Bridging the Gap between Consumers and Products in Rehabilitation Medicine

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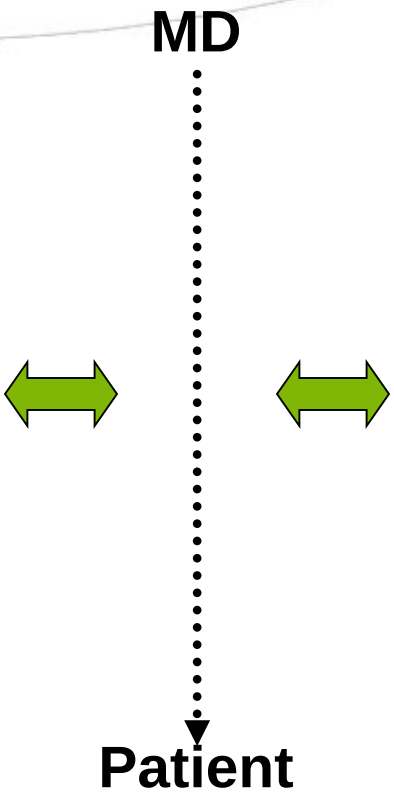
How is assistive technology used?

- Mental and / or Physical Activities
  - Improve functioning
  - Increase functioning
  - Maintain functioning
  - Prevent dysfunction from occurring*

❖ Goal: Increased Independence

The Transdisciplinary Rehabilitation Team



Computer Engineer
Family / Tutor / Caregiver
Rehabilitation Counselor
Assistive Technology Specialist
Service Coordinator
Fabrication / Adaptation Tech
Training Coordinator
Audiologists
Nurse Practitioners
Psychologist

Social Workers
Occupational Therapist
Speech-Language Pathologist
Prosthetist
Medical Consultants
Teachers / Special Educators
AT Equipment Vendors
Hearing Device Specialists
Physical Therapists

What is Occupational Therapy?

Occupational therapists and **occupational therapy assistants** help people of all ages do the things they want and need to do through the use of everyday activities (occupations).

Occupational therapy practitioners ask:

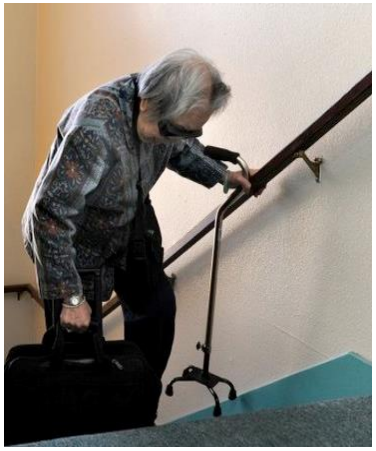
"What matters to you?"

not, "What's the matter with you?"

Disability ≠ Inability

What can AT help with?

- Self Care
  - Mobility



What can AT help with?

- ADL
  - Dressing

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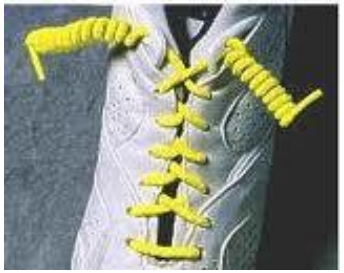

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What can AT help with?

- ADL

Eating and Meal Preparation

What can AT help with?

- ADL
  - Eating

What can AT help with?

- ADL
  - Hygiene

*

What can AT help with?

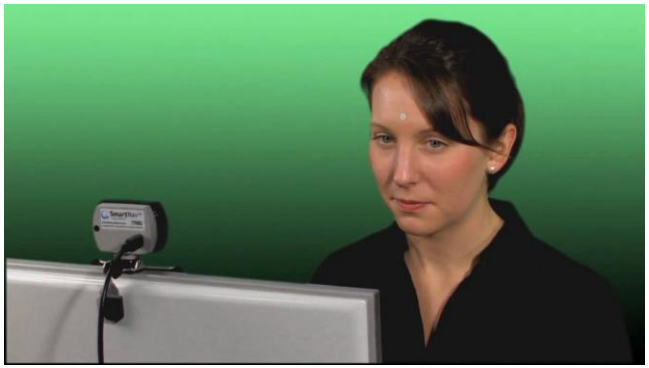
- Communication

What can AT help with?

- Leisure
  - Hobbies, sports, travel, etc.

What can AT help with?

- Vocational and Educational



Steps to Successfully Issue an Assistive Device

Framework for Patient Evaluation:

- Health Status
- Cognitive Status
- Economic
- Physical Environment
- Social Aspects
- Personal Preferences

Expectations!!!!

