

Telepractice: The Australian Experience in an International Context

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Telepractice is emerging as a viable alternative to traditional “face-to-face” service as practitioners seek to meet the diverse needs of children who are deaf or hard of hearing and their families. Telepractice provides the opportunity for many countries to expand their reach and viability within their own borders as well as the possibility of delivering some services internationally. The potential benefits of moving to telepractice models of service delivery are significant, but successful implementation requires that consideration be given to potential barriers. As one of the international “early adopters” of telepractice, the experiences of service providers in Australia offer insight into the factors that influence the development of telepractice services as well as some of the potential barriers to implementation.

Telepractice is gaining global acceptance as evidence emerges of its benefits as a service delivery model (Doarn, Protilla, & Sayre, 2010; Gournaris & Leigh, 2004; Mashima & Holtel, 2005; Polovoy, 2008; Szeftel et al., 2011). In Australia, the use of telepractice with children who are deaf and hard of hearing and their families occurred in response to a unique combination of factors that required practitioners to look beyond traditional methods of service delivery. The vast distances in Australia, the low incidence of hearing loss, and the lack of qualified practitioners in the field have led some organizations, such as the

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Royal Institute for Deaf and Blind Children (RIDBC), to pursue the use of telepractice in supporting families of children who are deaf or hard of hearing.

The Australian Context

More than 10 years ago, two Australian nongovernment centers for children who are deaf and hard of hearing reported on their growing use of telepractice. Projects at those two centers—Taralye in Victoria (Flett, 2001) and Cora Barclay Centre in South Australia (Payne & Duncan, 2001)—variously relied on the use of Internet protocols, or Integrated Services Digital Network (ISDN) technology, to connect children and families in rural Australian locations to services provided in more populous areas. Flett (2001) described the trial placement of computers capable of videoconferencing in two locations to allow early intervention staff to interact with caregivers and the local kindergartens in which the children were enrolled. Payne and Duncan (2001) described the placement of integrated videoconferencing units in schools in remote locations to enable specially trained practitioners to work directly with students with hearing loss and also to communicate with local school personnel about programming and progress. These early applications of videoconferencing technology served as a partial proof of concept for telepractice as a method of service delivery in Australia.

Following these early applications of telepractice technologies, RIDBC developed a larger scale program in the state of New South Wales, initially using ISDN technologies and later using emerging technologies, such as Internet protocols over Symmetric Digital Subscriber Lines (SDSL). More recently, with the benefit of federal government funding support, the RIDBC Teleschool™ program has focused on installing dedicated videoconferencing equipment in family homes for the purposes of facilitating interaction between practitioners and families of children who are deaf and hard of hearing (McCarthy, 2011). RIDBC Teleschool has continued to explore the use of a variety of technologies, including cellular networks for videoconference facilitation, iPods and iPads to deliver session-support resources, and the use of Australia's developing National Broadband Network for higher speed and more reliable Internet connections with families in remote locations. A second article in this issue (McCarthy, 2012) provides more detailed information regarding the RIDBC Teleschool program and its model of service delivery.

As one of the international “early adopters” of telecommunications technologies and telepractice to serve the needs of children who are deaf or hard of hearing, Australia is able to act as an example to other countries that are beginning to explore and implement these approaches. Although many of the factors that spawned the development of telepractice in this country are

particularly “Australian” in nature, most will have resonance in other international contexts.

The Tyranny of Distance

In 1966, Australian historian Geoffrey Blainey coined the term “the tyranny of distance” to highlight the impact that Australia’s geographical remoteness and vast internal distances have played in shaping the country’s development. Australia is one of the world’s largest countries in physical size while at the same time having one of the lowest population densities (Blainey, 1966). Adding to the tyranny of distance is the fact that the population is not evenly distributed across the land mass (Department of Foreign Affairs and Trade, 2008a, b). Two-thirds of Australians live in major cities with the remainder living in rural and remote areas (Australian Bureau of Statistics, 2009).

