see the value in ICT applications or simply not have the capacity to properly make use of ICT applications. This in turn, can negatively impact the client-caregiver relationship (Wald et al., 2007). Considering this, it is important for planners and decision-makers to fully assess community interest, capacity, leadership and will before applying information and communication technology in the human services.

6.0 CONCLUSION AND RECOMMENDATIONS

The research and practice reviewed herein will help to prepare for the development of a pilot for tech-enabled Hubs in a number of ways. First, we now have a clearer understanding of what the Hub model is, and what its core components are. Even in existing adaptations of the Hub model, we can see that the true discipline around information sharing and intervention planning is intact. Second, we've learned from other human service models, the challenges and opportunities that await us in adapting the Hub model for northern and remote communities in Saskatchewan. Flexibility, patience and understanding community interest and need during adaptation planning will certainly help in the process. Finally, we have learned about a number of ways that information and communication technology can increase service access, reduce demands on human service professionals, improve client engagement, maximize efficiencies in service delivery and reduce geographic barriers. Moving forward with an adaptation of the Hub model in northern Saskatchewan, may certainly be made easier with certain advancements in information and communication technology. A thorough consultation process with field experts and community stakeholders will help us begin that journey.

To help guide that journey, a number of recommendations are provided to help develop the larger project that this review supports:

1) Be aware of the fact that printed press is usually quite far behind technological innovation. Therefore, while reviews of peer-reviewed and trade publications are still of value, a thorough project would be remiss without consulting some of the leading experts in ICT innovation.

2) While the Hub model itself may require slight adaptations to fit the context and capacity of remote communities in Saskatchewan, the purpose of this project is to see how technology can

enable application of the Hub model. Therefore, to the extent that resources and infrastructure allow, the focus should be on pushing technology, while preserving the Hub model. This again, speaks to the importance of consulting with cutting edge practitioners in ICT infrastructure and devices.

3) The Hub model is a venue for risk detection, information sharing and intervention planning. Undoubtedly, communication is a critical component of the Hub's operation. Unfortunately, other factors outside of Hub discipline and technological capacity (e.g. human resources, budget, leadership) will impact the viability of a pilot project. Therefore, careful measures should be taken to account for these external influences, and if not mitigate their impact, then at least acknowledge them in evaluation of that pilot project.

4) As this review as shown, the Hub model is a new way of doing business for human service providers. Similarly, each month in the field of ICT is checkered with new innovations and ongoing advancements. Considering the dynamics of these two project components, it will be critical in preparation for the pilot project, that proper training in the Hub process and ICT application is provided. The development of this project over the coming months should try to capture the most effective strategies for Hub/ICT training.

REFERENCES

Akomea-Bonsu, C. (2012). The Impact of Information and Communication Technologies on Small and Medium Scale Interprises (SMEs) in the Kumasi Metropolis, Ghana, West Africa. In *European Journal of Business Management*, v.4, n.20:152-158.

Alkhaldi, G., Hamilton, F., Lau, R., and Murray, E. (2016). The Effectiveness of Prompts to Promote Engagement with Digital Interventions: A Systematic Review. In *Journal of Medical Internet Research*, v.18, n.1:e6.

Angeleski, M.,, Mitrevski, P., and Janeska, M. (2009). Composite Index of e-Business Strategy Readiness of the Enterprises in the Republic of Macedonia. In Davcev, D., and Gomex, M. (eds). *ICT Innovations 2009*, pp:265-275. Berlin, Germany: Scientific Publishing Services.

Avgerou, C. (2003). The Link Between ICT and Economic Growth in the Discourse of Development. In *Proceedings of the International Federation of Information Processing.*, v.9: 373-386.

Babayan, A., Landry-Thompson, T., and Stevens, A. (2015). *Evaluation of the Brant Community Response Team Initiative: Six-month Report*. Brantford, ON: Brant County Health Unit.

Barnett, J., and Scheetz, K. (2003). Technological Advanced and Telehealth: Ethics, Law and the Practice of Psychotherapy. In *Psychotherapy: Theory, Research, Practice, Training.* V.40,n.1-2:86-93.

