



### Outcome Measures in Assistive Technology Service Delivery

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# **Learning Objectives**

- 1. Explain 3 reasons why it is important to measure the outcomes of an intervention
- 2. Explain 2 characteristics of a standardized measurement tool
- Give 2 reasons why formalized outcomes have not been implemented in the field of assistive technology
- 4. Describe one example of a standardized measure used in rehabilitation.

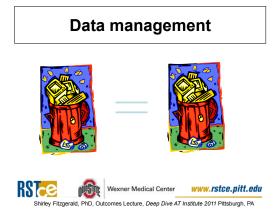


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# Outline

- · Outcome Measure Basics
  - Outcome vs. Measure Definitions
  - Benefits
  - Development
  - Barriers to use
  - Clinical usage strategies
- Case Examples





### OUTCOMES

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# Measure vs. Outcome

(Websters Dictionary)

#### Measure

*n.* A standard: a basis for comparison; a reference point against which other things can be evaluated; "they set the measure for all subsequent work." *v.* To bring into comparison against a standard.

#### Outcome

*n.* something that happens as a result of an activity or process



### What is an Outcome Measure?

"The process of assigning numerals to variables to represent quality of characteristics according to certain rules "– (Nunally,1978)

How do patients know if their healthcare is good care? How do providers pinpoint the steps that need to be improved for better patient outcomes?

How do insurers and employers determine whether they are paying for the best care that science, skill, and compassion can provide?

#### How do we know? We measure

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### Why Outcome Measures?

- · Accountability
- Policy
- · Effectiveness
- Justification
- Knowledge
- Improvement
- Inform Consumers
- Influence Payment

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# **Barriers to Outcomes**

- Rehab is a Young Science (Rusk, 1969)
- Rehab is very "Practice Based" (Opit et al, 1997)
- Few Rehab Practitioners with Research Training
   (Kajermo et al, 1998; Dubouloz et al, 1999)
- Existing Research tends to be Quasi-Scientific
- Limited Access to Large Sample Sizes
- Lack of time & resources to engage in research (Jette, 1993)
- Research articles too Scientific w/out Clinical Relevance
   (Philibert et al, 2003)
- Perceived Potential Threats to Practice

   (Cusick et al. 1999)

### The Pain of Outcome Measures

- · Perception that outcome measures are
  - Developed by Academics and Researchers
  - Enforced by Management
  - Endured by Clinicians

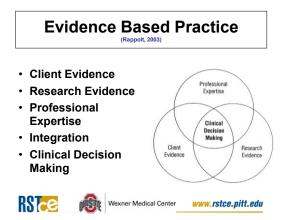


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### People focus on the pain rather than the gain in using outcome measures



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### **Getting Started with Outcomes**

- · Identify a problem or question
- · Evaluate baseline status
- · Identify where deficits exist
- Improve systematic assessments
- Influence treatment strategies/plan of care

Therapy Outcome Measure for Rehabilitation Professionals, Hatfield (2007)

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### **Outcome Categories**

- Treatment
- Quality Assurance
- Research

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# Treatment

- Choose between courses of treatments
- Evaluation of a patient' s response to treatment
- Change treatment strategies
- Track progress
- · Alter treatment to prevent failure

Portney and Watkins, Hatfield (2007), Hatfied &Ogles (2006), Lambert (2001), Dawes (1996)



### **Quality Assurance**

- Identify shortfalls in quality
- · Determine the cause of shortfalls
- · Evaluate patient safety
- · Design and implement interventions
- · Assess the impact of interventions
- Sustain and enhance improvements
   Becher (2001)

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### Research

- · Compare and discriminate between groups
- Draw conclusions about predictive relationships between variables
- · Objectively evaluate subjective measures



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### Preparation

- To introduce outcome measures the following has to be in place:
  - Structures
  - Systems
  - Processes
  - Staffing
  - Training



### Outcome Measures Appropriate for Clinical Use

- Questionnaires
  - General health status
  - Pain
  - Functional status
  - Patient satisfaction
- · Physiological outcomes
- · Utilization measures
- · Cost measures



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### Ways to Improve Use

- · Have a positive attitude
- · Facility buy-in (Management)
- · Become familiar with the outcome measures
- Develop setting specific education
- Streamline use
- · Pick tools that are easy to use/analyze
- Therapists and Engineers involved from the start
- Support from Admin staff and Research Co-ordinator
- · Collaboration with experts