For Australians with hearing loss in rural areas, the tyranny of distance is significant and access to special services is often severely limited. Two Federal Parliamentary Reports have highlighted the limited expertise available to meet the needs of children and adults who are deaf and hard of hearing and live in rural and remote areas of Australia (Employment, Workplace Relations, and Education Committee, 2002; Senate Community Affairs References Committee, 2010). In order to receive specialist support for children who are deaf and hard of hearing, families have often been obliged to travel great distances to attend appointments at hearing centers in the nearest major city. In some cases, families have relocated to major cities to minimize travel time and costs. These factors significantly influenced RIDBC’s pursuit of an alternative service delivery model for children who are deaf and hard of hearing and their families, and highlight the relevance of telepractice in the Australian context.

Low Incidence of Childhood Hearing Loss

In Australia, approximately 2 out of 1,000 children are identified with significant permanent hearing loss by the time they reach school age (Russ et al., 2003). When those children are located in rural and remote areas of Australia, there is frequently a limited availability of appropriate expertise to serve their needs. Given the low incidence of hearing loss, many small communities lack the critical mass of children who are deaf and hard of hearing to warrant the local availability of a specialized practitioner (e.g., a teacher of the deaf or a Listening and Spoken Language Specialist [LSLS™]). Instead, a generalist special educator is often deployed to address a child’s and family’s support needs. In some rural and remote communities where an itinerant teacher of the deaf is employed, geographically disparate caseloads mean that it is difficult to maintain timely and appropriate levels of service provision (Employment, Workplace Relations, and Education Committee, 2002).

Some rural and remote areas of Australia have a higher prevalence of childhood hearing loss than in metropolitan areas due to a range of social and environmental factors. Notably, indigenous Australian children have higher rates of middle ear disease and associated hearing loss than nonindigenous children, and are more likely to reside in rural and remote locations (Couzos, Metcalf, & Murray, 2001). In addition, limited awareness of the impact of ear disease, reduced access to allied medical services, and poor compliance with medical interventions exacerbate the pervasiveness of middle ear disease in indigenous Australian children (Senate Community Affairs Committee, 2010). These facts add weight to the need for well-developed service delivery mechanisms that are capable of overcoming the effects of remoteness and inaccessibility of services. This situation also correlates with similar circumstances in other countries (e.g., Canada and the United States) where indigenous communities have higher incidences of childhood hearing loss and may be geographically isolated (World Health Organization [WHO], 1996).

Recruitment, Retention, and Education of Professional Staff

Recruitment, retention, and professional education of current and prospective staff are significant challenges for service delivery in rural and remote areas.

Recruitment

The workforce of practitioners who provide intervention and educational services to children who are deaf and hard of hearing and their families is small and typically specially trained (Johnson, 2004). Attracting such practitioners to remote areas of Australia and retaining them in those locations presents particular problems for agencies and employing authorities—both government and nongovernment. Even when practitioners are attracted to rural and remote locations, they are often expected to cover vast geographical distances and to do so with limited resources and extremely broad responsibilities (McCarthy, 2011). Teachers of the deaf, for example, may be expected to support a caseload that encompasses children with many different types of disabilities, ages, and varying levels of complexity—often across all settings from early intervention to high school inclusion (Employment, Workplace Relations, and Education Committee, 2002). Furthermore, once recruited, rural and remote practitioners often have great difficulty accessing opportunities for professional development as well as materials and technical resources (Rude, Jackson, Correa, & Luckner, 2005). Given that practitioners in remote areas are usually the only specialist of their type in the area, they also frequently experience a greater sense of isolation and lack of professional support. The combination of these factors results in high staff turnover in rural and remote areas (Ludlow, Conner, & Schechter 2005).