Bee, P., Bower, P., Lovell, K,m Gilbody, S., Richards, D., Gask, L., and Roach, P. (2008). Psychotherapy Mediated by Remote Communication Technologies: A Meta-Analytic Review. In *BMC Psychiatry*, v.8, n.60.

Boniface, K., Shokoohi, H., Smith, R., and Scantlebury, K. (2009). Tele-Ultrasound and Paramedics: Real-time Remote Physician Guidance of the Focused Assessment with Sonography for Trauma Examination. In *American Journal of Emergency Medicine*, v.29: 477-481.

BPRC Implementation Team. (2013). *Building Partnerships 2013: A Forward Looking Strategy for Continued Success and Broader Outcomes Arising From the 2011 Building Partnerships to Reduce Crime Commitment*. Regina, SK: Saskatchewan Ministry of Justice.

BPRC. (2016). Building Partnerships to Reduce Crime Website. Retrieved from www.saskbprc.com.

Braga, A., and Weisburd, D. (2012). *The Effects of "Pulling Levers" Focused on Deterrence Strategies on Crime*. Cambridge, MA: Campbell Systematic Reviews.

Brannigan, N. (2010). Enhancing Leadership Capacity in ICTs in Education through Technology Enabled Collaboration. Retrieved from www.gesci.org.

Broad, G., and Doxtater, L. (2015). *Neighbourhood Resource Centre: Preliminary Report*. Sault Ste. Marie, ON: NORDIK Institute.

Brown, J., and Newberry, J. (2015). *An Evaluation of the Connectivity Situation Tables in Waterloo Region.* Evaluation report submitted to Waterloo Region Connectivity Partnership. Guelph, ON: Taylor Newberry Consulting.

Call, V., Erickson, L., Dailey, N., Hicken, B., Rupper, R., Yorgason, J., Bair, B. (2015). Attitudes Toward Telemedicine in Urban, Rural, and Highly Rural Communities. In *Telemedicine and eHealth*, v.21, n.8:644-652.

Canada, K., Angell, B., and Watson, A. (2010). Crisis Intervention Teams in Chicago: Successes on the Ground. In *Journal of Police Crisis Negotiations,* v.10, n1-2:86-100.

Caperna, A. (2010). Integrating ICT Into Sustainable Local Policies. In Silva, C. (ed.), *Handbook of Research on E-Planning: ICTs for Urban Development and Monitoring*, pp.340-364. Hershey, PA: Information Science Reference.

Chan, S., Torous, J., Hinton, L., and Yellowlees, P. (2014). Mobile Tele-Health: Increasing Applications and a Move to Hybrid Models of Care. In *Healthcare*, v.2:220-233.

Chen, S., and Macredie, R., (2010). Web-based Interaction: A Review of Three Important Factors. In *International Journal of Information Management*, v.966: 1-9.

Christensen, J. (2012). They Want a Different Life: Rural Northern Settlement Dynamics and Pathways to Homelessness in Yellowknife and Inuvik, Northwest Territories. In *The Canadian Geographer*, v.56, n.4:419-438.

Christensson, P. (2010). *ICT Definition*. Retrieved from www.techterms.com.

COACH. (2013). *2013 Canadian Telehealth Report: Based on the 2012 Telehealth Survey.* Toronto, ON: Canada's Health Informatics Association.

Cohen, D., Garibaldi, P., and Scarpetta, S. (eds.) (2004). *The ICT Revolution: Productivity, Differences and the Digital Divide*. Oxford, UK: University of Oxford Press.

Coleman, A. (2015). *Housing First Pilot Programme Evaluation*. Wellington, ON: County of Wellington Social Services.

College of Nursing. (2015). *Innovation: Remote Presence*. Retrieved from www.usask.ca/nursing/remote.

Del Grosso, P., Kleinman, R., Mraz Esposito, A., Sama Martin, E., & Paulsell, D. (2011). *Assessing the Evidence of Effectiveness of Home Visiting Program Models Implemented in Tribal Communities*. Washington, DC: U.S. Department of Health and Human Services.

DelliFraine, J., and Dansky, K. (2008). Home-based telehealth: A Review and Meta-analysis. In *Journal of Telemedicine and Telecare*, v.14:62-66.

