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# Telerehabilitation Position Paper

The purpose of this paper is to articulate the position of the American Occupational Therapy Association (AOTA) regarding the use of telerehabilitation technologies by occupational therapists and occupational therapy assistants.<sup>1</sup> Telerehabilitation is the clinical application of consultative, preventative, diagnostic, and therapeutic services via two-way interactive telecommunication technology.

The AOTA asserts that the same ethical and professional standards that apply to the traditional delivery of occupational therapy services also apply to the delivery of services received via telepractice. This document examines issues related to telerehabilitation and service provision, practitioner<sup>2</sup> qualifications, ethics, and reimbursement. Key terms related to telerehabilitation are defined in the Appendix. Occupational therapy practitioners are the intended audience for this document, although those who supervise or reimburse occupational therapy services also may find it helpful.

## Service Provision

Over the past decade, computer and information technologies have become increasingly accessible and cost-effective as a means of providing educational and health care services. This has occurred simultaneously with an increased national emphasis on the quality of rural health care services, a focus on evidence-based outcomes, and a general increase in demand on practitioners' time and expertise. As a result, occupational therapy practitioners are initiating and participating in the use of telerehabilitation technology

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<sup>1</sup>The occupational therapist is responsible for all aspects of occupational therapy service delivery and is accountable for the safety and effectiveness of the occupational therapy service delivery process. The occupational therapy assistant delivers occupational therapy services under the supervision of and in partnership with the occupational therapist (AOTA, 2004a).

<sup>2</sup>The term "practitioner" refers to an individual initially certified to practice as an occupational therapist or occupational therapy assistant or licensed or regulated by a state, district, commonwealth, or territory of the United States to practice as an occupational therapist or occupational therapy assistant and who has not had that certification, license, or regulation revoked due to disciplinary action (AOTA, 2004b).

as a method of service delivery for (1) evaluation, (2) intervention, (3) consultation, (4) education, and (5) supervision of students and other personnel.

Telerehabilitation offers many new opportunities to provide occupational therapy services in alternative ways. Its effectiveness depends upon the specifics of the application, including the type and severity of disability, purpose of assessment, intervention goals, specifics of the technology, and infrastructure of both the local and remote sites. Current research and anecdotal reports regarding the use and efficacy of telepractice have yielded encouraging, but as yet inconclusive, preliminary findings. For the most part, research evidence cited in this document is specific to occupational therapy, though some studies related to the use of telecommunication and telerehabilitation technologies in allied health or medicine also are included, as appropriate.

### *Telerehabilitation for Evaluation*

Cooper, Fitzgerald, Boninger, Cooper, Shapcott, Cohen et al. (2002) and Shaw, Dreyer, and Wittman (2001) found that low-cost, "dial-up" methods of Internet connection may be effective for conducting interview assessments. Low-speed Internet connections also have been found to be adequate for observation of performance of daily living tasks (Shaw et al., 2001), overall assessment of sitting posture (Cooper et al., 2002), and collaboration regarding goal-setting and intervention planning (Cooper et al., 2002). However, high-speed connections, specific assessment protocols, and clinicians experienced in the use of telerehabilitation technology are recommended for evaluations that require detailed observations of occupational performance or motor performance skills (Allegretti, Fitzgerald, Schmeler, Cooper, Boninger, & Shapcott, 2004; Shaw et al., 2001). Assessments conducted using telerehabilitation methods are often low-cost for clients, particularly when they eliminate long-distance travel, but may be initially time-consuming for clinicians. Massman, Dodge, Fortman, Schwartz, and Salem (1999) suggest that as remote sites become more familiar with preparing clients for teleconsultations, telerehabilitation will become more efficient and cost-effective for clinicians and consumers.

