

Statement on Assistive Technology and Rehabilitation

Maximising human potential through rehabilitation

Human capability is strongly influenced by our body structures and functions, health conditions, personal factors and environments. Products and technology are a key facilitator within environments¹, with one in ten people use some form of technology to assist daily living, and many more having unmet needs for assistive technologies².

Assistive Technology: an underestimated rehabilitation intervention

AT is one of six rehabilitation strategies³. The majority of the research and intervention 'spend' focusses on the strategies of reducing impairments. Evidence demonstrates that introducing assistive products and services, alongside the strategies of redesigning activities and redesigning the environment, is also a cost-effective intervention. The 'technology chain'⁴ of inclusive environments plus technologies designed for a diversity of users, enacts the social model of disability and has the potential to improve population-level outcomes⁵. Rehabilitation research has underestimated the effectiveness of AT as it is often 'invisible' within a person's or community's context⁶. Most effective when combined with environmental modifications, service elements and personal support, AT solutions are 'multicomponent' interventions and their efficacy requires appropriate measurement⁷.

Assistive Technology Outcomes

Increased participation (objective and subjective), satisfaction, quality of life, well-being and inclusion are key primary outcome dimensions valued by AT users and resulting from tailored AT provision. Secondary outcomes include cost effectiveness (including minimising social costs and cost offsets), decreased support costs, lowered admission and readmission rates. Some concepts are of more value to rehabilitation practitioners than to the person⁸, for example AT users tell us that autonomy and self-efficacy may be more important than independence and function. Some research tools and methods (such as health-related quality of life outcome measures) have inherent disability bias⁹.

Co-producing outcomes (patient led outcomes)

Assistive technology practice is characterised by heterogeneous populations and unique product solutions, adapted to individualised environments and goals. Assistive technology outcomes research therefore offers rehabilitation¹⁰ a blueprint for collaborative practice and for patient-reported or person-led outcomes¹¹. For these reasons, recipients of disability and rehabilitation services have a role to play in co-designing outcomes research¹².

¹ W.H.O. (2001). *International Classification of Functioning, Disability and Health*. Geneva: World Health Organisation.

² W.H.O. (2011). *World Report on Disability*. Malta, World Health Organisation.

³ [reduce impairment, compensate for impairment, introduce personal support, redesign activities, environment, introduce AT] FROM Smith, R. O. (1996). Measuring the outcomes of assistive technology: challenge and innovation. *Assistive Technology*, 8(2), 71-81.

⁴ AAATE. (October, 2012). *Service Delivery Systems for Assistive Technology in Europe: Position Paper*. Retrieved from <http://www.at4all.eu/news/detail.aspx?id=406&tipo=1>

⁵ Schraner, I., & De Jonge, D. (2010). Economics of Inclusiveness - Can We as a Society Afford Not to Provide Assistive Technology and Not to Use Universal Design? In E. Steinfeld & J. Maisel (Eds.), *In The State of the Science: Emerging Research and Developments in Universal Design* (pp. 132-143). New York: Bentham Sciences.

⁶ Rust, K., & Smith, R. (2005). Assistive technology in the measurement of rehabilitation and health outcomes: a review and analysis of instruments. *American Journal of Physical Medicine and Rehabilitation*, 84(10), 780-793.

⁷ Layton, N (in press) Assistive Technology for Participation, in Occupational Therapy for People Experiencing Illness, Injury or Impairment: Enabling Occupation, Promoting Participation, Seventh Edition. Michael Curtin, Mary Egan and Jo Adams (eds). Elsevier.

⁸ Rist, P., Freas, D., Maislin, G., & Stineman, M. (2008). Recovery from Disablement: what functional abilities to rehabilitation professionals value the most? *Archives of Physical Medicine and Rehabilitation*, 89, 1600-1606.

