

# Transforming Child and Youth Mental Health Care

via Innovative Technological Solutions

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**Abstract**

**Live interactive videoconferencing and other technologies offer innovative opportunities for effective delivery of specialized child and adolescent mental health services. In this article, an example of a comprehensive telepsychiatry program is presented to highlight a variety of capacity-building initiatives that are responsive to community needs and cultures; these initiatives are allowing children, youth and caregivers to access otherwise-distant specialist services within their home communities. Committed, enthusiastic champions, adequate funding and infrastructure, creativity and a positive attitude represent key elements in the adaptation of this demonstrated user-friendly modality.**

It is consistently documented that almost 20% of children worldwide have one or more mental health disorders (Waddell and Shepherd 2002; World Health Organization 2003). A similar prevalence rate applies in the province of Ontario, but only one in six receives services (Offord et al. 1987). In Ontario, the ratio of child psychiatrists to children and youth with mental health needs is approximately one to 6,148 (Steele and Veitch Wolfe 1999), which is much lower than an estimated need of one to 1,390 (Thomas and Holzer 2006). Estimates of young people with psychological or psychiatric problems who are seen in primary care range from 15 to 40% (Clatney et al. 2008; Hilty et al. 2009; Stretch et al. 2009). Consequently, a large burden of responsibility for children's mental health falls on family practitioners, pediatricians, nurses and nurse practitioners (Myers et al. 2008), social workers and child and youth workers (Provincial Centre of Excellence for Child and Youth Mental Health 2006), many of whom feel inadequately trained, ill equipped and uncomfortable in both recognizing and managing child and adolescent psychiatric disorders (Fremont et al. 2008; Paing et al. 2009).

Geographical, economic and cultural factors often impede access to specialized children's mental health services (Kelleher et al. 1992; Letvak 2002). In sparsely populated areas, costs associated with travel and time off work pose barriers to accessing care. Furthermore, it is difficult to recruit and retain specialists and allied healthcare workers, who tend to concentrate in larger urban areas (McCabe and Macnee 2002). For example, although 30% of Ontario child psychiatrists are involved in some outreach activities, only 10% venture more than 150 kilometres from their base practice (Steele and Veitch Wolfe 2006). The shortage of resources and support services in rural communities means that children requiring urgent attention are often placed in residential care outside of their home community (Sheldon-Keller et al. 1996), compromising familiar psychosocial and cultural strengths and supports. Thus, the provision of psychiatric services to children and their families in rural and remote regions must address geographical barriers to access

(Boydell et al. 2006) and the distribution of scarce specialist resources, with attention to the cultural contexts of individual communities. Creative and innovative solutions responsive to these needs and challenges are required.

The Canadian Standing Senate Committee on Social Affairs, Science and Technology (2006) recommends that telepsychiatry be used in rural and remote communities for consultations, education and training of mental health practitioners. The term telepsychiatry designates psychiatric applications employing live, interactive videoconferencing (Myers and Cain 2008), making it possible for two or more individuals any distance apart to interact in real time, and is emerging as one of the most successful uses of this technology (Brown 1998; Ruskin et al. 1998). With interactive technologies, extending the boundaries of the medical home base and improving communication with children and adolescents experiencing mental health challenges and their caregivers are now realizable goals (Spooner and Gotlieb 2004). In this article, a description of an operational telepsychiatry program is presented to illustrate the components that foster success.

**Case Report: The TeleLink Mental Health Program**

In 1997, The Hospital for Sick Children (SickKids), in Toronto, Ontario, undertook a pilot project to provide support to primary care settings through videoconferencing. Fully operational in 2000, the program subsequently evolved to become the TeleLink Mental Health Program (Pignatiello et al. 2011). The program's mission is to enhance the knowledge, skill set and confidence of children's mental health practitioners using videoconferencing and other technologies by providing timely, equitable access to bilingual (English and French) specialist services. Guided by the strategic directions of SickKids (excellence, integrity, collaboration, innovation, integration of care, research and education) and its academic affiliation with the University of Toronto, TeleLink is committed to matching community needs with best evidence and excellence in care through a range of innovative and responsive service delivery models. Particular attention is paid to fostering partnerships with stakeholders aligned with unique local cultures.