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# **Choosing a Tool**

- Validity
  - Does it Measure What You are Looking For/Credible
- Reliability
  - Consistently Repeatable (time & scorers)
- Sensitive to Change
  - Change in Scores Consistent with Clinical Observations
- Administrative Burden
  - Time, Apparatus, Clinical Routine



# **Choosing a Tool**

#### · Self-Report Questionnaires

- Lower Administrative Burden
- Limited Expertise
- Flexible Administration
  Less Valid & Reliable

#### Performance/Capacity Observations

- More Administrative Burden
- Expertise of Observer
- Apparatus Required
- In-Person Administration
- More Valid & Reliable



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### **Examples of Existing Tools**

- WST Wheelchair Skills Test
- FEW Functioning Everyday with a Wheelchair
- FMA Functional Mobility Assessment
- PIADS Psychosocial Impact of Assistive Devices Scale
- QUEST Quebec User Evaluation of Satisfaction with Assistive Technology
- <u>COPM</u> Canadian Occupational Performance Measure



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#### **Functional Mobility Assessment (FMA)**

- · Evaluates a person perceived function related to mobility (with or without device)
- · Self-report questionnaire
- · 10 items that evaluate the performance of mobility in relation to consumer's goals

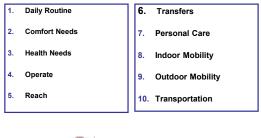


### **FMA** Population

- All individuals who have mobility impairments
- Progressive and non-progressive disabilities
- Valid for individuals with minimally impaired cognition and language

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# **FMA** Components



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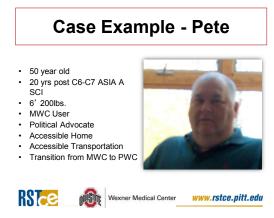
### **FMA Scoring**

Each items has score ranges from 1 – 6

- 6 = Completely Agree
- 5 = Mostly Agree
- 4 = Somewhat Agree
- 3 = Somewhat Disagree
  2 = Mostly Disagree
- 1 = Completely Disagree
- Area to provide comments for each item
- Obtain a total score for comparison
- Can look at individual items



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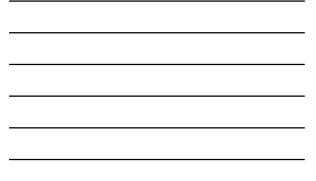






# Pre FMA Scoring

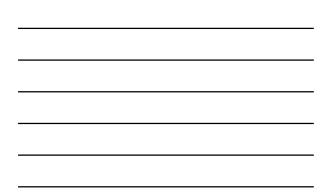
ltem	Pre Score	ltem	Pre Score
Daily Routine	1	Transfers	5
Comfort	5	Personal Care	5
Health	5	Indoor Mobility	5
Independence	4	Outdoor Mobility	1
Reach	2	Transportation	5
	Pre-T	otal: 38	.rstce.pitt.ed



















Post FMA



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# **Post FMA Scoring**

ltem	Post Score	Pre Score	ltem		Post Score	Pre Score
Daily Routine	6	1	Transfers		6	5
Comfort	6	5	Personal Car	е	6	5
Health	6	5	Indoor Mobili	ty	6	5
Independence	6	4	Outdoor Mob	ility	6	1
Reach	6	2	Transportatio	n	6	5
<b>RST</b> e		Pre-To	otal: 60 tal: 38 Medical Center	www.	rstce.pi	tt.edu

Assistive Technology Center - The Ohio State University Wexner Medical Center

Veterans Affairs-Polytrauma **Rehabilitation Center Assistive** Technology Lab

### **CASE STUDIES**

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# AT Center – OSU Wexner Medical Center

#### · Personnel:

- Team Leader
- Rehab Engineer / Program Director - OT; PT, SLP, Driver Rehab Specialist
- Office Associate
- Team Members (in addition to above)

  - Renab Suppliers (3 companies)
     Manufacturing Representatives
     Neurorehab Team: Social Work; Rehab Psychologist; Case Manger; Registration; Billing, etc.
     College of Medicine/College of Engineering

     Faculty and Students



### Assistive Technology Center



# AT Center – OSU Wexner Medical Center

- Client Base
  - Adult population (14 and up)
  - Neuro Rehabilitation (Head Injury, Stroke, etc.)
  - Neuromuscular Disease
  - Developmental Disabilities
  - Other