### *Telerehabilitation in Intervention Planning, Implementation, and Follow-up Care*

Research and documentation regarding the use of telerehabilitation methods for ongoing implementation of intervention is minimal at the time of this writing. Guilfoyle, Wootton, Hassall, Offer, Warren, and Smith (2003) investigated whether intervention plans developed following allied health (including occupational therapy) evaluation carried out via videoconferencing were comparable to those made following evaluations carried out face to face. Results indicated that despite the therapists' preference for working in person with their clients, intervention plans formulated via videoconferencing were reasonably similar to those formulated in face-to-face evaluation. Follow-up care conducted using telerehabilitation methods, including videophones and videoconferencing, has been managed successfully by medical personnel to address concerns such as pressure sores (Vesmarovich, Walker, Hauber, Temkin, & Burns, 1999), and by interdisciplinary teams to manage post-stroke care and rehabilitation for a client in a rural area (Clark, Dawson, Scheideman-Miller, & Post, 2002). No published studies or reports were found regarding the use of telerehabilitation methods for follow-up of specific occupational therapy services.

### *Telerehabilitation in Consultation*

Wakeford (2002) documents the use of videoconferencing via a high-speed Internet connection to obtain consultation regarding specific areas of play performance for a young child with special needs. Cooper et al. (2002) describe the use of telerehabilitation methods to provide consultation regarding wheelchair mobility, and the Sister Kenny Institute in Minneapolis, Minnesota, routinely uses telerehabilitation technologies to provide consultation to a physical therapist in a remote clinic in American Samoa (White, 2003). As with evaluation, high-speed connections facilitate detailed observations, while low-speed connections or telecommunication methods other than computer-based may be adequate for general observations, interviews, or other conversation-based collaboration.

### *Telerehabilitation in Education*

Multi-point Internet videoconferencing has been used by the TelAbility Project ([www.telability.org](http://www.telability.org)) in Chapel Hill, North Carolina, to provide evidence-based continuing education for physical and occupational therapy practitioners on topics such as constraint induced movement therapy, music therapy interventions, and the use of specific standardized assessment tools in telerehabilitation. This was enhanced by the capability of the videoconferencing soft-

ware to allow sharing of word processing documents and videotaped case study information. Just as telerehabilitation methods may be used in consultative arenas that include practitioners and clients, those methods also may be used to support a continuing education model, particularly when interested parties are apart from one another and travel capabilities for clinicians are limited.

### *Telerehabilitation in Supervision of Students and Other Personnel*

State licensure laws, institution-specific guidelines regarding supervision of occupational therapy students and personnel, the AOTA *Guidelines for Supervision, Roles, and Responsibilities During the Delivery of Occupational Therapy Services* (AOTA, 2004a), and the AOTA *Occupational Therapy Code of Ethics* (AOTA, 2000) must be followed, regardless of the method(s) of supervision chosen. However, the use of telecommunications technology may be used within those laws and guidelines as an adjunct to face-to-face methods, to support students and practitioners working in isolated or rural areas, and to allow students opportunities to pursue nontraditional fieldwork placements that cannot offer on-site supervision (Miller, Miller, Burton, Sprang, & Adams, 2003; Hubbard, 2000). At the time of this writing, there were no published studies regarding the use of telehealth technologies to provide supervision of occupational therapy assistants.

## Practitioner Qualifications

Occupational therapy practitioners using telehealth technology as a method of service delivery should be competent in operating the system (hardware and software) or consistently have the support of technical assistance personnel. Practitioners also must have a working knowledge of the benefits and limitations of the technology, especially the interrelated issues of bandwidth and communication protocols across sites. Finally, practitioners should be competent in, and comfortable with, using on-camera skills that facilitate therapeutic and/or collaborative interactions. It is strongly recommended that occupational therapy practitioners using telerehabilitation as a method of service delivery develop their proficiency through various means, including, but not limited to, continuing education and on-site training by experts.

## Ethical Issues

Client confidentiality can be a significant issue with the use of telerehabilitation interactions. Secure connections need to be established, and practitioners should seek the expertise

of network professionals to ensure that firewalls are active or encryption techniques have been established with the connection. This is paramount with Internet-based connections, and assurances of HIPAA compliance should be obtained. Consumers also should provide informed consent for the telerehabilitation service as well as be given the opportunity to refuse the service if they feel their safety or privacy will be compromised.

