OT PRACTICE DOCUMENT: ASSISTIVE TECHNOLOGY & ARTIFICIAL INTELLIGENCE

WHAT IS ASSISTIVE TECHNOLOGY?

Assistive technology (AT) is an umbrella term which includes both assistive products and the services which are required to assess, plan and implement them. Assistive products (AP) include any device or system that improves or maintains an individual's daily function, and promotes participation, well-being, and inclusion[1]. AP can be used by clients of all ages and clinical conditions to support various activities including cognition, moving around, self-care, communicating, hearing and seeing[2]. Examples of AP include mobility aids, screen readers, voice recognition software, eye-gaze systems, automatic door openers and grab bars.

For many individuals, AT is necessary for accessing education, employment, and basic services. In recognition of the importance of AT in supporting equitable access to supports and services, access to AT is considered a fundamental human right[3].

THE ROLE OF OCCUPATIONAL THERAPY IN AT

1. **Assess** and select the product that best meets the person's needs, goals, and preferences taking into consideration the interaction between person, environment, and occupation factors.
2. **Fit** the product
3. **Teach** the person, and when applicable caregivers, how to safely use and take care of the product.
4. **Follow up**, including facilitating basic maintenance. If the person is expected to need AT for a long period of time, it is recommended that the person refers back for reassessment if needs change.

AT is a core competency within occupational therapy practice. Regardless of area of practice, almost all occupational therapists at some point will recommend AP to their clients[2]. To ensure that clients benefit from, and use recommended AP, occupational therapists are recommended to follow the four-step process developed by the WHO[4]:

The occupational therapist role in AT may also include[2,5,6]:

- Engaging in professional opportunities to maintain skills and knowledge, particularly when working with rapidly evolving technologies
- Advocating for access to, and funding for, all aspects of the AP acquisition process including assessment, purchase, training in AP-use and follow-up
- Educating clients on their right to access AP and associated services under relevant legislation.
- Recognizing the critical role of AT in enacting human rights
- Improving the sustainability of equipment provision (e.g., promoting the provision of products that are created with minimal environmental impact and with sustainable materials)

Prescription of some APs requires specialized training; therefore, when prescribing AT, occupational therapists have the ethical and professional responsibility to only provide services and recommendations within their own level of competence and scope of practice[6].

AT AND ARTIFICIAL INTELLIGENCE (AI)

AI refers to the capability of computer systems to perform activities that require human-level intelligence (e.g., speech recognition)[7]. AI has the potential of changing the way in which individuals interact with the world. Some examples of how AI is contributing to AT include[8]:

- Analysis of data from various sources (e.g., wearable sensors, mobile apps) to predict health outcomes and personalize therapy plans. This predictive capability can help therapists identify potential challenges clients might face and adjust interventions accordingly.

- Enhancement of communication to improve interaction, social integration, and independence for individuals facing communication challenges (e.g., AI can convert sign language into spoken word and provide captioning for people with hearing impairments).
- Development of navigation/guidance systems for people with visual impairments (e.g., intelligent white canes).
- Provision of cognitive assistance through personal assistants like Siri, Alexa or Chat GPT.
- Support for clients with mobility or dexterity impairments in their daily tasks using AI-powered voice assistants. These devices can support independence by helping clients control home appliances, make phone calls, send messages, or search the internet.
- Provision of feedback on the quality of movements during rehabilitation exercises and enhance mobility aids and prosthetic limbs by creating more intuitive and natural control mechanisms.
- Enhancement of smart home systems to support aging in place (e.g., fall detection).
- Provision of virtual care agents for remote monitoring and telehealth to enable monitoring of clients' progress remotely which can facilitate timely adjustments to therapy plans.
- Creation of immersive rehabilitation environments using virtual Reality and Augmented Reality driven by AI (i.e., simulate real-life activities and/or therapeutic games) which may be helpful for improving motor skills, cognitive functioning and spatial awareness.

When using AI in practice, occupational therapists must evaluate risks to privacy by understanding and complying with relevant laws, obtaining informed consent, and ensuring secure data handling when integrating AI and technology into their services. Occupational therapists should also provide clients with necessary information regarding risks to privacy to allow the client to make an informed choice regarding the use of technologies using AI.

AI typically uses large data "training sets" to create algorithms. Advocating for the inclusion of diverse groups (including people with disabilities) when developing products using AI is essential to ensure that these technologies remain relevant and applicable the needs and characteristics of said groups.

For more information about occupational therapy and AI, consult this CAOT resource.
https://caot.ca/document/8063/OT%20&%20AI_Final%20Copy_EN.pdf

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All Occupational Therapy Practice Documents have been developed and reviewed in collaboration with diverse occupational therapists with lived experience and expertise in the respective areas of practice. For any feedback, contact practice@caot.ca.