The application of telepractice in rural and remote locations provides the opportunity to have appropriately qualified and specialized practitioners meet the needs of children and families via technology—regardless of where they may be located. Instead of a small community with just one or two children of widely different ages depending on the sporadic services of a single itinerant practitioner, telepractice stands to deliver the opportunity for regular service delivery by appropriately qualified practitioners capable of meeting each child’s specific needs. The telepractice model delivers the benefits of regular service and the important ability to match practitioner skills and experience to the specific requirements of the child and family.

Retention

The benefits of telepractice do not pertain solely to direct service delivery. The technologies and techniques associated with telepractice (i.e., videoconferencing, web conferencing) stand to impact directly on preparation and retention of practitioners—including those who do continue to be located in rural and remote locations. These practitioners can use telepractice methods to participate in professional development opportunities in major cities or, indeed, to access regular support and guidance from other, more experienced practitioners (see DeMoss, Clem, & Wilson, 2012, or Douglas, 2012, in this issue). Even with these additional supports in place, it is clear that the supply of qualified practitioners cannot meet the demand created by the dispersed population of children who are deaf or hard of hearing, causing positions to remain vacant nationwide (Ross & Michael, 2006). Here again, telepractice can play a particularly important role.

Education

In the Australian context, telepractice has facilitated the enrollment of more postgraduate students in university programs, efficiently utilized (and distributed) academic expertise across the nation, and allowed practicum supervisors and mentors the opportunity to observe postgraduate students in real-time practice teaching sessions wherever they may be located (RIDBC, 2011). To these ends, RIDBC Renwick Centre (The University of Newcastle) currently has more than 150 students from every state and territory in Australia and internationally—most notably from countries in the Asia-Pacific region—undertaking studies in education of the deaf and/or auditory-verbal practice (RIDBC, 2011). Delivery of their coursework via telepractice allows these students to continue in their current employment while further developing their knowledge and skills. RIDBC Renwick Centre employs a telepractice model using dedicated videoconferencing and other web-based technologies to deliver postgraduate coursework in both real time and asynchronous formats. This greatly reduces the need for travel and enhances the opportunities for current

and prospective practitioners from across the nation (and, indeed, across the world) to undertake highly specialized professional education.

When students in postgraduate education programs are located internationally, telepractice permits the practical assessment of those students, in their first language, by coordinating synchronous meetings with the student, the professor or supervisor, and an interpreter. Indeed, the same telepractice technologies that are used to deliver therapy and educational services for children and families in rural and remote Australia are utilized to facilitate practical supervision of students in almost any location. For example, the practicum coordinator and an interpreter at RIDBC Renwick Centre in Australia can use technology to observe a graduate student in Seoul, Korea, and provide immediate feedback as she teaches a lesson in her own school using her native language.

The International Context

The factors outlined here have created an environment that places Australia in a unique position to embrace and develop telepractice technologies and techniques for application in the field of professional service delivery for children who are deaf and hard of hearing and their families as well as training and professional development of LSLs and other professionals. The issues faced by Australia are not, however, unique to that country. The challenges outlined pertain to varying degrees in almost all international contexts. Challenges created by extreme distances, the low incidence of hearing loss, higher prevalence among indigenous children, and the difficulties associated with developing and deploying an appropriately trained workforce are common in many countries. There are many reasons to consider the application of the Australian experience internationally, but particularly to developing countries, such as those in the Asia-Pacific region.

Demography, Not Geography

As already discussed, the geography of Australia presents an ideal circumstance and incentive for the introduction of telepractice. The large land mass and low population density of the country virtually demand an alternative to "face-to-face" service delivery models as a basis for providing equity of access to specialized hearing services across the nation. Clearly, many other countries also experience the combination of geographic distance and low population density (i.e., regions in the Circumpolar North, including Mongolia, Alaska, and northern Canada). Isolation need not, however, be solely a consequence of distance. Isolation can be a consequence of other features of geography, such as weather or hazardous terrain. For example, in Motuo, a small community in the Tibetan Autonomous Region of China, access

requires land travelers to pass through parts of the snow-bound Himalayas. Access to qualified practitioners in these locations will clearly be limited.