Operationally, the videoconference connection between recipient "far" sites and the TeleLink hub site occurs via Internet protocol (IP) or occasionally integrated services digital network (ISDN) carried on a maximum of three lines (maximum bandwidth 384 kilobits per second). Two or more sites can be connected simultaneously, and videos, PowerPoint presentations and scanned documents can be transmitted. Recording of sessions is possible but not done routinely for clinical services. The hub site is equipped with five stationary studios, with all configurations allowing both hub and far sites to be viewed simultaneously. Core hub site staff (Figure 1) and a desig-

nated telepsychiatry coordinator at far sites provide the necessary infrastructure. To foster relationship building with sites servicing Aboriginal clients and to enhance provider capacity on Aboriginal issues, a child psychiatrist stationed in a distant community is assigned as liaison with Aboriginal communities. Funding is derived from diversified sources, including an annual contract with the Ontario Ministry of Children and Youth Services, the purchase of service agreements, donations, research grants, direct billings to the provincial healthcare plan (Ontario Health Insurance Plan) and “in kind” support from SickKids for partial space lease, information technology (IT) and limited accounting assistance.

Twenty-three child psychiatrists within the Division of Child Psychiatry at the University of Toronto provide the bulk of services through a regular weekly or monthly roster. An additional 16 faculty members are available for specific consultations and educational sessions, depending on their expertise and availability. In addition, two social workers and three psychologists with specific areas of expertise comprise the core clinical team.

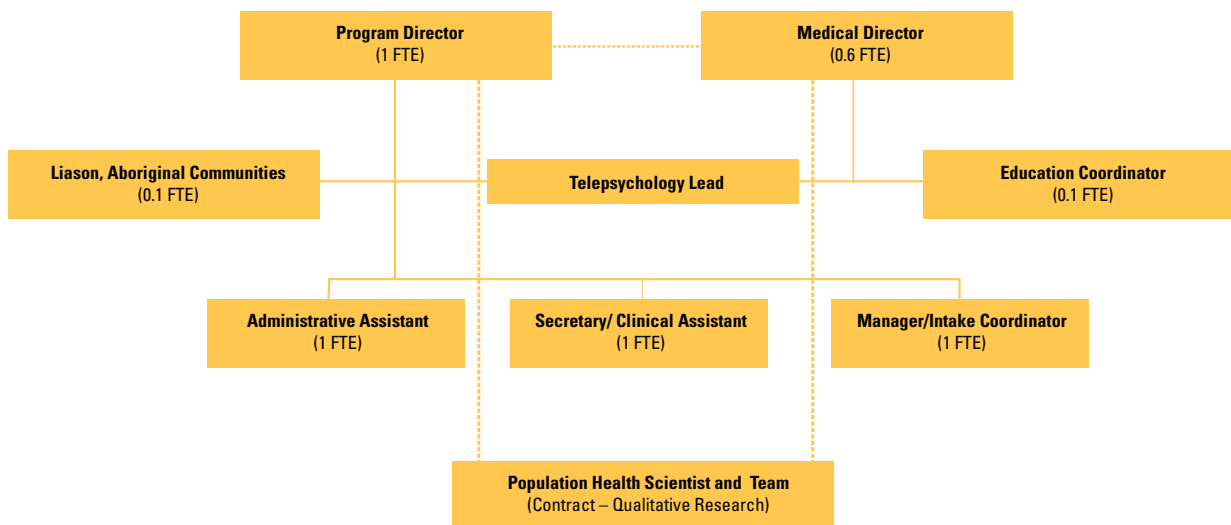
Currently, TeleLink services may be accessed through multiple routes of referral: 15 primary children’s mental health agencies, along with their satellite locations; three community general hospitals with child and adolescent mental health beds; one youth detention centre; one community youth justice diversion program; and, to a developing extent, community physicians. Models of service delivery are tailored to requested services and may include clinical consultation or short-term follow up, professional-to-professional consultation, shared

