

**Outcome Measures  
in Assistive  
Technology  
Service Delivery**

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VA-Polytrauma 13<sup>th</sup> Grand Rounds  
University of Pittsburgh  
October 1, 2012

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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
3. 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

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## 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**  
– (Phillibert et al, 2003)
- **Perceived Potential Threats to Practice**  
– (Cusick et al, 1999)

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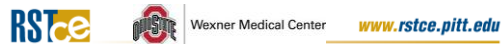
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## The Pain of Outcome Measures

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



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



## Evidence Based Practice

(Rappolt, 2003)

- Client Evidence
- Research Evidence
- Professional Expertise
- Integration
- Clinical Decision Making



## 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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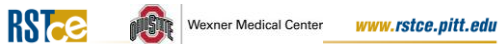
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## Outcome Categories

- 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), Hatfield & Ogles (2006), Lambert (2001), Dawes (1996)




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## 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




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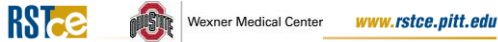
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### Outcome Measures Appropriate for Clinical Use

- 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




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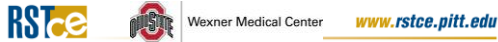
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## Choosing a Tool

- **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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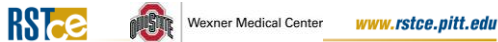
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## Examples of Existing Tools

- **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
- **COPM** - 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




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## 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

- |                  |                     |
|------------------|---------------------|
| 1. Daily Routine | 6. Transfers        |
| 2. Comfort Needs | 7. Personal Care    |
| 3. Health Needs  | 8. Indoor Mobility  |
| 4. Operate       | 9. Outdoor Mobility |
| 5. Reach         | 10. Transportation  |




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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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**Post FMA**



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## Assistive Technology Center



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## AT Center – OSU Wexner Medical Center

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

RSTce



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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

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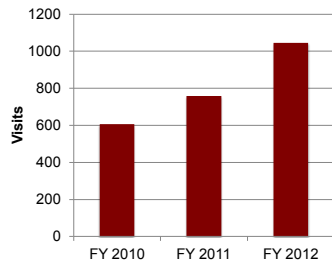
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## Seating and Mobility Visits

- FY10 – 606
- FY11 – 758
- FY12 – 1046




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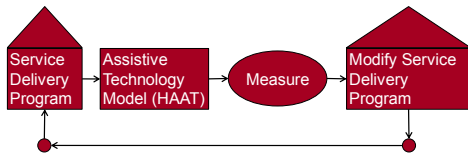
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## Outcome Measurement

- 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




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## 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




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