In other countries, however, isolation from appropriate professional services may be a consequence of factors other than geography. Like Australia, many countries will experience the effects of a relative scarcity of practitioners and the dispersed nature of potential clients in areas of low population density. In some countries, factors such as the lack of readily available transportation or the decreased viability of travel (by families or practitioners) because of the congestion caused by high traffic volumes may be the cause of isolation from services. Undoubtedly, isolation from readily available services can be a factor for children who are deaf or hard of hearing and their families anywhere in the world, even in metropolitan areas. Isolation from services, regardless of the reason, presents an opportunity for the application of telepractice as an alternative to traditional face-to-face service delivery.

Incidence and Prevalence of Childhood Hearing Loss

There is particular potential for the application of the Australian experience with telepractice to regions where both demography and geography present particular challenges for service delivery and where the prevalence of childhood hearing loss is potentially very high (Leigh, Newall, & Newall, 2010), such as parts of the Asia-Pacific region. There are numerous potential reasons for the higher prevalence of hearing loss in these regions including the higher likelihood of some maternal infections and other preventable causes of infant hearing loss, such as meningitis and ototoxic drugs (Olusanya, 2006). As noted by Olusanya, Luxon, and Wirz (2006), in developing countries in particular there is also an increased potential for childhood hearing loss associated with poor maternal and child health and a range of other health conditions. The gradual introduction of Universal Newborn Hearing Screening in many countries in the Asia-Pacific region will also likely exacerbate the mismatch between demand for and the availability of services in those countries (Olusanya, 2006).

Intervention and (Re)Habilitation

Consistent with the development of hearing screening programs in many developing countries, the WHO (2004) has sought to promote the development of audiological and associated support services, including the provision of low-cost hearing aids. There has been a corresponding growth in the application of cochlear implant technology in the Asia-Pacific region as a consequence of the wider application of socialized medicine and also through some public-private partnerships and private benefaction (Leigh et al., 2010). In regard to the latter, it is notable that, in 2006, a private benefactor donated 15,000 cochlear implant devices (and associated support for surgery) for the benefit of children who are

deaf and hard of hearing in China (Leigh et al., 2010). Such increased availability of hearing technology will undoubtedly require a shift in current intervention models in many countries in the region to accommodate a greater emphasis on the development of listening and spoken language. According to the AG Bell Academy for Listening and Spoken Language, at the time of this printing there is only one practitioner registered as a LSLs certified professional in China (AG Bell Academy for Listening and Spoken Language, 2012). Here again, the use of telepractice could provide access to appropriately certified practitioners in Australia or other parts of the world for direct service delivery and/or for the professional development of local personnel.

Implementation of Telepractice: An International Solution?

There are many countries—particularly developing countries—where there is a large gap between the need for early intervention or related services for children who are deaf and hard of hearing and the local availability of those services (Olusanya, 2006). At least in part, telepractice has the potential to assist in bridging that gap. As is the case in Australia, existing early intervention services in central locations in many countries could be delivered more widely and efficiently to a greater number of children by practitioners using telepractice. Further, there is the potential for the international application of telepractice using the skills and resources of practitioners in other (developed) countries. The latter scenario has the potential to assist in both the delivery and development of services in developing countries—potentially as part of international aid arrangements. Clearly, however, there will be some potential barriers to the implementation of telepractice as a service solution in international contexts. In these authors' experience, such barriers may include, among others, the lack of availability of appropriate technology and infrastructure to support the technology, economic constraints, the lack of availability of effective ancillary services, social and cultural constraints, language differences, and the impact of possible negative perceptions of quality of services that are delivered by telepractice.

