

A technology-enabled Life After Stroke

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Plan

- To consider the promise of enabling and enhancing life after stroke with technology
- To consider why we are perhaps not meeting the promise
- To consider how we can, as a community, overcome some of the barriers to the use of technology in life after stroke



Promise & Opportunity

Technology-based interventions can enhance life after stroke via:

- Increasing intensity and repetition of some therapies
- Support for self-management and personalisation of rehabilitation
- Enhancing engagement, interest and participation. Reducing feelings of abandonment?



Wasted Promise?

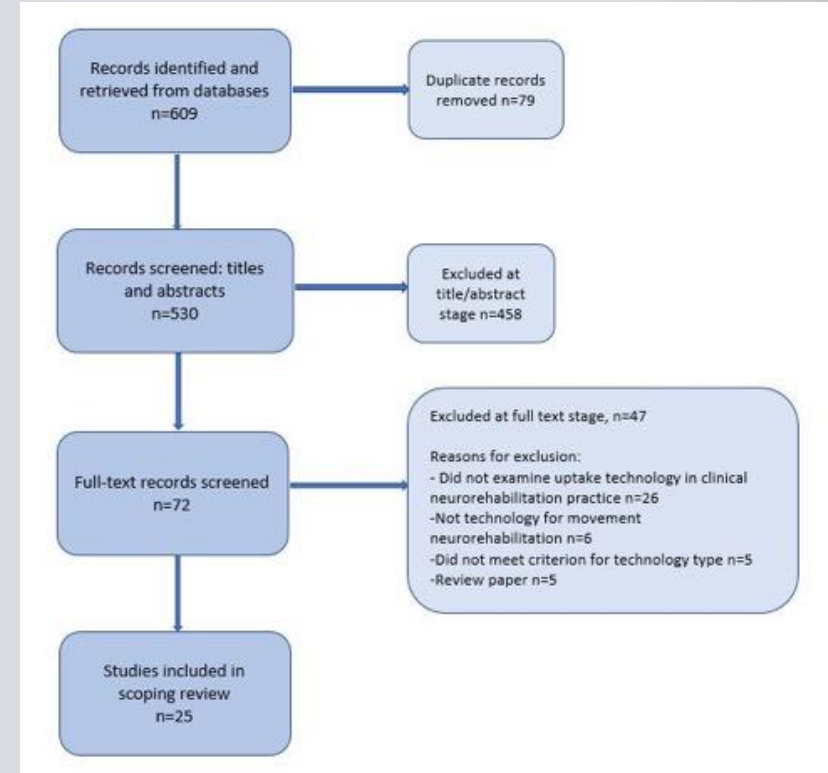
- 17 years for 14% of original research to be integrated into clinical practice
- **42% of 90** available technologies used regularly during **44 hours** of observation, numbers especially **low for measurement technology***
- We are not fully exploiting the opportunities



* Celian et al. 2025 *Arch Rehab Res & Clin Translation*
<https://doi.org/10.1016/j.arrct.2024.100425>

Exploring uptake & sustained use

- A systematic scoping review with evidence mapping^{*}
- Framework: Populations, Concept, Context
- Studies examining uptake or factors influencing uptake of technology in stroke and other neurological conditions (e.g. wearables, VR, robotics); quantitative or qualitative outcomes
- Not service delivery, not neuromodulation, not AI
- Selection and data extraction independent and cross-checked, pairs of authors
- N=25 studies included



^{*}Alt Murphy M, Pradhan S, Levin MF, Hancock NJ. Uptake of Technology for Neurorehabilitation in Clinical Practice: A Scoping Review. *Phys Ther.* Feb 1 2024;104(2)<https://doi.org/10.1093/ptj/pzad140>

Exploring uptake and sustained use

Only 4 studies investigated uptake or factors influencing uptake after sustained use (5 months to three years) in clinical practice:

Feasibility of use increased over time, but-

More time needed for implementation

Despite initial intention, clinician use declined after an implementation programme

Challenges to uptake and sustained use

Five themes: perceptions and experiences of use of technology in neurorehabilitation:

