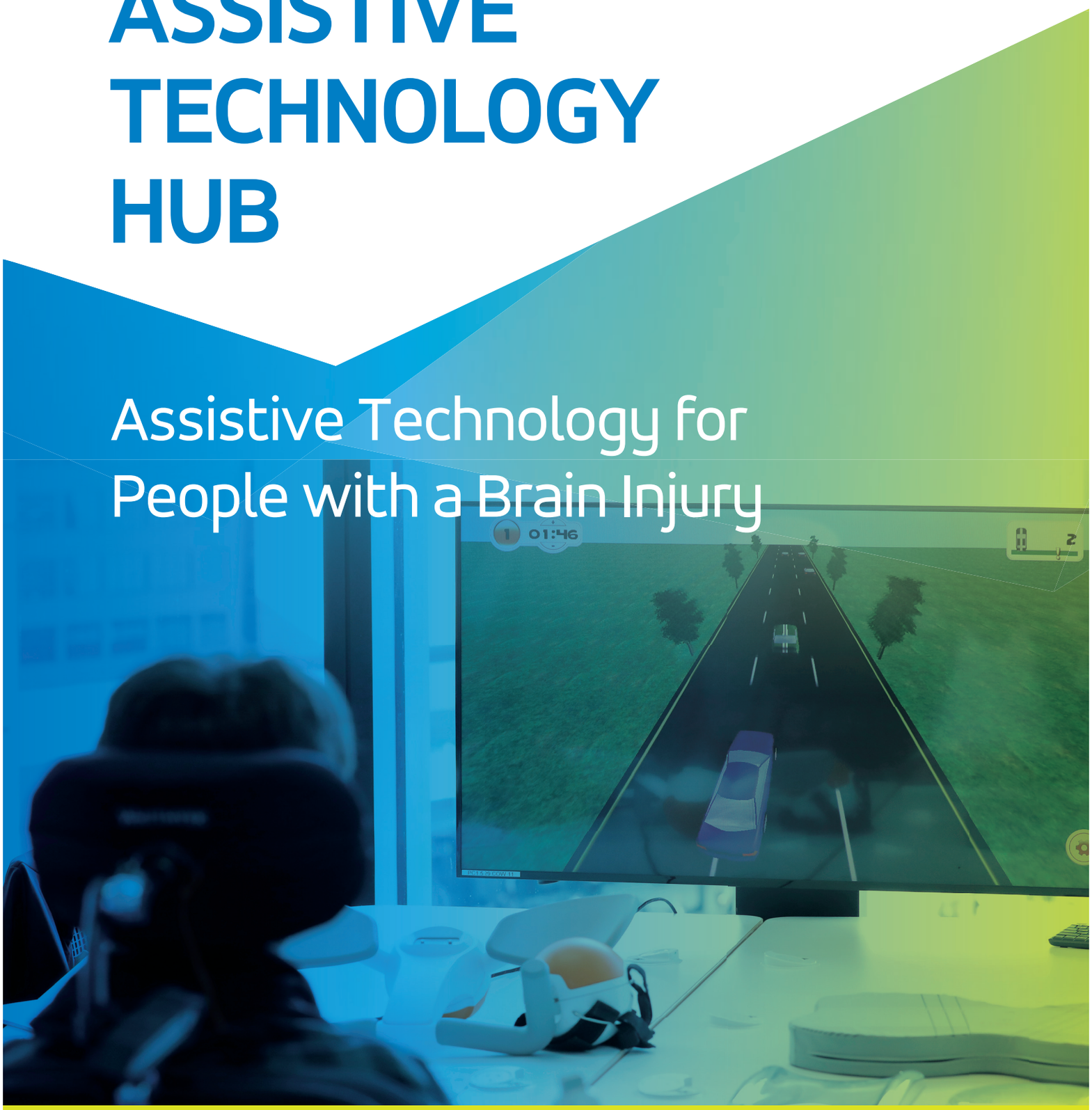
Ingham Institute
Applied Medical Research

ASSISTIVE TECHNOLOGY HUB

Assistive Technology for People with a Brain Injury



A Clinician's Guide

Introduction

Traumatic Brain Injury (TBI)

Traumatic brain injury (TBI) is a leading cause of disability in Australia and is the result of a sudden injury that causes damage to the brain.[1]

TBI often leads to long-term cognitive, physical, behavioural, or emotional impairment.[2] These impairments affect people's ability to self-manage health, wellness, and safety, and reduces independence in the home and community. This can result in increased family and carer involvement to support the person in the long and short-term.[3] The use of assistive products can help support clients and their families throughout the client's recovery.[4]

Assistive Technology (AT)

Assistive Technology (AT) is used to describe the products, and services that support the use of the assistive products, which enable individuals to participate in everyday activities. Assistive products may be specifically produced or generally available. They are used by people experiencing impairment to support them to fill the capability gap. These products provide individuals with increased function and independence. Potentially, they reduce the reliance of clients on family and carers (https://www.arata.org.au/about-at/).