Technology and Staffing

Telepractice can be provided using a variety of technologies ranging from dedicated professional-grade videoconferencing to freely available software on a home computer. The infrastructure existing in a particular country and/or a region within that country will influence the type of technology that can be used most successfully in that location. Remarkably, many countries have excellent technology infrastructure even when other seemingly necessary infrastructure is not yet in place. Hutton (2011) noted, for example, that more people in Africa have access to mobile phones than to clean drinking water. Nevertheless, the cost of equipment set-up and ongoing connection costs may prevent some locations

from undertaking telepractice for service delivery. Different types of equipment and technology have widely varying costs. Funding may be a significant factor in choosing the type of technology to be used in a telepractice setting. Staffing costs are also a consideration. Specially trained practitioners are essential; however, support staff (such as administrative staff and technology support staff) may be equally as important. Payment and reimbursement issues are also a consideration before commencing a telepractice program.

Availability of Ancillary Services

In some countries—particularly developing countries—lack of effective ancillary services, such as audiology, otology, and speech-language pathology, will significantly influence the likelihood of success of any intervention service. This will be no less the case with telepractice. Audiology, for example, is a relatively new profession in many countries and, as such, qualified audiologists may be entirely unavailable in those locations. This is particularly the case in parts of Asia (WHO, 1998). Similarly, in many countries there will be a dearth of technology for assessing hearing and fitting hearing aids (Kumar, 2001). Indeed, the lack of availability and/or affordability of hearing aids at all will create a significant impediment to the establishment of effective practice—telepractice or face-to-face delivery—in many developing countries (Mukari, Tan, & Abdullah, 2006). Intervention is an important component of addressing the needs of children who are deaf or hard of hearing, but intervention alone does not guarantee successful outcomes. The availability of ancillary resources will be critical to maximize the effectiveness of any telepractice program.

Cultural Considerations

Early intervention of any type may be perceived or valued differently according to the customs and cultural beliefs of the consumers of those services. It is well understood, for example, that participation in early intervention programs may be challenging for parents from some cultures because of the stigma attached to disability (Leigh et al., 2010). In other cultures, families may be difficult to engage in intervention because there is simply no perception that hearing loss requires such intervention (Rhoades, 2010a). Hearing loss may be seen as unremarkable or commonplace such that intervention of any type is not seen as necessary, much less as a priority (Rhoades, 2010b).

In some cultures, the added issues associated with telepractice may present additional cultural or social concerns. From some perspectives, the use of telepractice may be, at least initially, too confronting. Cross-cultural experience in Australia suggests that there are several key questions that should be considered before commencing telepractice services:

1. Are there cultural concerns about the participant's image being captured?
2. Is the mother, or the primary caregiver, able to engage in intervention sessions—asking and answering questions—or does another relative or elder need to be involved?
3. Are there culturally specific behaviors that must be observed (e.g., is eye contact considered acceptable or unacceptable)?
4. Does the practitioner speak the same language as the family and, if not, what ancillary services (e.g., interpreting, cultural liaison) are required in order to ensure effective communication?
5. Does the practitioner have the skill necessary to maximize the benefit of an interpreter or other community liaison worker?

In addition to these specific issues, practitioners need to consider broader issues of language and culture in setting goals and choosing activities. The inclusion of local knowledge, language, and experiences will make the intervention relevant for the family and increase the likelihood of generalization of skills outside of the telepractice session.

Perceptions of Quality

Regardless of the country involved, it may be that some families will view services delivered through telepractice with some level of concern in regard to quality or potential for efficacy. Telepractice models *may* be perceived as a lesser option than face-to-face service delivery. At the very least, clinical interactions may be perceived as being qualitatively "different." Kully (2002) reported that clients in her trial of telepractice for speech-language pathology interventions in Canada indicated that interactions during the sessions were "not the same as face-to-face interactions at the clinic" (p. 5). Nevertheless, the practitioners reported that all treatment goals were met and clients indicated that they were satisfied with the telepractice sessions and the outcomes. Further, the clients indicated that overall they preferred the use of telepractice to the exigencies of long-distance travel and that the savings in terms of time and cost were considerable.