## Billing and Reimbursement

Typically, occupational therapists and occupational therapy assistants using telehealth technologies to deliver services have relied on state and federal grants to support telerehabilitation projects. However, in some cases, practitioners have been able to negotiate fee-for-service with various third-party payers or, in some cases, private pay. A recent survey (Palsbo, 2004) conducted to assess current payment practices for telerehabilitation services by state Medicaid programs revealed that while most states reimburse *telemedicine* services (primarily provided by physicians and nurses), *telerehabilitation* (including occupational therapy, physical therapy, and speech-language therapy) is reimbursed in only four states (Hawaii, Louisiana, Minnesota, and Nebraska). The survey report did not indicate the frequency with which telerehabilitation services were billed or reimbursed in those states, nor the types of facilities or providers that were reimbursed. The report cited provider shortages in rural areas as the primary incentive for reimbursing telerehabilitation. Although Medicaid and other third-party payment are not yet widespread, they reflect a potential trend toward more routine reimbursement for telerehabilitation services.

## Governmental Influences

### *State Regulations*

Practitioners using telerehabilitation methods must comply with licensure laws and other state legislation regulating the practice of occupational therapy in the state or states in which those services are received. When telerehabilitation is used to provide individual client services (evaluation and intervention), the practitioner must be licensed in the state in which the client receives those services. The provision of consultation to another practitioner or continuing education content (e.g., workshop or seminar) using this technology may or may not be addressed by individual state regulations, and it is recommended that practitioners using the technology in these ways investigate those regulations to ensure compliance.

## *Federal Influence*

In 1998, the National Institute on Disabilities and Rehabilitation Research established a Rehabilitation Engineering Research Center for Telerehabilitation, the purpose of which is to support research and development of rehabilitation consultation, assessment, monitoring, and intervention at a distance.

As of 2005, many of the Veteran's Health Administration's (VHA) Veteran's Integrated Service Networks are using telerehabilitation technologies at VA Medical Centers and Health Care Systems, and the VHA's Rehabilitation Research and Development Service supports research to expand the use of telerehabilitation to address various rehabilitation health care issues (Veteran's Health Administration, 2001, 2005).

## Case Studies

Though there are a variety of methods and applications for telerehabilitation available within occupational therapy practice, the most common use currently occurs as consultation within the intervention process, with the intent of improving specific client outcomes. As noted in the literature cited in this document, the use of telehealth technology for the purposes of providing continuing education to practitioners and supervision to students and occupational therapy assistants show promise, but are not yet well documented. The two cases presented here provide examples of the use of telerehabilitation for consultation to improve client outcomes.

### *Case #1: Margaret*

Margaret lived in a rural area. She received occupational therapy services through a local hospital to address problems with occupational performance associated with right hemiparesis and painful, subluxed shoulder related to a recent stroke. The on-site (local) occupational therapist requested a telerehabilitation consult from a practitioner with specialized training in neurorehabilitation who practiced in a metropolitan hospital approximately 150 miles away. Margaret was evaluated via high-end videoconferencing equipment. During this 45-minute session, she and the local therapist were asked to engage in several activities, which allowed the consulting therapist to observe the effects of both limited range of motion and the presence of pain at the shoulder on occupational performance. The teleconsultation resulted in changes to the intervention plan (including the addition of a hemi-cuff sling and functional electrical stimulation to the shoulder) that advanced Margaret's progress toward her occupational performance goals.

## Case #2: Rose

Rose is a charming, social 3½-year-old girl who was diagnosed with spastic quadriplegic cerebral palsy at birth. She received occupational therapy, physical therapy, speech-language therapy, and special education services at her preschool.

One of the concerns about which Rose's occupational therapist sought consultation was the potential for Rose to use powered mobility. The consulting site had professionals with expertise in this area, but was located 150 miles away. Preliminary information, such as recent medical history and Rose's current levels of performance in play, self-care, communication, learning, and mobility, was sent in an organized format to the consulting site several days before the videoconference.