care, program consultation, education and training. Referring clinicians must complete a mental health assessment prior to requesting a consultation. Written consent forms in accordance with the Ontario Personal Health Information Protection Act (Ontario Hospital Association 2004) must also be completed to confirm that the youth or family understand and consent to the provision of psychiatric/psychological consultation via videoconference from TeleLink. Consents also allow for the exchange of relevant information, records and reports between the referral source and TeleLink, and always include the local treating physician, who ultimately considers and facilitates medical and pharmacological recommendations when indicated. Furthermore, participants are made aware that since TeleLink is connected with an academic facility, medical trainees may be present and information collected from the consultation will be entered into a database, in aggregate format, to be used for education, statistics, quality improvement and other purposes permitted or required by law.

Supporting documentation and referrals are triaged by presenting issue and urgency and matched to compatible consultants. For non-urgent referrals, the average time from referral to consultation is approximately two to four weeks; however, urgent consultations are expedited within 24–72 hours. Between April 1, 2009, and March 31, 2010, approximately 95% of all referrals made were completed (Table 1). This unusually high rate appears to be consistent with technology-enabled service delivery (Leigh et al. 2009).

It is a requirement that a child’s case manager or primary clinician be present during the clinical intervention to bridge the

**FIGURE 1.**  
**TeleLink program hub organizational structure**



FTE = full-time equivalent.

culture, language, formulation, recommendations etc. between the client and consultant, and to confirm and clarify roles and responsibilities (Broder et al. 2002). The presence of the case manager and others involved in the care of the child also serves to increase knowledge and confidence of healthcare providers in an experiential way. Impressions and recommendations are provided verbally at the end of the consultation, and a written report follows within 15 working days. Primary care clinicians may also connect with the core hub medical and administrative staff by telephone, e-mail or fax with any questions or issues prior to or following videoconference appointments. TeleLink maintains an electronic database derived from standard referral forms and sheets completed by all consultants, summarizing those present in the consultation, diagnostic impressions, clinically assessed degree of psychosocial severity and recommendations. Demographic data, intake and scheduling procedures, distribution of final reports and administrative and billing information are also readily monitored. A detailed description of TeleLink program components and results follows.

## Services Offered and Results

### Clinical Services

From May 1, 2000, to March 31, 2010, a total of 7,056 clinical consultations were provided, of which 21% were follow-ups. Sixty-six percent of clients were male, 17% were Aboriginal, 4% were French and 2% were seen urgently. The age distribution was as follows: 16% were six years old and under, 44% were seven to 12 years old and 40% were 13–18. Diagnostic impressions based on clinical impressions included attention deficit hyperactivity disorder (ADHD) and disruptive behaviour disorders, mood and anxiety disorders, learning difficulties, attachment disorders, autistic spectrum disorders and psychotic or thought disorders. These diagnostic categories are in keeping with other similar programs (Elford et al. 2000; Myers et al. 2004, 2010).

The overall degree of dysfunction based on the psychiatric consultants' clinical impression of social, school, family or occupational function and intensity of intervention recommended was rated as mild (17%), moderate (66%) or severe (17%). Recommendations typically included family and individual interventions or counselling, medication, additional focused assessments (e.g., psycho-educational, speech, hearing etc.), placement and other interventions.

### Telepsychology

The use of videoconferencing to deliver psychological services to children is still emerging. To date, psychologists have used videoconferencing primarily in the area of counselling (Botella et al. 2004; Shepherd et al. 2006; Simpson 2001). Psychological assessment services cannot be provided by sole practitioners

but require the assistance of a psychometrist who is available to administer tests directly to the child. A pilot project to determine the feasibility of providing individual psychological assessments to children using videoconferencing was completed, and TeleLink has begun delivering telepsychology services to four distant agencies for children's mental health. Completed sessions included an initial interview with parents and agency personnel, direct testing sessions with the child and a feedback interview where results and recommendations were presented orally, followed by a written report.