-perceived and expected usefulness

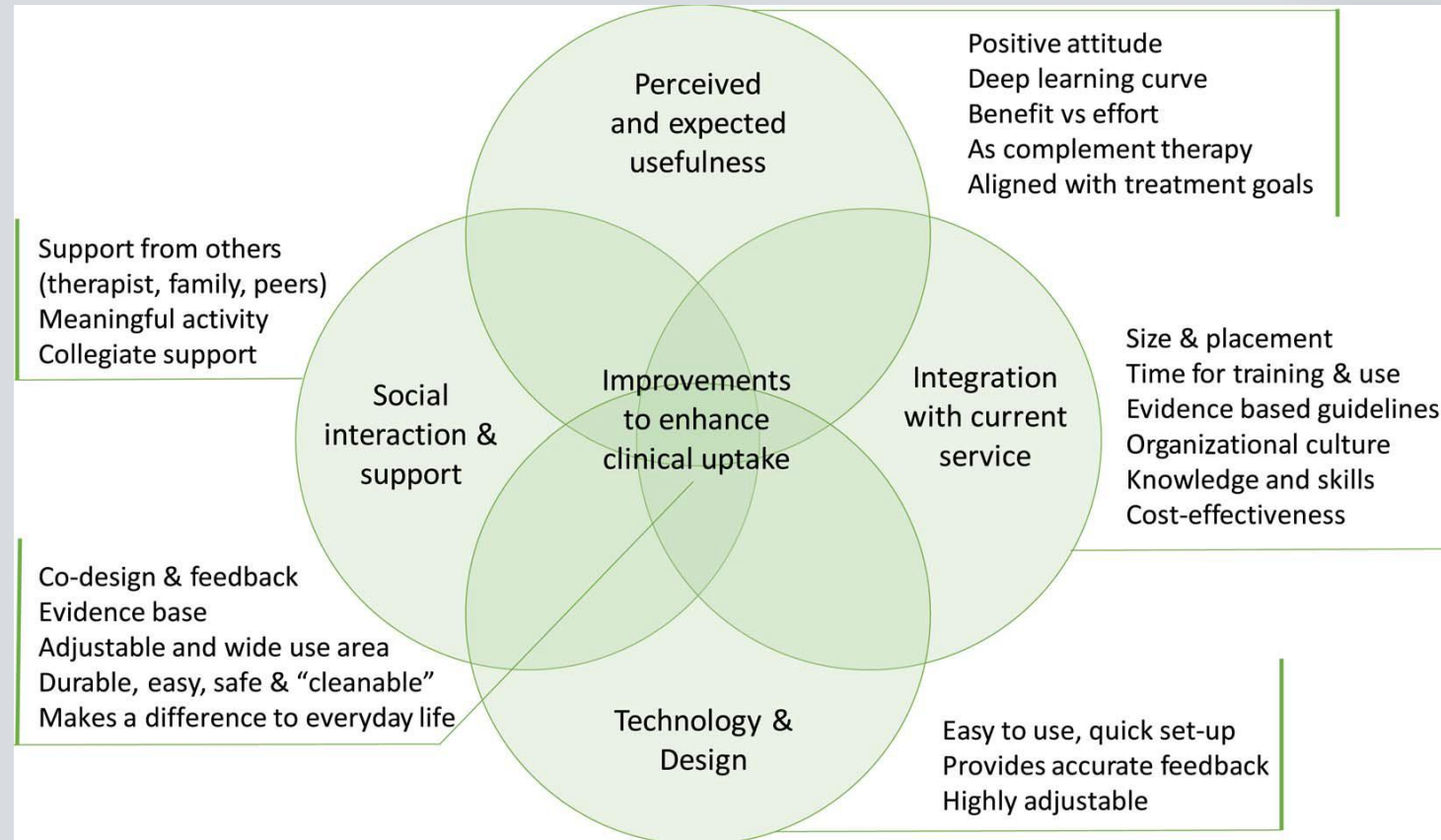
-technology design

-social interaction and support

-integration with current service;

-and improvements to enhance clinical uptake.

Schematic: Synthesis of user perspectives on factors influencing the uptake and implementation of technology in neurorehabilitation clinical practice



From: Alt Murphy M, Pradhan S, Levin MF, Hancock NJ. Uptake of Technology for Neurorehabilitation in Clinical Practice: A Scoping Review. *Phys Ther.* Feb 1 2024;104(2) <https://doi.org/10.1093/ptj/pzad140>

The goal

- To build a robust, person-centred toolkit of devices alongside people with stroke
- User-centred design of new technologies to meet people's needs
- Robust evaluation of existing technologies to meet people's needs
- So over to our key speakers to help with the challenge!