One of the main challenges of AT is that one size does not fit all. One client with a TBI may be able to successfully use a smart device to support their independence, whereas another may find accessing the smart device very challenging due to cognitive or physical impairment.[5] As such the assessment and implementation of AT has to be individualised for each client.

1 AIHW, Helps Y, Henley G, Harrison J. (2008). Hospital separations due to traumatic brain injury, Australia 2004-05. Canberra: AIHW

2 Maas, A. I., Stocchetti, N., & Bullock, R. (2008). Moderate and severe traumatic brain injury in adults. The Lancet. Neurology, 7(8), 728–741. https://doi.org/10.1016/S1474-4422(08)70164-9

3 Fisher, A., Bellon, M., Lawn, S., & Lennon, S. (2020). Brain injury, behaviour support, and family involvement: putting the pieces together and looking forward. Disability and rehabilitation, 42(9), 1305–1315. https://doi.org/10.1080/09638288.2018.1522551

4 Wong, Sinclair, K., Seabrook, E., McKay, A., & Ponsford, J. (2017). Smartphones as assistive technology following traumatic brain injury: a preliminary study of what helps and what hinders. Disability and Rehabilitation, 39(23), 2387–2394. https://doi.org/10.1080/09638288.2016.1226434

5 Oliver, M. (2019). Assistive Technology in Polytrauma Rehabilitation. Physical medicine and rehabilitation clinics of North America, 30(1), 217–259. https://doi.org/10.1016/j.pmr.2018.08.002

Human Activity Assistive Technology (HAAT) Model

The Human Activity Assistive Technology (HAAT) model is a framework for the provision of AT in clinical practice. The model consists of four core components:

- the human
- the activity
- the AT
- the context - physical, social, cultural and environmental.

The model emphasises the human (client) as the central focus and highlights how the key components interact and influence each other. Using the HAAT model will help the clinician better understand these influences and guide the process assessment, prescription and evaluation.[6]

6 Giesbrecht, E. (2013). Application of the human activity assistive technology model for occupational therapy research Australian Occupational Therapy Journal, 60(4), 230-240. https://doi.org/10.1111/1440-1630.12054

Assessment and Implementation

When working to deliver a piece of AT for a client the following steps can be used to guide the assessment and implementation.[7]

Meeting with the Client

Meeting with the client helps to gain a broad picture of their living situation, needs, activities, and life goals. It is also useful to determine the client's interests, habits, routines, skills, and values. These factors will help you to evaluate the client's motivation to use AT.

Goal Setting

Goal setting involves identifying the areas in which the client experiences difficulties that could be solved with AT.

The aim is to involve the client, their family and carers, where appropriate, to identify meaningful, attainable, and realistic goals. Involving the client and family/carer, where appropriate, can support the client's engagement and motivation throughout the process.

Assessment

The assessment process involves understanding the person's level of function, activity, and personal and environmental factors that will impact on AT chosen and treatment strategies.

Function: this includes establishing the learning capacity of the individual and their current learning strategies. Also, screening of client's psychological status.

Activity: this includes collecting information on client's ability to perform everyday tasks and identify performance skills required to use selected AT.

Personal and environmental factors: this involves understanding the societal influence on client's willingness to use AT and help better inform treatment strategies.

7 Bartfai, A., & Boman, I.-L. (2014). A multiprofessional client-centred guide to implement

Selection of AT

The client and their family/carer, where appropriate, need to be involved in choosing AT that will facilitate the client's goals. This includes a detailed analysis and matching of the AT to the client's desired outcomes. It is important to also consider the client's individual preferences, any prior experience with AT, and the funding pathways through which the AT will be acquired.

The client will usually need to undergo a process of trialling different assistive products. This process can take time, but it is key to ensuring the AT is the right fit.