The consult question regarding the potential for using powered mobility led to a surprising outcome. One of the reasons the local therapists had asked the question was that Rose's family had minimal financial resources. Rose's family and therapists were concerned about using Rose's Medicaid or other financial resources to purchase a power wheelchair if she was not going to be able to use it. The therapists at the remote site agreed that Rose had good potential to use a power chair, then offered to loan a chair that was in their assistive technology inventory but not being used by anyone in their area. Arrangements were made to transport the chair to Rose's child care program, where she could work with her local therapists on learning to drive it. Although the chair required seating modifications and joystick adaptations and she needed practice, learning to use this chair gave Rose more options, specifically for joining friends in outdoor play, and in general for overall independence.

## Summary

Though the use of telerehabilitation technologies is expanding quickly as a viable method of service delivery for many practitioners within the field of health care, there remain issues of efficacy, cost, reimbursement, legal and ethical ramifications, and practitioner competence. There is a significant need for occupational therapy practitioners to document, research, and publish on the efficacy of consultation, intervention, and follow-up services provided using telerehabilitation technologies. Further investigation of the use of telehealth technologies in professional development and supervision is needed to clarify effectiveness and efficiency, as demand for services, particularly in rural areas, threatens to exceed services available. Occupational therapy practitioners using telerehabilitation methods must adhere

to the AOTA Occupational Therapy *Code of Ethics* (AOTA, 2000), maintain the AOTA *Standards of Practice* (AOTA, 2005), and comply with state regulations, ensuring both their proficiencies as practitioners and the well being of their clients.

## References

- Allegretti, A., Fitzgerald, S., Schmeler, M., Cooper, R. A., Boninger, M. L., & Shapcott, N. (2004). Pelvic positioning evaluations for wheelchair selection: A comparison between in-person and video conferencing. In *Proceedings of the 20th International Seating Symposium* (pp. 215–216). Vancouver, Canada: RESNA.
- American Occupational Therapy Association. (2000). Occupational therapy code of ethics. *American Journal of Occupational Therapy, 54*, 614–616.
- American Occupational Therapy Association. (2002). Occupational therapy practice framework: Domain and process. *American Journal of Occupational Therapy, 56*, 609–639.
- American Occupational Therapy Association. (2004a). Guidelines for supervision, roles, and responsibilities during the delivery of occupational therapy services. *American Journal of Occupational Therapy, 58*, 663–667.
- American Occupational Therapy Association. (2004b). Policy 1.44: Categories of occupational therapy personnel. In *Policy manual* (2004 ed.). Bethesda, MD: Author.
- American Occupational Therapy Association. (2005). Standards of practice for occupational therapy [draft]. (Available from the Practice Department, American Occupational Therapy Association, 4720 Montgomery Lane, PO Box 31220, Bethesda, MD 20824-1220.)
- Association of Telehealth Service Providers. (2004). *ATSP telemedicine glossary*. Retrieved from <http://www.atsp.org/telemedicine/homepage.asp> January 23, 2004.
- Clark, P. G., Dawson, S. J., Scheideman-Miller, C., & Post, M. I. (2002). Telerehab: Stroke teletherapy and management using two-way interactive video. *Neurology Report, 26*, 87–93.
- Cooper, R., Fitzgerald, S., Boninger, M. L., Cooper, R. A., Shapcott, N., Cohen, L. et al. (2002). Using telerehabilitation to aid in selecting a wheelchair. In R. Simpson (Ed.), *RESNA 2002 Annual Conference Proceedings* (pp. 245–247). Minneapolis, MN: RESNA Press.
- Guilfoyle, C., Wootton, R., Hassall, S., Offer, J., Warren, M., & Smith, D. (2003). Preliminary experience of allied health assessments delivered face to face and by videoconference to a residential facility for elderly people. *Journal of Telemed Telecare, 9*, 230–233.
- Hubbard, S. (2000, Dec. 4 & 18). A case example of remote supervision. *OT Practice, 5*(24), 16–18.
- Law, M., Polatajiko, H., Baptiste, W., & Townsend, E. (1997). Core concepts of occupational therapy. In E. Townsend (Ed.), *Enabling occupation: An occupational therapy perspective* (pp. 29–56). Ottawa, ON: Canadian Association of Occupational Therapists.
- Linkous, J. D. (2004). Toward a rapidly evolving definition of telemedicine. Retrieved from <http://www.atmeda.org/news/definition.html> January 22, 2004.