From January through December 2009, seven comprehensive psychological assessments were completed. The children ranged in age from five to 15 years (mean age 7.4 years). Of those seen, 57.1% were male. The most frequent diagnoses were learning disability (42.8%), ADHD (42.8%) and intellectual disability (28.6%).

### Program Consultations

TeleLink currently provides 25 monthly program consultations wherein a consistent consultant meets with a designated group of mental health providers from a particular team (i.e., school-based day treatment programs, residential and foster homes, specialized programs working with children of military families, family health teams etc.) to discuss clinical, program-wide and community issues. Informal evaluations suggest that primary care staff appreciate the education, support and guidance in working with very difficult or complex situations.

**TeleLink staff rely on the expertise of local providers, take time to understand cultural strengths and local resources and incorporate this information into appropriate clinical suggestions.**

Child and adolescent mental health and psychiatry practice, whether by TeleLink or otherwise, must take into account a wide range of community and cultural variables (Aggarwal 2010; Shore et al. 2006). In rural Ontario, new Canadian immigrants comprise 8% of the population (Beshiri and Alfred 2002), and in Northern Ontario, Aboriginal and First Nations people comprise 11% (15% of children less than one to 19 years old) of the population (Southcott 2004). Farther north, above the 50th latitude, Aboriginal people comprise a large majority of the population. First Nations communities must also themselves be considered diverse, spanning a wide geography, language groups and treaties. To facilitate consultations, TeleLink staff rely on the expertise of local providers, take time to understand cultural strengths and local resources and incorporate this information

**TABLE 1.**  
**Non-materializing appointments, April 1, 2009–March 31, 2010**

Reason	<i>n</i> *	%
Technical – far end	3	0.3
Cancelled by family	4	0.4
Client/family a “no show”	15	1.5
Scheduling issue	5	0.5
Case manager not available	1	0.1
Client hospitalized	2	0.2
Illness	3	0.3
Power outage	1	0.1
Weather	3	0.3
Consultant unavailable	8	0.8
<b>Total</b>	<b>45</b>	<b>4.5</b>

\*N=981 referrals.

into appropriate clinical suggestions. Individual and program consultations and training all allow for a sharing of ideas and appropriate translation of current evidence. A core group of five child psychiatrists at the hub site are now understood to have extensive (five to 10 years) experience with Northern and Aboriginal communities, and in so doing, have developed meaningful relationships with Aboriginal teams and therapists and are generally relied upon in this context. The position of Liaison, Aboriginal communities, has further encouraged communication, participation and understanding of potential barriers to effective care.

**Qualitative Research and Evaluation**

Qualitative research is a key component of the TeleLink program, drawing on practitioner, family and youth intuition and experience to generate findings that are meaningful, useful and effective for practice. The strength of qualitative research lies in its focus on the specific cultural context and familiarity with “real people in real situations” (Goering et al. 2008). Qualitative findings offer insight into the conditions, values, needs and preferences of research participants (Gilgun 2006).

TeleLink’s program of research (Pignatiello et al. 2008) is based on the exchange and linkage conceptual Knowledge-to-Action (KTA) framework. The KTA approach developed by Graham and colleagues (2006) permeates the key components of

TeleLink, including clinical collaboration, education, evaluation and research. This model identifies two broad activities: knowledge creation and knowledge action. Knowledge creation refers to the knowledge created by research but also encompasses tacit or experiential knowledge. The action cycle illustrates the eight steps required for knowledge implementation: (1) identification of a problem; (2) identification and selection of knowledge; (3) adaptation of knowledge; (4) assessment of barriers to knowledge use; (5) selection, tailoring and implementation of an intervention to ensure knowledge use; (6) monitoring of knowledge use; (7) evaluation of outcomes; and (8) sustainment of use. The cycle is dynamic, that is, steps and processes influence each other and can in turn be influenced by available knowledge.

