



**Gathering Patient-Centered
Outcomes at the Point of
Care:
The Promise of Contemporary
Measurement Methods**

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Outcome Assessment Challenges

- » **Conceptual:** Clearly defining stroke rehabilitation outcomes
- » **Operational:** Selecting psychometrically adequate measures for relevant patient-centered outcomes
- » **Practical:** Selecting measures that are feasible for use in and across settings where stroke rehabilitation care is provided

The Challenge for Rehabilitation!!

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"Are you just pissing and moaning, or can you verify what you're saying with data?"



Conceptual Challenges

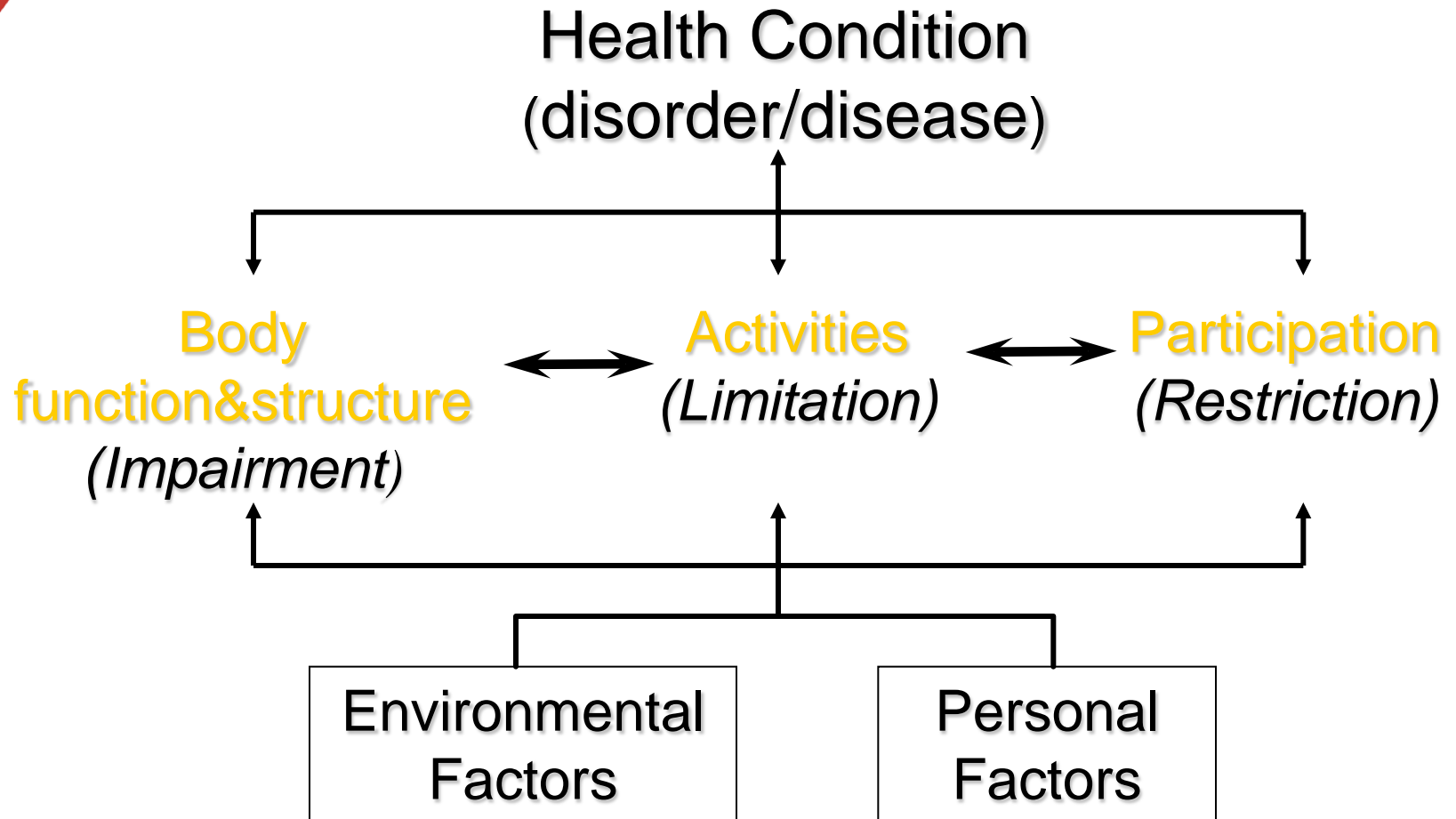
**Measurement protocols
must focus on conceptually
distinct stroke rehabilitation
outcomes**