Dimitrios, B., and O'Connor, P. (2005). Information Communication Technology: Revolutionizing Tourism. In *Tourism Recreation Research*, v.30, i.5: 7-16.

Double Robotics. (2016). *Double 2*. Retrieved from www.doublerobotics.com.

Economic Action Plan. (2014). *Homelessness Partnering Strategy*. Retrieved from www.actionplan.gc.ca.

Ehrenreich, B., Righter, B., Rocke, S., Dixon, L., and Himelhoch, S. (2011). Are Mobile Phones and Handheld Computers Being Used to Enhance Delivery of Psychiatric Treatment. In *Journal of Nervous and Mental Disease*, v.199, n.11:886-891.

Engel, R. (2013). *Establishing Partnerships to Reduce Violence: The Cincinnati Experience*. CEBCP-SIRP Joint Symposium held at George Mason University Arlington Campus. Retrieved from http://cebcp.org/wp-content/Symposium2013/Engel.

Family Service Kent. (2015). *F.I.R.S.T Terms of Reference*. Chatham-Kent, ON: Family Service Kent.

FBI. (2015). *Information Technology Strategic Plan: FY 2010 - 2015*. Washington, DC: United States Department of Justice.

Fowles, T. (2009). *Preventing Recidivism with Cell Phones: Telehealth Aftercare for Juvenile Offenders.* Dissertation submitted to University of Utah.

Gaggioli, A., and Riva, G. (2013). From Mobile Mental Health to Mobile Wellbeing: Opportunities and Challenges. In *Studies in Health Technology Information*, v.184:141-147.

Gardner, J. (2015). As Early as 2016, Robot Cops Will be Patrolling Your Streets...No, Seriously. In *The Free Thought Project*. Retrieved from www.thefreethoughtproject.com.

Gill, S., Dutta-Gupta, I., Roach, B. (2014). *The Technology Opportunity for Human Services*. Cambridge, MA: ASH Centre – Harvard Kennedy School.

Global Network for Community Safety. (2016). Global Network for Community Safety website. Retrieved from www.globalcommunitysafety.com.

Greene, K. (2016). *50 Apps for Teachers: Must-have Apps for Your Smartphones and Tablets.* Retrieved from www.scholastic.com/teachers.

Groton, D. (2013). Are Housing First Programs Effective? In *Journal of Sociology & Social Welfare*, v.XL, n.1:51-63.

Haselmayr, M. (2014). Here's Why Your Business Needs Its Own Mobile App. In *Forbes*, November 17. Retrieved from www.forbes.com.

Health Canada. (2004). *Telemental Health in Canada: A Status Report*. Ottawa, ON: Health and Information Highway Division - Health Canada.

Healthy Families BC. (2016). Action Schools! BC. Retrieved from www.actionschoolsbc.ca.

International Telecommunication Union. (2011). *Measuring the Information Society*. Geneva, Switzerland: International Telecommunication Union.

International Telecommunication Union. (2015). *Measuring the Information Society*. Geneva, Switzerland: International Telecommunication Union.

InTouch Health. (2016). *Why InTouch Health?* Retrieved from www.intouchhealth.com.

Jones, D., Anton, M., and Gonzalez, M. (2013). Incorporating Mobile Phone Technologies to Expand Evidence-Based Care. In *Cognitive and Behavioural Practice, v.22:281-290.*

Kalinowski, B. (2015). *CBO Engagement in Models of Collaborative Risk-Driven Community Safety.* A Report Prepared for the Ontario Working Group for Community Safety and Well-being. North Bay, ON: SUM-C Consulting.

Kalinowski, B. (2016). Getting the Right Care, At the Right Time: If we want to Change the Outcomes, we may have to Change Ourselves. In *Canadian Police Chief Magazine*, Winter 2016: 25-26.

Kozma, R. (2005). National Policies that Connect ICT-Based Education Reform to Economic and Social Development. In *Human Technology*, v.1, n.2:117-156.