Research evidence in the application of knowledge translation approaches shows increased application when decision-makers are involved with the research process (Lee and Garvin 2003). Collaboration between researchers and knowledge users is critical to understanding users’ context and ensuring that the translated knowledge meets their needs (Gagnon 2009). Ideally, this collaboration should take place in the early phases of the KTA cycle to allow for constructive exchanges on explicit expectations and objectives to be met by the team (Berta et al. 2010). Previously, the traditional view was that knowledge flows are unidirectional, uncomplicated and linear; however, it has been demonstrated that this is a flawed assumption (Henderson et al. 2006). Following from the KTA model, the effective flow of knowledge is conceptualized as bidirectional.

The TeleLink program of research has involved a series of studies including the development of a participatory approach to the design of an evaluation framework for pediatric telepsychiatry (Boydell et al. 2004), family member and caregiver perspectives on pediatric telepsychiatry (Greenberg et al. 2006), medical opinions on telepsychiatry (Greenberg et al. 2003), an analysis of recommendations uptake made during telepsychiatry consultations (Boydell et al. 2007) and the views of young people receiving consultations (Boydell et al. 2010).

This research demonstrates the importance of acknowledging the social context of various communities, the reduced burden experienced by families following the receipt of telepsychiatry services, and the enhanced capacity of service providers to deal with complex mental health issues. Additionally, research identifying factors most likely to increase the uptake of recommendations made in telepsychiatry consultations has been important to the development of best practice guidelines for consulting psychiatrists. Narratives from young people highlight the importance of their relationship with the psychiatrist as well as their capacity to actively take responsibility and exert control within the consultation process. The most positive facet of their telepsychiatry experience was the opportunity to be exposed to a new form of technology.

These research projects have produced an excellent knowl-

edge base reflecting the perspectives of critical TeleLink stakeholder groups regarding issues of access, use, communication, education, technology and administration, program delivery and contextual sensitivity. Group feedback has provided critical information about what is working well and what changes could be made to further enhance the program. Rigorous evaluation and theory-grounded research have contributed to TeleLink's credibility and viability and have impacted both the internal program and broader provincial and international initiatives. Internally, each of the research phases produced findings that were extensively disseminated and then used to change or modify the practice of the program. For example, as a result of our young clients' recommendations for a less formal setting, one studio at the hub was designed with a couch and armchair, dispensing with the standard table behind which the consultant sits. At the provincial level, research results have had a direct impact on one funder's (Ministry of Children and Youth Services) decision to amend the mandate to allow for follow-up consultations. Internationally, many emerging programs are looking to emulate the model, based on the evidence emerging from our program of research.

Research in TeleLink promotes the creation of a learning culture. Its collaborative approach encourages ongoing interaction and an exchange of ideas, thereby supporting continuous knowledge generation and translation for all program participants. Chunharas (2006) identifies three elements essential to a learning organization: the regular interaction of those who conduct research and those who use it, established mechanisms for knowledge translation and recording of all data for future sharing. The co-creation of knowledge inherent in our research is particularly advantageous to an integrative approach to knowledge translation that relies upon solid relationships between clinicians and researchers. This is culturally congruent with existing Ojibwe, Oji-Cree and Cree values including mamow, or "altogether," and "sharing" (Ningewance 2004).

### Education and Training

Practitioners in rural areas lack easy access to continuing education (Fahey et al. 2003). Conferences and other opportunities for professional development are often located in urban centres, requiring rural practitioners to travel great distances at significant expense and time away from their communities. Easier access to continuing education enables them to keep their knowledge and skills up to date, improving the care they provide to their clients. It can also decrease their sense of professional isolation, improving the recruitment and retention of these practitioners in rural communities (Fahey et al. 2003; Smith et al. 2009; White et al. 2007) Videoconferencing is one method of delivering educational services to practitioners in their communities. Most commonly, it has been used for delivering seminars, grand rounds and other similar presentations (Fahey et al. 2003; Rees