The World Health Organization's International Classification of Function & Disability

(ICF)



Interaction of Concepts ICF 2001





Impairment-Centered Outcomes

Body Function & Structure -

impairments at the level of organs or body systems

- » Hemiparesis
- » Muscle tone
- » Joint ROM





Patient-Centered Outcomes

Activity Limitation Outcomes

Limitations an individual may have in executing tasks or functional tasks

- › Walking
- › Stair climbing
- › Lifting objects




Participation Restriction Outcomes

The nature and extent of a person's involvement in life situations

- » Sports
- » Employment
- » Home management



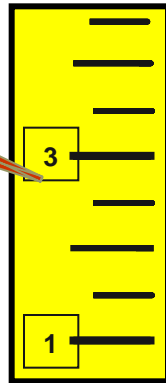


Overcoming Operational and Practical Challenges for Measuring Patient- Centered Outcomes

Existing Instruments are Limited

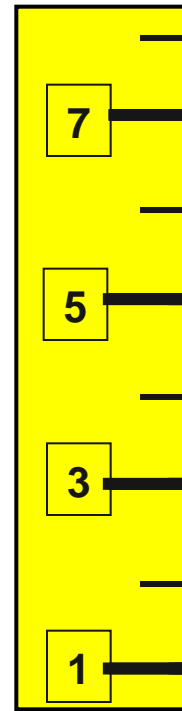
**Too
Low- Ceiling
Effect**

Example: FIM



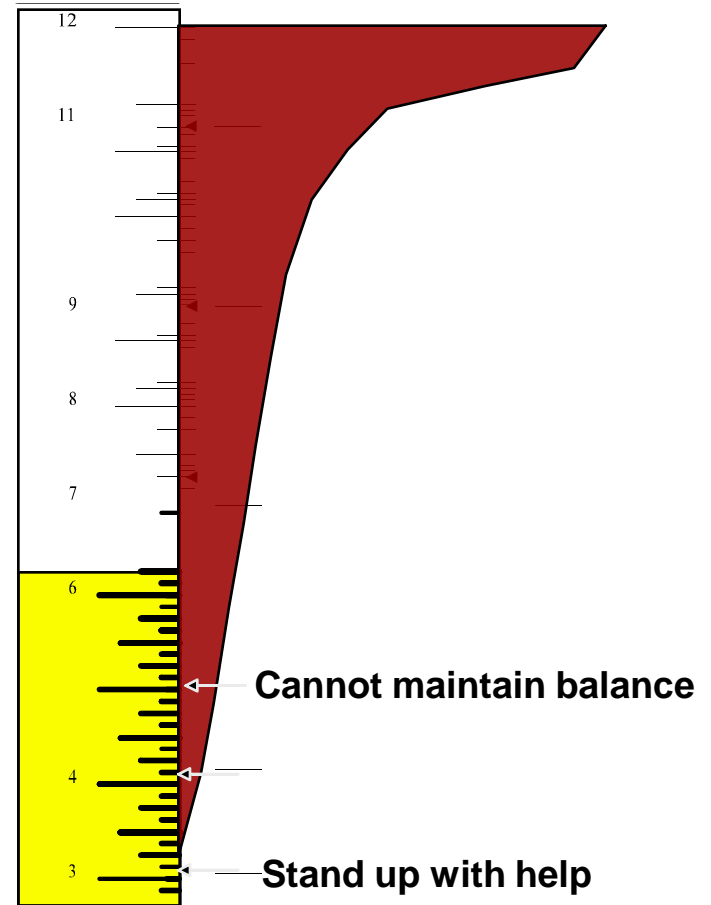
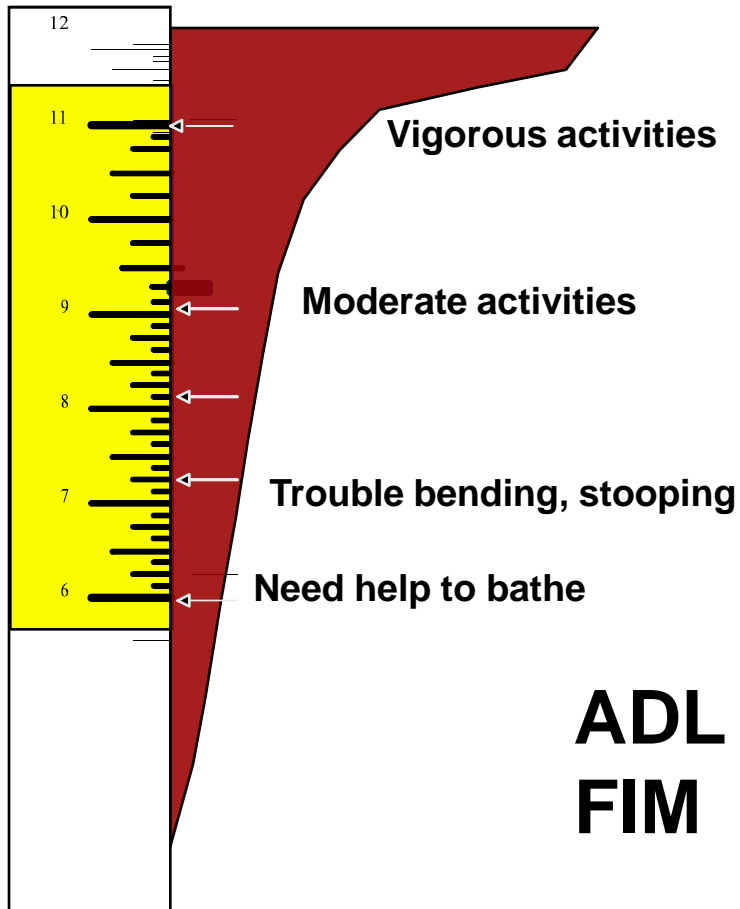
**Not Enough
Marks –
Too Noisy**