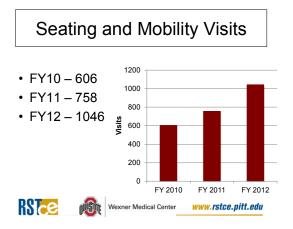


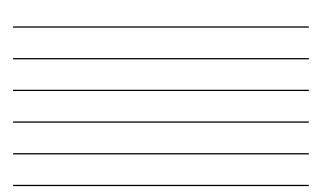
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# Programs and Equipment

- Programs:
  - Seating and Mobility
  - Drivers Rehabilitation
  - Augmentative and Alternative Communication
  - Computer Access
    Electronic Aids to Daily Living
- Equipment:
  - Standardized evaluation instruments
  - Comprehensive tool box

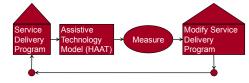






### **Outcome Measurement**

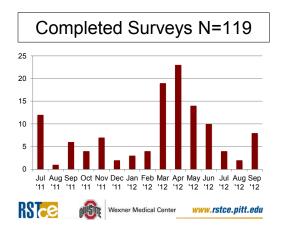
- Outcome measures evaluate the end result of the assistive technology implementation. (Cook & Polgar, 2008)
  - Functional Performance Measures
  - User Satisfaction Measures
  - Quality-of-Life Measures
- · Utilize to modify Service Delivery Program



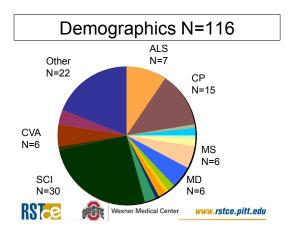
### Outcome Measurement – Quality Assurance

- Quebec User Evaluation of Satisfaction with assistive Technology (QUEST)
  - All assistive technology
  - Requires that you already have a device
  - 12 item 8 device, 4 service
    e.g. Safety, Durability, Comfort
- Functional Mobility Assessment (FMA)
  - Mobility only
  - Does not require experience with a device
  - 10 items
  - e.g Safety, Independence, Indoor Mobility, Outdoor Mobility









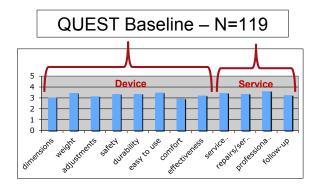


### QUEST

ser Evaluation	of Satisfaction wi	th assistive T	echnology		Not satisfi at all
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			-		2. the weigh
					Comments:
evice and the m	stated services you				3. the ease i your assistin Commenta:
far 12 items, n rvices you expe	te your satisfaction rianced by using th	a with your as a following se	sistive device and ale of 1 to 5.		4. how safe Comments:
2	3	4	1		5. the dura
satisfied	satisfied	Satisfied	very talisesia		assistive de Comments:
		best describe	s your degree of		6. how easy
					Comments:
		neow come	ent in the action		
					7. how com Comments:
т	hank you for comp	leting the QUI	ST questionnaire.		8. how effe which your Comments:
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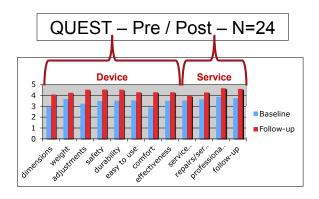
1	2	3	4		5	
Not satisfied at all	Not very satisfied	More or less satisfied	Quite Satisfie	Ver	y satis	fier
How satisfied ar		SSISTIVE DEVIC	CIE			
	s (size, height,	length, width) of		2 1	4	4
2. the weight of Comments:	your assistive c	levice?	1	2 1	4	
3. the ease in ad your assistive de Commente:	justing (fixing vice?	fastening) the par		2 1	4	ं
4. how safe and Comments:	secure your as	sistive device is?	1	2 1	4	
5. the durability assistive device? Comments:		sistance to wear) o		2 1	4	
6. how easy it is Comments:	to use your ass	istive device?	1	2 1	4	
7. how comforta Comments:	ible your assist	ive device is?	1	2 3	4	1.00
8. how effective which your devia Comments:		device is (the degr eeds)?		2 1	4	





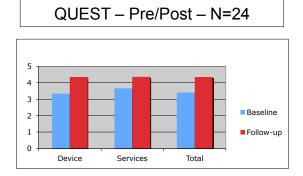
 $\begin{array}{ll} 1-\text{not satisfied} & 2\text{- not very satisfied} & 3-\text{ more or less satisfied} \\ & 4-\text{quite satisfied} & 5\text{-very satisfied} \end{array}$ 





1 – not satisfied 2- not very satisfied 3 – more or less satisfied 4 – quite satisfied 5-very satisfied