Training Plan

AT needs to be introduced with sufficient time for the client to learn and practice with the assistive product. This allows the client the opportunity to build skills and confidence.

Training can be divided into three stages:

Teaching with therapist and/or carer: focus on introducing the client to daily tasks with the AT and performing the tasks repeatedly with a gradual reduction in information and cues.

Self-training: begins when the client masters the use of the AT, with the purpose of increasing fluency and further implementing it into daily life

Integration into daily life: focuses on ensuring that the client has sufficient support as they continue their journey at home.

Evaluation

Evaluation involves assessing whether client's goals were achieved, and if the AT worked as expected. It may be that the client's goals and AT requirements change overtime and this needs be re-assessed routinely.

Consideration

When implementing AT, there are additional factors that may need to be considered.

Client's attitude to and experience with AT

Many clients have a positive attitude to the use of technology. However negative attitudes and a lack of experience with technology can reduce interest in AT and the speed of adoption.[8]

Social Support

Social support such as family, friends or caregivers are a source of motivation and can play a key role in a client's journey with AT. Clients who lack social support may find it harder to implement AT. Lack of appropriate support can lead to challenges during training and familiarisation.

These negative experiences may be difficult for the client to manage without external support, which can lead to reduced confidence in their ability to use AT.

Client's Environment

A client's home and community environment needs to be considered when implementing AT. A supporting environment can help to reduce challenges. Adequate space for set up and use of AT, the availability of transport or the portability of AT all assist in supporting positive experiences. Reliable internet access is also key.

Clinician Capability

In a survey of clinicians conducted by the Assistive Technology Hub, it was found that clinicians generally have positive attitudes towards the use of AT. However, many often have gaps in their knowledge and confidence with AT.

Clinicians also found it difficult to find the time and access resources to implement AT successfully. Clinicians need to keep up to date with current research and training, and access speciality AT services for support.

8 Oyesanya, Thompson, N., Arulselvam, K., & Seel, R. T. (2021). Technology and TBI: Perspectives of persons with TBI and their family caregivers on technology solutions to address health, wellness, and safety concerns. Assistive Technology, 33(4), 190–200. https://doi.org/10.1080/10400435.2019.1612798

Funding

While there are new funding pathways for AT available the perception and reality is often that it can be difficult to fund technology. Additionally, there is a concern around equitable access to AT and a 'funding gap' for particular client groups. Combined with a lack of awareness around alternative options for funding, this means many clients are unable to get the necessary AT to improve their quality of life (assistivetechforall.org.au).

Some potential strategies to overcome these barriers include:

- Promoting AT as a product and service including assessment, trial, prescription, training and evaluation.
- Including the client's support network (that is, family, friends and caregivers - where appropriate) throughout the process.
- Providing clients with education and training to help support them to adjust to AT and build confidence and capacity.
- Developing resources for clients and clinicians to increase awareness of AT services and funding options.

Eligibility and Funding

When working with a client, the clinician may be the first person they consult regarding funding for their AT needs. As such, it is important to be aware of the funding pathways and their eligibility criteria in order to direct the client to the most suitable option for them.

There are multiple funding pathways that people with a brain injury can access to fund AT.

National government agencies:

- National Disability Insurance Scheme (NDIS - www.ndis.gov.au)
- Department of Veteran Affairs (DVA - www.dva.gov.au)

NSW government agencies:

- icare (www.icare.nsw.gov.au)
- EnableNSW (www.enable.health.nsw.gov.au)

Registered charities:

- JMB Foundation (jmbfoundation.org.au)
- Variety, The Children's Charity (www.variety.org.au)

The Assistive Technology Hub

The Assistive Technology Hub is an initiative the Ingham Institute for Applied Medical Research and icare.

The Assistive Technology Hub aims to support people with a brain injury to understand and access assistive technology.

At the Assistive Technology Hub we have therapists who can help you with assistive technology, including:

- Assessment
- Prescription
- Implementation
- Training

Client Brochure

The Assistive Technology Hub has developed a client brochure to help raise awareness of AT, the processes involved and where to find support and information. This brochure may be a useful resource to share with clients throughout their AT journey.

Contact Details

Please reach out to the Assistive Technology Hub for more information

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Assistive Technology Hub

The Assistive Technology Hub is an initiative of

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Applied Medical Research

Supported by

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