KYRHA. (2015). *The Strength of Our Family: A Home-Based, Family-Centred, Multi-Sector Program for Helping Children and Families Exposed to Violence – Facilitation Manual*. Buffalo Narrows, SK: Keewatin Yatthé Regional Health Authority.

Masuda, Y. (1980). Computopia: Rebirth of Theological Synergism. In Masuda, Y. (ed.). *The Information Society as Post-Industrial Society*, pp.146-154. Tokyo, Japan: Institute for the Information Society.

McFee, D., and Taylor, N. (2014). The Prince Albert Hub and the Emergence of Collaborative Risk-Driven Community Safety. In *Change and Innovation in Canadian Policing - Canadian Police College Discussion Paper Series.* Ottawa, ON: Canadian Police College.

McGarrell, E., and Chermak, S. (2003). Problem Solving to Reduce Gang and Drug-Related Violence in Indianapolis. In Decker, S. (ed.). *Police Gangs and Youth Violence*, p.77-101. Belmont, CA: Wadsworth Publishing Company.

McNickle, M. (2012). 5 Ways Mobile Apps Streamline Patient-Doctor Communication. In *Healthcare IT News*, August 6. Retrieved from www.healthcareitnews.com.

Mendez, I., Jong, M., Keays-White, D., and Turner, G. (2013). The Use of Remote Presence for Health Care Delivery in a Northern Inuit Community: A Feasibility Study. In *International Journal of Circumpolar Health*, v.72:1-8.

Mendez, I., Song, M., Chiasson, P., and Bustamante, L. (2012). Point-of-Care Programming for Neuromodulation: A Feasibility Study Using Remote Presence. In *Neurosurgery*, v.72, n.1: 99-108.

Ministry of Corrections, Public Safety and Policing. (2011). *Building Partnerships to Reduce Crime*. Regina, SK: Government of Saskatchewan.

Mitra, S. (2009). Remote Presence: Technologies for 'Beaming' Teachers Where They Cannot Go. In *Journal of Emerging Technologies in Web Inteligence*, v.1, n.1:55-59.

Mwawasi, F., (2014). Technology Leadership and ICT Use: Strategies for Capacity Building for ICT Integration. In *Journal of Learning for Development*, v.1, n.2.

Nardelli, G. (2012). The Complex Relationship between ICT and Innovation in Services: A Literature Review. In Keller, C., Wiberg, M., Agerfalk, P., Jenny, S., and Lundstrom, E. (eds.)*, Nordic Contributions in IS Research*, pp.1-24. Berlin, Germany: Springer.

Naylor, P., McKay, H., Scott, J., Bridgewater, L., Drummond, J., and Panagiotopoulos, C. (2009). *Exploring the Implementation and Potential Adaptation of Action Schools! BC for Rural and Remote First Nations Communities.* Vancouver, BC: Canadian Council on Learning.

Nelson, G., Stefancic, A., Rae, J., Townley, G., Tsemberis, S., Macnaughton, E., Aubry. T., Distasio, J., Hurtubise, R., Patterson, M., Stergiopoulos, V., Piat, M., and Goering, P. (2014). Early Implementation Evaluation of Multi-site Housing First Intervention for Homeless People with Mental Illness: A Mixed Methods Approach. In *Evaluation and Program Planning*, v.43: 16-26.

Ng, S., and Nerad, S. (2015). *Evaluation of the FOCUS Rexdale Pilot Project*. Delivered to the City of Toronto and Toronto Police Service. Toronto, ON: Vision and Results Inc. and SN Management.

Nilson, C. (2014a). *Risk-Driven Collaborative Intervention: A Preliminary Impact Assessment of Community Mobilization Prince Albert's Hub Model.* Saskatoon, SK: Centre for Forensic Behavioural Science and Justice Studies – University of Saskatchewan.

Nilson, C. (2014b). *Common Practices in Collaborative Risk-Driven Intervention: Preliminary Findings from a Forthcoming Report on Filter Four Activities of the Hub Model*. Saskatoon, SK: Centre for Forensic Behavioural Science and Justice Studies – University of Saskatchewan.

Nilson, C. (2015). Developing a Regional Initiative to Support Children and Families Exposed to Violence: Community Consultation Findings. Prince Albert, SK: Living Skies Centre for Social Inquiry.