Steps to Successfully Issue an Assistive Device

- Patient evaluation
  - Home Evaluation
  - Survey / Interview
  - Functional Evaluation

Steps to Successfully Issue an Assistive Device

- Introduction of device
  - In-Patient / Out-Patient / Home
- Site and method of instruction / training

Different Levels of Assistive Technology Require Different Amounts of Training

Low Technology Adaptation

- Easy to use. May require a short training period.

Elementary Technology Devices

- Usually off-the-shelf or inexpensive. User requires a moderate training period.

High Technology Devices

- Includes complex and programmable equipment. User requires specific training for the user to take full advantage of their capabilities. **Expensive**.

Issuing Assistive Devices - The final step?

Write justification to insurance company

Ordering / Buying equipment

- High tech equipment (typically) - care team/insurance
- Low tech or not covered by insurance - patient/caregiver

High Versus Low Tech Quadraplegic Feeding Aids

$149

$6000

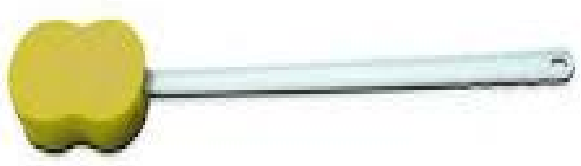
Steps to Successfully Issue an Assistive Device

Assessing the Outcomes:

- Effectiveness
- Efficiency
- Device Satisfaction
- Psychological Functioning
- Subjective Well-Being

Assistive Technology: One Size Doesn't Fit All

Total Hip Replacement - precautions



Long Handled Sponge

At 2 months, 30% of patients aren't using the device

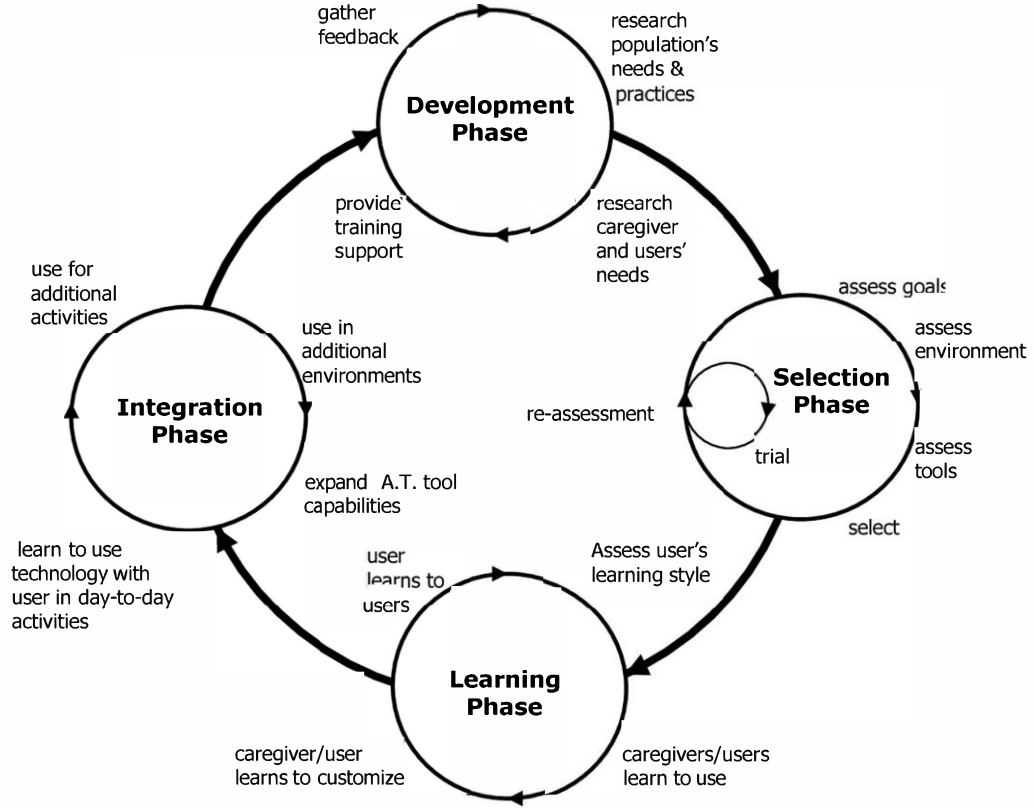
Why might this AT end up in the closet?