et al. 2009), although there are reports of its use for clinical supervision of trainees and practitioners (Hilty et al. 2004; Xavier et al. 2007). Studies have demonstrated that education delivered by videoconference was perceived as relatively equivalent to face-to-face teaching (Whitten et al. 1998). They also report a high degree of participant satisfaction, gains in knowledge and evidence of practice changes (Fahey et al. 2003; Rees et al. 2009). As a first step in developing a continuing education program for the staff at our far sites, the TeleLink program initiated a needs-assessment process. Continuing education programs that are based on needs assessment appear to be more effective in changing learner behaviour and the outcomes of patients (Mazmanian and Davis 2002). The needs assessment was multi-modal, including a survey for far-site practitioners, a videoconferenced meeting with site coordinators and a survey of consultants at the hub site.

Based on the needs-assessment results and the literature on effective continuing education, TeleLink developed a program of longitudinal, multi-part seminar series. Interactive teaching methods have been emphasized, including case-based discussions, role plays and game show formats. The seminars have covered a wide range of clinical topics, including ADHD, adolescent depression, family therapy, physical and sexual abuse and individual psychotherapies. Seminars have been geared either to an introductory level or an advanced level, to meet the diverse needs of practitioners at our far sites.

### Psychiatry grand rounds at SickKids have been broadcast to six rural sites at a time.

Between 2002 and 2009, 180 educational sessions were delivered. It was not possible to compile accurate attendance records, but participants did return 6,863 evaluation forms. The seminars had a mean overall rating of 5.63 out of 7. Participants provided extensive comments about the seminars. Recurring themes in these comments included the following (1) interaction and case-based teaching was valued; (2) existing knowledge was reinforced; (3) new knowledge was relevant and applicable to practice; (4) participants were stimulated to reflect on their own work; and (5) the seminars helped to increase the confidence of the participants.

With donated funds, TeleLink has been able to initiate other education programs for different audiences. Psychiatry grand rounds at SickKids have been broadcast to six rural sites at a time. This has allowed physicians from distant communities to access regular academic presentations. TeleLink has also provided two public forums on mental health topics geared toward parents and caregivers.

A second educational goal for the TeleLink program has been to prepare future mental health professionals in the use of videoconferencing. Work in telemedicine has been expanding (Brown 2006), and many future professionals will use this technology. As of 2005, all psychiatry residents at the University of Toronto are required to participate in at least two telepsychiatry consultations at TeleLink. Residents can watch a staff psychiatrist assess a child and family and are also able to participate in the interview and discussion process. Through 2009, 112 residents had participated and completed 164 evaluation forms. Eighty-two percent found the experience interesting and enjoyable, and 78% expressed interest in participating further in telepsychiatry. Residents' comments were highly positive about the experience. To allow residents to further explore this area of work, we have been offering three- and six-month electives at our program. To date, eight residents have participated in these electives.

**In small, remote communities where clinicians and clients may be close acquaintances, receiving mental health services from a distant provider via videoconference may offer a greater sense of privacy and confidentiality.**

Our experience so far is that telepsychiatry can deliver valued educational services to distant learners and can make use of the same strategies associated with other forms of effective continuing education. We have also found that trainees react very positively when exposed to telepsychiatry and that at least some are disposed to pursue this kind of work in more depth.

#### Administration, Dissemination and Promotion

The hub site administrative staff meet on a monthly basis to discuss program-related issues and future planning. Steering committee meetings are held quarterly with the core hub team and all far sites via videoconference. As well, the orientation of prospective and new sites is provided through this medium. To keep consultants apprised of relevant information in TeleLink and to disseminate research findings, a periodic newsletter titled *Short Circuit* is distributed electronically.

TeleLink collaborates regularly with similar programs in other Canadian provinces, as well as the United States, England and Australia (Starling and Foley 2006) to share initiatives, processes, protocols and experiences. At time of preparation of this article, the team has contributed to and has been recognized through 20 publications (peer-reviewed journals, abstracts and book chapters), 65 presentations, 16 associated committees, six news and media opportunities and events, three teaching

awards and one service award, and it has produced a video of the program (AboutKidsHealth n.d.).