Nilson, C. (2015a). *The Original Game Changers: An Evaluative Report on Prince Albert's Centre of Responsibility and its Role in the Advancement of Community Mobilization Efforts to Improve Community Safety and Wellness*. Saskatoon, SK: Centre for Forensic Behavioural Science and Justice Studies – University of Saskatchewan.

Nilson, C. (2015b). *Measuring Change: A Framework to Support Evaluation of Collaborative Risk-Driven Community Safety and Well-Being in Ontario*. Delivered to the Ontario Working Group on Collaborative Risk-Driven Community Safety. Prince Albert, SK: Living Skies Centre for Social Inquiry.

Nilson, C. (2016a). *Collaborative Risk-Driven Intervention: A Study of Samson Cree Nation's Application of the Hub Model*. Ottawa, ON: Public Safety Canada.

Nilson, C. (2016b). *Evaluation Framework: Creating a Pathway for Performance Monitoring and Outcome Measurements of Collaborate Barrie*. Toronto, ON: Global Network for Community Safety.

Nilson, C. (2016c). *Chatham-Kent's Fast Intervention Risk Specific Team: An Evaluation Plan*. Toronto, ON: Global Network for Community Safety.

Nilson, C. (2016d). *Privacy and Information Sharing in Muskoday Intervention Circle*. Prince Albert, SK: Living Skies Centre for Social Inquiry.

Nilson, C. (2016e). *Muskoday Intervention Circle: Summary*. Prince Albert, SK: Living Skies Centre for Social Inquiry.

Nilson, C. and Taylor, N. (2016). *Moving Forward Collaboratively: A Strategic Overview of Opportunities to Maximize the Combined Leverage of Ottawa's Community Safety and Well-Being Initiatives.* Toronto, ON: Global Network for Community Safety.

Nilson, C., and Okanik, K. (2015). *Home-Based Family Programming in Northern and Aboriginal Communities: A Literature Review in Support of Programming Development for Families Exposed to Violence*. Prince Albert, SK: Living Skies Centre for Social Inquiry.

Nilson, C., Winterberger, M., and Young, T. (2015a). *Hub Chair Discussion Guide: A Tool Designed to Help Hub Chairs Run Data-Friendly Hub Discussions.* Prince Albert, SK: Community Mobilization Prince Albert/ Centre for Forensic Behavioural Science and Justice Studies – University of Saskatchewan.

Nilson, C., Winterberger, M., and Young, T. (2015b). *Hub Discussant Guide: A Tool Designed to Help Hub Discussants Run Data-Friendly Hub Discussions.* Prince Albert, SK: Community Mobilization Prince Albert/ Centre for Forensic Behavioural Science and Justice Studies – University of Saskatchewan.

North Bay Parry Sound District Health Unit. (2014). *North Bay Gateway Hub: Evaluation Matrix.* North Bay, ON: North Bay Parry Sound District Health Unit.

O'Donnell, S., Johnson,L., Kakepetum-Schultz, T., Burton, K., Whiteduck, T., Mason, R., Beaton, B., McMahon, R., and Gibson, K. (2013). Videoconferencing for First Nations Community-Controlled Education, Health and Development. In *The Electronic Journal of Communication*, v.23, n.1.

Okanik, K., and Nilson, C. (2016). *Collaborative Risk-Driven Intervention and Multi-Agency Coordinated Support: Literature, Theory and Practice.* Prince Albert, SK: Living Skies Centre for Social Inquiry.

Papachristos, A., Meares, T., and Fagan, J. (2007). Attention Felons: Evaluating Project Safe Neighbourhoods in Chicago. In *Journal of Empirical Legal Studies*, v. 4:223-272.

Pelgrum, W. (2001). Obstacles to the Integration of ICT in Education: Results from a Worldwide Educational Assessment. In *Computers & Education*, v.37, i.2:163-178.

Petelen, J., Nelson, M., and Goodman, J. (2007). *Deployment and Early Experience with Remote-Presence Patient Care in a Community Hospital.* In Surgical Endoscopy, v.21:53-56.