$599

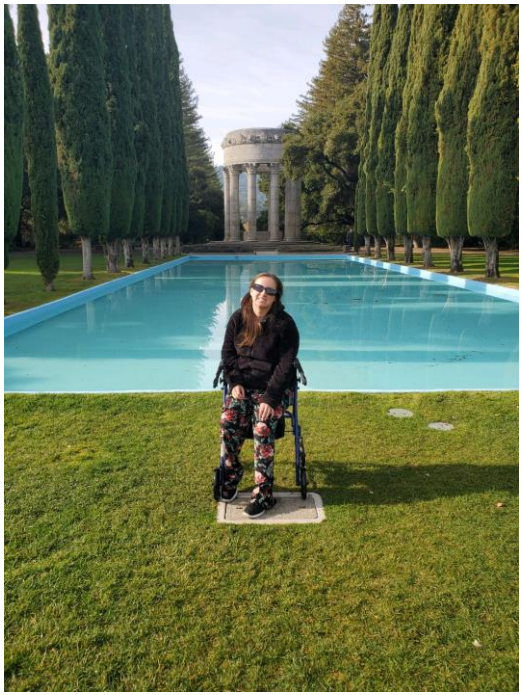
How this all Relates to Product Development

- Involve all stakeholders early on and throughout the design process:
  - End users
  - Rehab team / therapist
  - Family members

Successful Design and Implementation of Assistive Technology



Case Study



Emma

30 y.o.

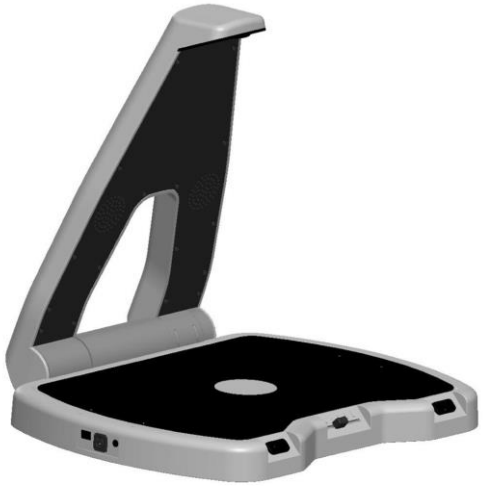
Acquired Brain Injury:

- Cortical Blindness
- Sensory and Motor deficits
- Memory deficits
- Executive Functioning deficits

Aids for Reading

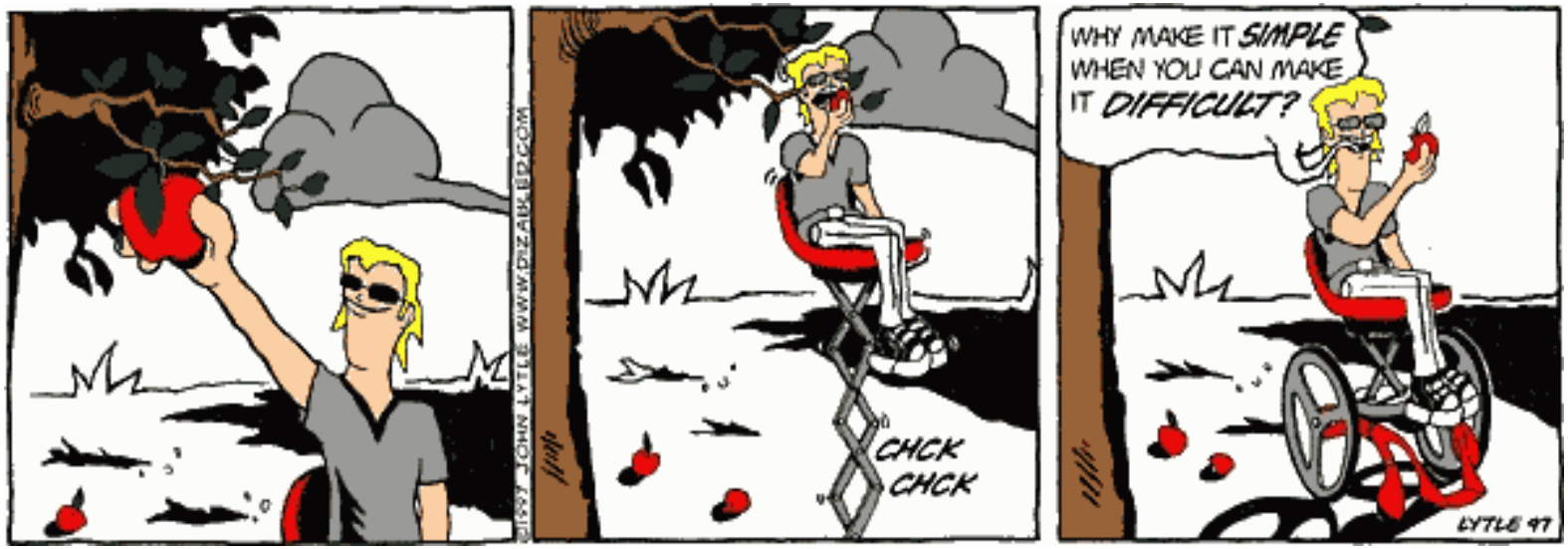
Orcam

Envision



LyriQ

Whenever possible, keep it simple



What is it &Who would use it?