Experience at RIDBC Teleschool is consistent with Kully's experience (2002) and suggests that some families are indeed apprehensive about the process of telepractice and require explicit information as to how it works. These initial concerns can, however, be alleviated by discussing the expectations of each participant prior to beginning telepractice sessions and providing written materials to supplement that verbal information. Clearly, however, research is required to more fully investigate any influence that perceptions of quality may have on service delivery and effectiveness. It may be that any concerns or issues are related to specific factors that may differ within countries as well as across countries. Research will ultimately need to address this issue across international contexts.

Telepractice in Samoa: An Example of International Application

In 2008, RIDBC Teleschool engaged in a project to assist in the delivery of services to children who are deaf or hard of hearing in Samoa through collaboration with an inclusive education center for children with disabilities in that country. The program began by establishing a liaison with educational and governmental agencies in Samoa to determine the needs of the population and assess the available infrastructure. A proposal was developed, which included a national plan for hearing screening, early intervention, and inclusive education.

Initially, RIDBC audiologists visited Samoa and assessed the children's hearing, fitted hearing aids, and made recommendations about which children might benefit from a cochlear implant. Three students, between 3 and 5 years of age, were identified as potential candidates for cochlear implants and intensive intervention to develop listening and spoken language skills. These children traveled to Sydney, Australia, with their families to undergo an evaluation of candidacy for cochlear implants. During the candidacy process, the families lived on campus at RIDBC in Sydney, participated in intensive auditory-verbal therapy sessions as well as group lessons, and attended RIDBC's auditory-oral preschool. Each family remained on campus for 3 months postsurgery to allow for initial MAPping and habilitation sessions to take place. English was not the first language for two of the families, but all three sets of parents spoke adequate English. Consequently, all sessions were delivered in English with the parents translating the activities into the native language for the children. Interpreters were used when necessary for more complex information, such as reviewing the consent for cochlear implant surgery.

After the 3-month residential stay, each family returned to Samoa where the children resumed their enrollment in the local education center. Their daily schooling was supplemented by weekly telepractice sessions with RIDBC practitioners who used an auditory-verbal approach to focus on the development of listening and spoken language skills. Sessions were conducted in the morning at the start of the school day (9:00 a.m. Samoa time/6:30 a.m. Sydney time). Weekly telepractice sessions were initially delivered using a computer with a webcam via Skype. The reliability of this platform was inconsistent and dedicated videoconferencing equipment was eventually donated and installed. This resulted in a more consistent connection with a superior picture quality, audio signal, and audio-video synchronicity—all of which are essential for an effective telepractice session.

The children attended individual weekly sessions with at least one adult (e.g., the parent and/or staff from the local education center). Local staff was involved in planning, preparation, and evaluation of weekly sessions with RIDBC practitioners. At the end of each session, a weekly homework plan was provided to ensure generalization of skills from the telepractice session to all

areas of the children's schooling and home lives. Samoan staff was also provided with ongoing training in specific auditory-verbal techniques, such as acoustic highlighting, responsive teaching, and prompting techniques. Three staff members at the Samoan education center were targeted to receive additional postgraduate-level education through the RIDBC Renwick Centre as well as other online continuing professional education opportunities.

Sessions included three distinct types of interactions: (1) the RIDBC practitioner providing direct intervention to the child, (2) the RIDBC practitioner coaching and guiding the adult during adult/child interactions, and (3) information sharing between the RIDBC practitioner and adult, including collaborative planning, adult education, and skills training. The first interaction type, direct intervention, included activities typically seen in any early intervention session, although in the telepractice sessions activities were adapted to be interactive across the technology. For example, in eliciting a response to an auditory awareness task, the practitioner acted as a distractor while the adult presented the sounds using live voice. When the child became a more experienced listener, the roles were reversed with the adult acting as the distractor and the practitioner presenting the sounds via the technology. With coaching, the practitioner modeled a specific activity for the adult, such as how to focus on language while preparing a meal (McGinnis, 2010). The practitioner then encouraged the adult to try the activity with the child, providing encouragement and feedback during and after the activity. Similarly, the adult often demonstrated favorite activities from home or school while the practitioner observed and provided suggestions for incorporating the child's goals into the activity. In both types of coaching, the adult and practitioner discussed successes, challenges, and ideas for generalizing the goals outside of the telepractice session. In each session, time was allocated to the third interaction type, information sharing, including the provision of information and training related to specific topics (e.g., managing the cochlear implant, as well as discussion of informal topics, or questions related to a specific strategy that arose during each session). In addition, each session concluded with a review of the activities completed and the child's progress towards identified goals. The adult and practitioner discussed which activities to focus on in the upcoming week and how to generalize goals to other activities in the child's daily routines both at home and at school.