#### Quality Standards Program

A team of physicians and non-physicians was assembled at the hub to devise and implement a quality standards program of clinical activities. The overall framework includes the creation of modules and processes targeting specific selected components; collating and circulating the findings to the program, consultants and indicated stakeholders; and making necessary adjustments. To date, the second round of random file audits is nearly complete. Standards and guidelines for consultant performance appraisals for annual reappointment have been established. Other phases currently in progress include solicitation of feedback from referral sources and from young patients and their guardians regarding the clinical intervention and accompanying report. Modules and processes for tracking positive feedback, concerns and subsequent action taken are nearly complete. On an ongoing basis, issues related to technology and referrals, budgets and daily operations are reviewed at monthly staff meetings. Consultants have informally reported appreciation of the feedback as they rarely have the opportunity for self-monitoring in their usual practices.

#### Discussion and Conclusion

The Standing Senate Committee on Social Affairs, Science and Technology (2006) described the current children's mental health system as fragmented and underfunded, with a critical shortage of mental health professionals. It consequently identified telepsychiatry as a promising mechanism of sharing existing limited resources, but only if a basic level of mental health service is already in place. From stakeholders to policy makers, champions at the hub and distant communities represent the key driving force to develop, advance and sustain tele-programs for mental health. Other requisite components of a successful telepsychiatry/telemedicine service include adequate funding for equitable remuneration of service providers, with flexibility of remuneration schemes; current and secure technology; needs-driven service deliverables; infrastructure (policies, procedures, guidelines, for medico-legal due diligence, space and support personnel); and convenience and ease of use for patients and caregivers (Figure 2). Adapters of this novel approach will ask "how" this can be done. Maintaining a presence and actively merging such a program with the day-to-day operations of service providers, hospitals and universities, along with the dissemination of lessons learned and program promotion, are vital to the demystification, uptake and integration of telepsychiatry as a complementary approach to care. TeleLink represents a capacity-building model of service delivery; the possibilities are limited only by one's imagination and willingness to accept this modality. Videoconferencing could readily be incorporated into outreach initiatives, pre-admission

screening, post-discharge follow-ups and urgent consultations to reduce emergency room wait times. Integrative approaches from multiple referral sources working in concert will enable comprehensive, seamless patient care.

The KTA framework that guides the administrative, education, research and quality management components of TeleLink allows for an iterative approach to identifying issues, researching them in a collaborative fashion and arriving at strategies to improve the program. In this manner, practice is optimized.

Through relationship building and partnering with communities, telepsychiatry is well positioned to enhance, but not replace, the delivery of healthcare, reduce professional isolation and improve the distribution of clinical expertise. Limitations imposed by catchment areas virtually disappear, and care can remain local, thus facilitating less intrusive and culturally congruent assessment and treatment plans. Consultant recommendations lend extra weight in advocating for interventions that can be instituted locally (Boydell et al. 2010). In small, remote communities where clinicians and clients may be close acquaintances, receiving mental health services from a distant provider via videoconference may offer a greater sense of privacy and confidentiality, which may in turn reduce the stigma of receiving mental health intervention.

All clinical telepsychiatry programs should include a program of continuing education delivered to practitioners at the distant sites; education should be based on a needs assessment, be longitudinal and make use of interactive teaching methods including case-based discussions. The goal of this continuing education is to improve the knowledge and skills of these practitioners and thus build the capacity of these rural communities to provide excellent mental health care to children and their families. This program of education should also offer opportunities to train students and practitioners at the near end in the use of the technology and the clinical model so that they may be disposed to doing this work in the future. The goal of such training is to increase the number of practitioners delivering videoconferenced services to communities that lack adequate local access to these services, thus ensuring that all children and families have access to appropriate mental health irrespective of where they live.