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Practicing Subject and Caregiver Interviews

Which of the following assistive technologies do these people use?

- Do they use it
- Did they own it but no longer use it: Why?

Prompts:

- Explore social aspects, personal factors, economic, and physical environments of the subject
- Find out what motivates them

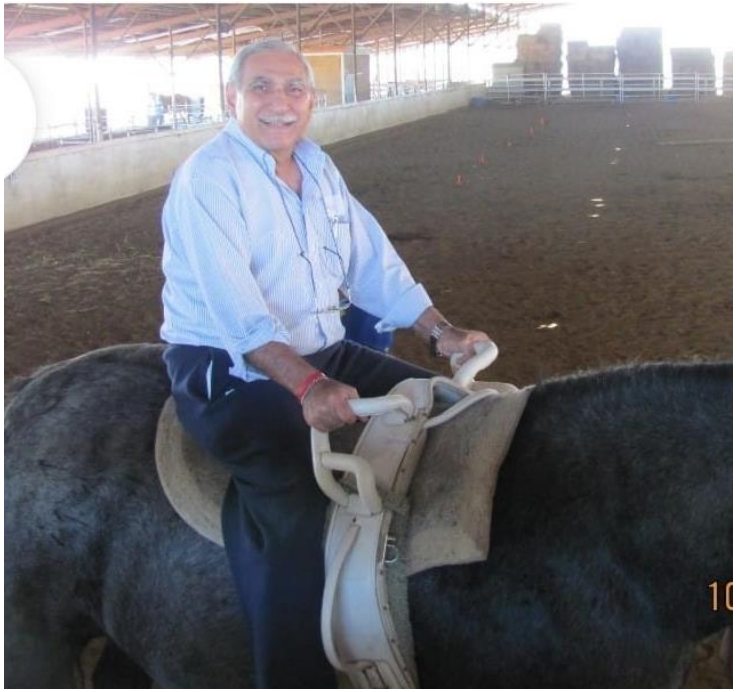
Stroke (aka CVA)

Michael

Rt Hand Dominant

Lt CVA with limited ability to use Rt hand

Stroke (aka CVA)



Albert

Rt Hand Dominant

Lt CVA with limited ability to use Rt hand

Example of a Low Tech Device: Rocker Knife

$8.95

$26.50

Example of Medium Tech Saebo Stretch

$200

Example of High Tech Device Rewalk Exoskeleton

Example of High Tech Device Rewalk Exoskeleton

$71,600 +

ADT Website

- Allegro Medical
- North Coast Medical
- Sunrise Medical
- Rehab Mart
- Move United

Where to donate used medical equipment

- ReCARES
- Lions Club – Hearing Aid and Eyeglass Recycling Program
- Silicon Valley Independent Living Center (wheelchairs <5 years old)
- Ability Tools – Reuse Programs

Other Resources

- **The Design and Evaluation of Assistive Technology Products and Devices Part 1: Design.** Marion A. Hersh, International Encyclopedia of Rehabilitation.
- RESNA
- Accessible Technology Coalition

Other Resources

- Gillham, M., Pepper, M., Kelly, S., & Howells, G. (2019). **Stakeholder views addressing the development and uptake of powered wheelchair assistive technology**. *Disability and Rehabilitation: Assistive Technology*, *14*(2), 146–160. https://doi.org/10.1080/17483107.2017.1416186

- Shah et al (2009) **Developing medical device technologies from users' perspectives**. Int J Technol Assess Health Care. 25(4):514-521. link

- Trish Wielandt et al., **Factors that predict the post-discharge use of recommended assistive technology**. Disability and Rehabilitation: Assistive Technology, January-June 2006; 1(1-2)ß: 29-40. link

- Ripat, J., & Booth, A. (2005). Characteristics of assistive technology service delivery models: Stakeholder perspectives and preferences. *Disability and Rehabilitation*, *27*(24), 1461–1470. https://doi.org/10.1080/09638280500264535