RIDBC practitioners continue to provide weekly telepractice sessions to further develop the skills of the Samoan staff and to monitor student progress. However, the Samoan staff now confidently provide regular face-to-face services to the parents of the 3 Samoan children. In addition, a number of other children with hearing loss in the local education center have benefitted from the skills acquired by the Samoan staff through the collaboration with RIDBC. The use of telepractice in Samoa has also extended to the provision of remotely delivered audiology services and cochlear implant MAPPING. The children who received cochlear implants no longer need to return to Australia for

periodic MAPping. Local staff has been trained to facilitate the MAPping in Samoa while an appropriately qualified and experienced audiologist in Sydney MAPs the cochlear implant remotely using videoconferencing and remote access software to control the local computer and software. These sessions take place using a high-speed broadband connection and associated videoconferencing equipment.

For Samoa, telepractice has overcome the crisis of capacity with regard to LSLs certified professionals and has provided direct access to cochlear implant technology and ongoing support for auditory (re)habilitation and audiological services. Telepractice has addressed issues of limited teacher preparation and professional development by providing access to a hub of expertise at RIDBC where ongoing training is provided to Samoan staff on a weekly basis. As demonstrated in Samoa, telepractice has the potential to create opportunities for children who are deaf and hard of hearing in other countries where similar circumstances exist.

Conclusion

Although there are some potential barriers to implementation, the benefits of telepractice are substantial. This has been well demonstrated in the Australian context where the benefits have improved availability and quality of service delivery for children who are deaf and hard of hearing in rural and remote areas. Those benefits include increased local access to specially trained specialists, expanded parental choice of intervention approach and communication mode (e.g., access to listening and spoken language professionals), expanded local access to a wider range of available allied health services (e.g., otology, audiology), and the creation of new and viable opportunities for initial and continuing professional education.

Without question, telepractice is particularly well-suited to support the needs of the many Australian children and families who live at considerable distances from major service delivery centers. However, it is becoming increasingly clear that telepractice has the potential to increase the efficiency and effectiveness of service delivery in areas that are neither rural nor geographically remote. This potential has been embraced at RIDBC Teleschool where telepractice is now used to deliver services to students with hearing loss who are in mainstream educational settings across the large metropolitan area of Sydney (see McCarthy, 2012, in this issue).

The knowledge gathered from the Australian experience can be used to assist the application of telepractice in other countries—particularly in neighboring countries in the Asia-Pacific region. There is great potential for services in many countries to expand their reach and viability by using telepractice service models within their own borders and/or to collaborate with countries like Australia to provide some services remotely. With appropriate consideration of

the potential barriers, the potential application of telepractice across international boundaries is enormous.

Mashima and Holtel (2005), among others (American Speech-Language-Hearing Association, 2010; Doarn et al., 2008; Speedie, Ferguson, Sanders, & Doarn, 2008), have suggested that the future of telepractice is due to a range of factors including: decreasing costs of telecommunications technologies and devices, increasing widespread connectivity, increasing demand for home health care, personnel shortages, and increasing acceptance and satisfaction of participants. In the field of intervention and education for children who are deaf and hard of hearing and their families, the application of this technology and the associated development of new and innovative intervention strategies stands to shape every aspect of service delivery into the future.

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