⁹ Gottlieb, D., Layton, N., & Wilson, E. (2010). Comparative Effectiveness Report - online surveys. *Disability & Rehabilitation: Assistive Technology*, 5 (6), 401-410. oi:10.3109/17483101003793404

¹⁰ Dijkers, M. (2009). *When the best is the enemy of the good: The nature of research evidence used in systematic reviews and guidelines*. Retrieved from Austin, TX www.ktdrr.org/ktlibrary/articles_pubs/nccdrwork/tfsr_best/tfsr_best.pdf

¹¹ Friedly, J., Akuthota, V., Amtmann, D., & Patrick, D. (2014). Why Disability and Rehabilitation Specialists Should Lead the Way in Patient-Reported Outcomes. *Archives of Physical Medicine and Rehabilitation*, 95, 1419-1422.

¹² Layton, N., Buchanan, R & Wilson, E (in press) Occupy Research, in Occupation Based Social Inclusion. Nick Pollard, Hanneke van Bruggen and Sarah Kantastzis (eds).

Assistive Technology Professional Organisations

Multi-stakeholder networks of AT Professional organisations and AT product databases collaborate internationally to support good practice in AT information provision, skilling, and AT user-focussed outcomes research. ARATA, as the Australian peak body, take an 'evidence-into-practice' approach to resource AT users and allied health professionals with good practice standards and indicators:

| | | |
|---|--|---|
| <p>Good practice principles Assistive technology provision process is person centred, not product or service centred. The outcome is enablement of participation in desired activities. An evidence-informed process is used in assistive technology provision. Assistive technology provision is conducted in an ethical manner, and assistive technology services are provided in a sustainable manner¹³.</p> | | <p>Good practice processes</p> <ul style="list-style-type: none"> • information • assessment • identifying and trialling assistive solutions • purchasing and customising • supporting ongoing and effective use • maintenance and review¹⁴¹⁵ |
| <p>Meeting consumer-defined benchmarks¹⁶</p> | | |
| <p>Collaborative practice indicators</p> | <ul style="list-style-type: none"> • Active involvement in decision-making • Determination of the best combination of devices, support and environmental design • Consideration of needs across the lifespan and as needs change • Consideration of personal preferences and identity so that AT is chosen to suit lifestyle and participation | |
| <p>Expertise indicators</p> | <ul style="list-style-type: none"> • Holistic assessment of needs, so that each product works well with other supports • Support throughout the process of getting AT including trial, training and maintenance | |
| <p>Resourcing indicators</p> | <ul style="list-style-type: none"> • Access to sufficient funding for quality devices • Funding to meet needs in every area of life | |

Defining Assistive Technology

Assistive **technology** comprises products and services used to provide assistive solutions that enable individuals' functioning and participation.

Assistive **products** are any product (including devices, equipment, instruments and software), especially produced or generally available, used by or for persons with disability for participation;• to protect, support, train, measure or substitute for body functions/structures and activities;• or to prevent impairments, activity limitations or participation restrictions¹⁷

Services or 'soft technologies' are the human elements of evaluation, adaptation, trialling and collaboration. Skilled AT practitioners integrate occupational analysis, task adaptation and work hardening to create fully individualised solutions. Products are most effective when delivered with these service elements as an integrated whole. Allied health practitioners such as occupational therapists, physiotherapists, rehabilitation engineers, ICT professionals, prosthetist/orthotists and credentialed 'AT user experts' and 'AT suppliers' may deliver AT services.

¹³ Cook, A., & Polgar, J. (2015). Assistive Technologies (4th Edition). St. Louis: Mosby.

¹⁴ Andrich R, Mathiassen N-E, Hoogerwerf E-J, Gelderblom GJ. Service delivery systems for assistive technology in Europe: An AAATE/EASTIN position paper. Technology and Disability. 2013;25(3):127-146.

¹⁵ Australian Rehabilitation and Assistive Technology Association. Assistive Technology within the NDIS: Position Paper. Caloundra: ARATA;2012.

¹⁶ de Jonge, D., Layton, N., Vicary, F., & Steel, E. J. (2015). Motivations and Incentives: Exploring Assistive Technology Service Delivery from The Perspectives Of Multiple Stakeholders. Paper presented at the New Frontiers in Assistive Technology, Denver CO.

¹⁷ ISO. (2016). *Assistive products for persons with disability — Classification and terminology*.