Primary Health Care. (2014). Robotics Technology Increases Access for Patients in Northern Saskatchewan. In *Success Stories from Saskatchewan's New Framework for Primary Healthcare*. Regina, SK: Saskatchewan Ministry of Health.

Reese, R., Conoley, C., and Brossart, D. (2006). The Attractiveness of Telephone Counselling: An Empirical Investigation of Client Perceptions. In *Journal of Counselling & Development*, v.84:54-60.

Rehman, S. and Khilji, N. (2014). Fast Pace of Change in ICTs (Information & Communication Technologies) and Knowledge Workers' Training Issues. In *Asian Journal of Business and Management*, v.2, n.5:454-460.

Reynolds, E., Grujovski, A., Wright, T., Foster, M., and Reynolds, N. (2012). Utilization of Robotic "Remote Presence" Technology Within North American Intensive Care Units. In *Telemedicine and e-Health, v.18, n.7: 507-515.*

Rincon, F., Vibbert, M., Childs, V., Fry, R., Caliguri, D., Urtecho, J., Rosenwasser, R., and Jallo, J. (2012). Implementation of a Model of Robotic Tele-Presence (RTP) in the Neuro-ICU: Effect on Critical Care Nursing Team Satisfaction. In *Neurocrit Care*, v.17:97-101.

Ritter, C., Teller, J., Munetz, M., and Bonfine, N. (2010). Crisis Intervention Team (CIT) Training: Selection effects and lon-term changes in perceptions of mental illness and community preparedness. In *Journal of Police Crisis Negotiations*, v.10: 133-152.

Roberts, J. (2013). *Police Apps for Law Enforcement Officers & Future Crime Fighters*. Retrieved from www.rasmussen.edu.

Rouse, M. (2005). *ICT (Information Communications Technology)*. Retrieved from www.techtarget.com.

Rouse, M. (2008). *Teleconference*. Retrieved from www.techtarget.com.

Russell, H., and Taylor, N. (2014a). *New Directions in Community Safety-Consolidating Lessons Learned about Risk and Collaboration: An Interpretive Guide to Information Sharing Practices in Ontario…Within the Context of Collaborative, Risk-driven Community Safety and Well-being*. Ontario Working Group on Collaborative Risk-Driven Community Safety.

Russell, H., and Taylor, N. (2014b). *New Directions in Community Safety-Consolidating Lessons Learned about Risk and Collaboration*. Ontario Working Group on Collaborative Risk-Driven Community Safety.

Russell, H., and Taylor, N. (2014c). *New Directions in Community Safety-Consolidating Lessons Learned about Risk and Collaboration: Mitigating Acutely-Elevated Risk of Harm Considerations in Adopting "The Situation Table".* Ontario Working Group on Collaborative Risk-Driven Community Safety.

Russell, H., and Taylor, N. (2015). Gaining Momentum: Multi-Sector Community Safety and Well-Being in Ontario. Report Prepared for the Ontario Working Group on Collaborative Risk-Driven Community Safety and Well-being. Ottawa, ON: Ontario Association of Chiefs of Police.

Schectman, T. (2011). *Augmentative and Alternative Communication*. Retrieved from www.friendshipcircle.org.

Seeley, M. (1996). Hotlines as Discrete Services in Mental Health and Human Service Organizations. In *Crisis*, v.17:100-101&104.

Selwin, N., Gorad, S., and Furlong, J. (2006). *Adult Learning in the Digital Age: Information Technology and the Learning Society.* Abingdon, UK: Routledge, Taylor and Francis Group.

Silva, C. (ed.), (2010). Introduction. In Silva, C. (ed.)., *Handbook of Research on E-Planning: ICTs for Urban Development and Monitoring*, pp.xx-xxiv. Hershey, PA: Information Science Reference.

Skubby, D., Bonfine, N., Novisky, M., Munetz, M. R., & Ritter, C. (2013). Crisis Intervention Team (CIT) Programs in Rural Communities: A Focus Group Study. *Community Mental Health Journal*, Vol, 49: 756–764.

Smallman, G. (2012). *The Benefit of Apps in Healthcare: Mobile and Tablet Apps Have Enormous Potential for Training and Professional Development in Healthcare.* Retrieved from www.theguardian.com/healthcare-network.