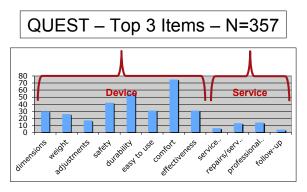


1 – not satisfied 2- not very satisfied 3 – more or less satisfied 4 – quite satisfied 5-very satisfied

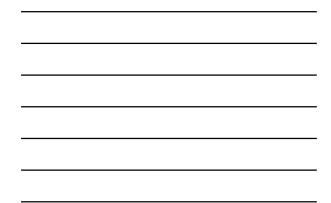


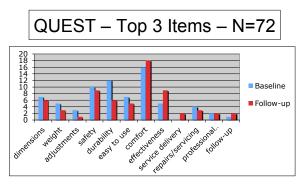
# QUEST – Top 3 items

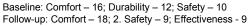
1.	Dimensions	7.	Comfort
2.	Weight	8.	Effectiveness
3.	Adjustments	9.	Service delivery
4.	Safety	10.	Repairs/servicing
5.	Durability	11.	Professional service
6.	Easy to use	12.	Follow-up services



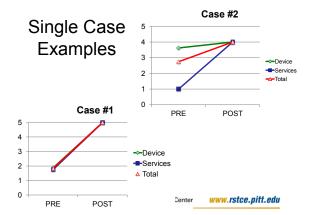
1. Comfort - 75; 2. Durability - 56; 3. Safety - 42



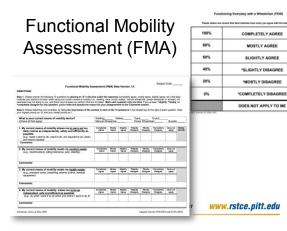




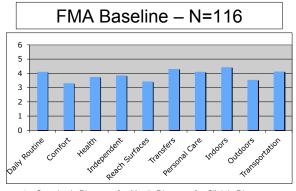






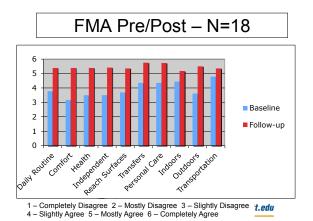






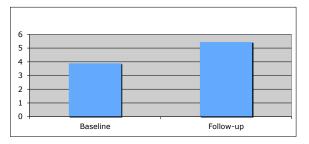
1 – Completely Disagree 2 – Mostly Disagree 3 – Slightly Disagree 4 – Slightly Agree 5 – Mostly Agree 6 – Completely Agree





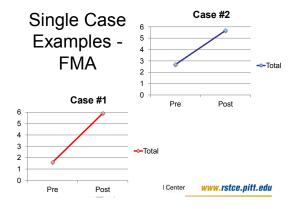


FMA Pre/Post – N=18



1 – Completely Disagree 2 – Mostly Disagree 3 – Slightly Disagree 4 – Slightly Agree 5 – Mostly Agree 6 – Completely Agree







# VA-PRC AT LAB CASE STUDY

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# VA-PRC AT Lab

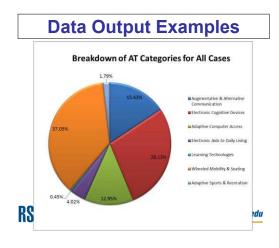
- · Working closely with treating clinicians
- Needs assessment
  - Identify perceptions and pilot tools/variables for feedback
- · In-person focus groups for data analysis
- In-person focus groups for online data entry – Usability Testing and Refinement

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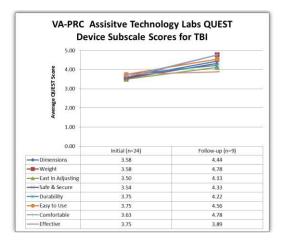
# **Uniform Data Set**

- Birth Year
- Deceased Year
- Gender
- Race
- Language
- Zip-code (first three digits)
- Primary Diagnosis
- Device Assessment
   Date
- Tool Administration Date
- Device Type
- Device Sub-type
- Device Name
- Outcome Tools PIADS, QUEST, FMA, FCM-NOMS



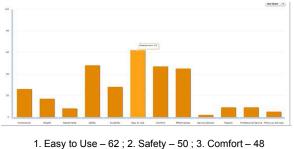








# QUEST 3-Important Areas for one of the PRC AT Labs



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### Summary

· Identify champion(s)

**MUST** 

- Get stakeholder buy-in: consumers, clinicians, suppliers, manufacturers, leadership
- · Create a plan
- · Implement the plan
- Implement the plan again

n Sir

· Provide feedback to stakeholders

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# **Thank You..Any Questions**

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