- Massman, N. J., Dodge, J. D., Fortman, K. K., Schwartz, K. J., & Solem, L. D. (1999). Burns follow-up: An innovative application of telemedicine. *Journal of Telemedicine and Telecare*, 5, Suppl 1, S52–S54.
- Miller, T. W., Miller, J. M., Burton, D., Sprang, R., & Adams, J. (2003). Telehealth: A model for clinical supervision in allied health. *The Internet Journal of Allied Health Sciences & Practice*, 1(2).
- Palsbo, S. E. (2004). Medicaid payment for telerehabilitation. *Archives of Physical Medicine and Rehabilitation*, 85, 1198–1191.
- Shaw, D. K., Dreyer, N. C., Dreyer, K. A., & Wittman, P. P. (2001). The efficacy of telemedicine in occupational therapy. *Journal of Allied Health*, 30(1), 39–42.
- Vesmarovich, S., Walker, T., Hauber, R. P., Temkin, A., & Burns, R. (1999). Innovations in practice: Use of telerehabilitation to manage pressure ulcers in persons with spinal cord injuries. *Advances in Wound Care*, 12(5), 264–269.
- Veteran's Health Administration. (2001). *VA research: A foundation of veteran's health care. Annual report 2001*. Department of Veteran's Affairs, Office of Research and Development. Retrieved March 23, 2005 from <http://www1.va.gov/resdev/resources/pubs/docs/annrpt01.pdf>.
- Veteran's Health Administration. (2005). *VHA telerehabilitation overview*. Retrieved March 23, 2005 from <http://www.va.gov/telehealth/Telerehabilitation/overview.asp>.
- Wakeford, L. (2002, Nov. 25). Using telehealth technology to provide services to children with special needs. *OT Practice*, 7(21), 12–16.
- White, M. (2003, May). Telerehabilitation: A primer for the OT practitioner. Presented at the AOTA Annual Conference and Expo, Washington, DC.

## Additional Resources

- Canadian Occupational Therapy Association. <http://www.caot.ca/>
- Journal of Telemedicine and Telecare*. <http://www.rsm.ac.uk/pub/jtt.htm>
- Rehabilitation Engineering Research Center (RERC) for Telerehabilitation. <http://www.telerehab-nrh.org>

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- Adopted by the Representative Assembly 2005C241*

## Appendix: Definition of Terms

**Bandwidth:** The speed of a connection that determines the quality of the audio and visual connection.

**Occupational therapy:** A profession that addresses engagement in occupations to support participation in context(s) (AOTA, 2002).

**Occupations:** “Activities of everyday life, named, organized, and given value and meaning by individuals and a culture” (Law, Polatajko, Baptiste, & Townsend, 1997, p. 34).

**Plain Old Telephone System (POTS):** Standard analog home phone service, referred to as dial-up when Internet access is involved.

**Protocol:** In telepractice, a written document specifying standard operating policies and procedures for application of computer and information technologies to the delivery of services.

**Telehealth:** “The electronic provision of health care and information services for the direct benefit of individual patients and their families” (Association of Telehealth Service Providers, 2004).

**Telehealth Technology:** The hardware and software used in, as well as the overall process of, doing telemedicine and telerehabilitation.

**Telemedicine:** “The use of medical information exchanged from one site to another via electronic communications for the health and education of the patient or health care provider and for the purpose of improving patient care” (Linkous, 2004). Note: This is an older and more restrictive term than telehealth and implies delivery of physicians’ services.

**Telepractice:** Service delivery characteristic of a particular profession, preformed by means of telehealth technology rather than traditional face-to-face methods.

**Telerehabilitation:** The provision of rehabilitation services, such as occupational therapy, physical therapy, and speech–language therapy using telehealth technology.