Snelling, S. (2014). *Process/Implementation Evaluation Interview Guide: Evaluator Version*. Sudbury, ON: Community Mobilization Sudbury.

SPPS Enterprise Group. (2011). *Global Literature and Experience in Whole-of-Government Approaches to Crime and Violence Reduction: An Interpretive Report on the Development and Meta-Analysis of an Annotated Bibliographic Database for Provincial Policy Makers*. Development for the Saskatchewan Police and Partners Strategy. Regina, SK: Government of Saskatchewan.

Stead, L., Hatmann-Boyce, J., Perera, R. and Lancaster, T. (2013). Telephone Counselling for Smoking Cessation. In *Cochrane Database of Systemic Reviews*, i.8.

Stefancic, A., Henwood, B., Melton, H., Shin, S., Lawrence-Gomez, R., and Tsemberis, S. (2013). Implementing Housing First in Rural Areas: Pathways Vermont. In *American Journal of Public Health*, v.103, supp.2:S206-S209.

Suitabletech. (2016). *What is Beam Smart Presence?* Retrieved from www.suitabletech.com.

Tachakra, S., Wang, X., Istepanian, R., and Song, Y. (2004). Mobile e-Health: The Unwired Evolution of Telemedicine. In *Telemedicine Journal and e-Health*, v.9, n.3:247-257.

Taylor, N. (2010). *Consultant's Report: A Province-Wide Policing Strategy to Reduce Crime, Build Safe Communities and Secure the Future for Saskatchewan*. Delivered to the Saskatchewan Ministry of Corrections, Public Safety and Policing. Regina, SK: Government of Saskatchewan.

Taylor, N. (2011). Game Changers: Prince Albert Partners Redefine the Fight Against Crime. In *Police Chief Magazine,* spring/summer, pp.20-27.

Techtarget. (2007). *What is a Videoconference?* Retreived from www.techtarget.com.

Teller, J., Munetz, M., Gil, K., and Ritter, C. (2006). Crisis Intervention Team Training for Police Officers Responding to Mental Disturbance Calls. In *Psychiatric Services*, v.57, n.2: 232-237.

Trucano, M. (2005). *Knowledge Maps: ICTs in Education*. Washington, DC: infoDev – World Bank.

Tutty, L., LeDrew, S., and Paige, A. (2008). *The Evaluation of Saskatchewan's Children Exposed to Domestic Abuse Programs: Final Report*. Calgary, AB: RESOLVE Alberta.

UNESCO. (2016). *ICT in Education*. Retrieved from en.unesco.org/themes/ict-education.

Unhelkar, B. (2011). *Handbook of Research on Green ICT: Technology, Business and Social Perspectives*. Hershey, PA: Information Science Reference.

Waegemakers-Schiff, J., and Turner, A. (2015). *Housing First in Rural Canada: Rural Homelessness and Housing First Feasibility Across 22 Canadian Communities.* Calgary, AB: University of Calgary.

Wald, H., Dube, C., and Anthony, D. (2007). Untangling the Web—The Impact of Internet Use on Health Care and the Physician-Patient Relationship. In *Patient Education and Counselling*, v.68, i.3:218-224.

Wang, F., Carley, K., Zeng, D,., and Mao, W. (2007). Social Computing: From Social Informatics to Social Intelligence. In *IEEE Intelligence Systems*, v.22, i.2:79-83.

Watson, A., Morabito, M., Draine, J., and Ottati, V. (2008). Improving Police Response to Persons with Mental Illness: A Multi-Level Conceptualization of CIT. In *International Journal of Law and Psychiatry*, v.31: 359-368.

WHO. (2016). Information and Communication Technologies for Public Health Emergency Management. Retrieved from www.who.int.

Wyllie, D. (2011). *You've got NERV: Emergency Interoperability on Wheels.* Retrieved from www.policeone.com.

Zuppo, C. (2012). Defining ICT in a Boundaryless World: The Development of a Working Hierarchy. In *International Journal of Managing Information Technology* (IJMIT), v.4, n.3: 13-22.