A population of all ages with diverse presenting problems and degrees of psychosocial severity can be managed by interactive videoconference (Nelson and Bui 2010; O'Reilly et al. 2007; Pignatiello et al. 2008; Yellowlees et al. 2008), employing principles of community systems of care (Winters and Pumariega 2007) and shared care (Kates 2002); however, challenges remain. Evidence for uses of videoconferencing is still emerging but likely will not keep pace with advances in technologies; thus, pioneers will be setting the courses as they venture into unfamiliar territories. Community and agency cultural issues and the provision of recommendations that are feasible and locally available require consideration. Technologically,

**FIGURE 2.**  
**Key components of a telemedicine program**

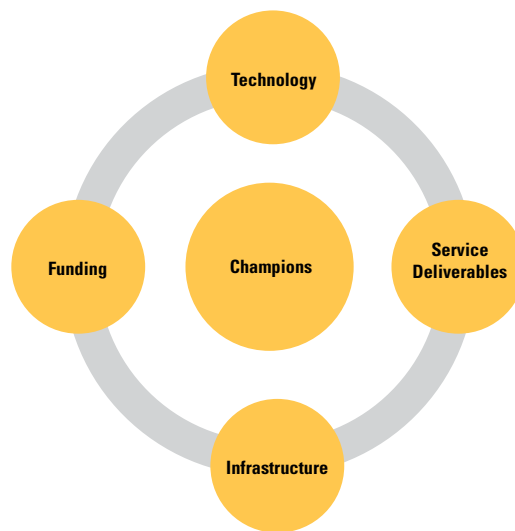


image resolution is still evolving. Senses of smell and touch, and absolute direct eye contact (Tam et al. 2007) are lost. These can be partly provided by the clinician in the room, but further consideration is warranted. Communication via videoconferencing requires an awareness of etiquette and extra consideration to adjust to the medium. It is important for participants to work *with* the technology rather than be frustrated by it. Our young participants can serve as role models, embracing technology and innovation.

TeleLink offers a comprehensive, innovative approach to confront the shortage of specialist resources for child and adolescent mental health in rural and remote Ontario, and a model for remote regions elsewhere. Interactive videoconferencing offers an efficient, cost-effective (Elford et al. 2001; Myers et al. 2004; O'Reilly et al. 2007; Persaud et al. 2005) and user-friendly modality (Ermer 1999), providing increased knowledge and training in pediatric mental health to distant and under-served areas (Broder et al. 2004; Pignatiello et al. 2008). Medical trainees in urban teaching centres are also expanding their knowledge of and comfort level with rural mental health issues, various complementary service models and the potential of videoconferencing for providing psychiatric and psychological services.

Family physicians supported by specialty services can realize an increase in knowledge and comfort in their recognition and management of children's mental health issues (Clatney et al. 2008; Stretch et al. 2009), and telepsychiatry is well poised to enable that. Often cited as "the next best thing to being there," mental health tele-initiatives do not happen spontaneously but require committed and enthusiastic champions, a positive

attitude (Werner 2004) and flexibility to ensure program viability (Hilty et al. 2004; Yellowlees 2005).

### Next Steps

Through promotion and further integration within hospital, academic and other provincial telemedicine networks, TeleLink will continue to develop its distance psychiatry and psychology presence and support to primary care clinicians. Collaboration among the multitude of agencies and ministries servicing the needs of children is key in creating community systems of care (Winters and Pumariega 2007), moving past barriers if not realigning fragmented, parallel systems. The exploration and integration of newer technologies in addition to videoconferencing will keep the venues for service deliveries current. Portable technologies that allow access to services right in one's home or at the service provider's fingertips would make for further ease of use. Live, active webcasting of education sessions and virtual chat rooms/offices could enable ready communication and support for professionals and patients. Although TeleLink has generated and learned from its programs of quality standards and evaluation to date, future research initiatives include an examination of technology-enabled knowledge translation of evidence-based practice in applied child and youth mental health settings in rural and remote Ontario communities. With the unique benefit of a large cadre of child psychiatric consultants, research is also under way to identify factors contributing to the recruitment and retention of child psychiatrists, an issue with implications extending beyond TeleLink. **HQ**

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