Example: SF-36

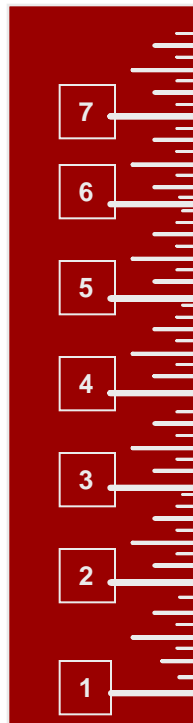


Combining Measures Increases the Range and the Measurement Burden

PF-10



The “Ideal” Outcome Instrument is Impractical



Ideal Ruler

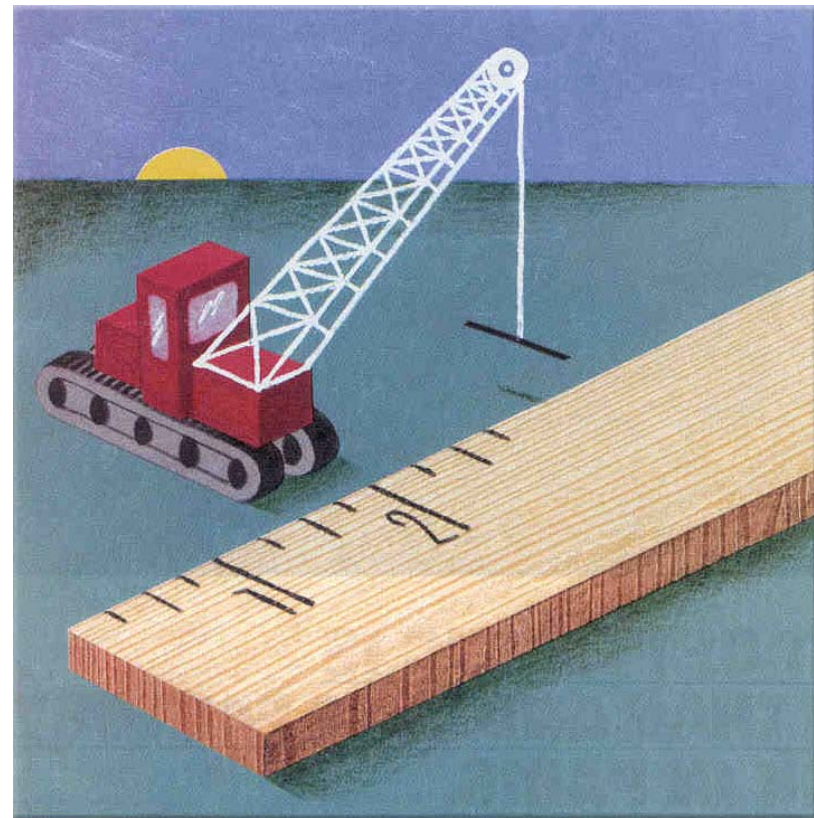
Solving the Measurement Dilemma:

- › **Need many items to cover important patient-centered activities & roles across a broad range**
- › **Administering all items to each person is burdensome and not practical**
- › **Two major advances...**



First Major Advance

- » Item Response Theory (IRT)
- Creation of large outcome item pools
 - Items calibrated on a defined outcome scale
 - Enables outcome scores to be linked on an underlying outcome scale



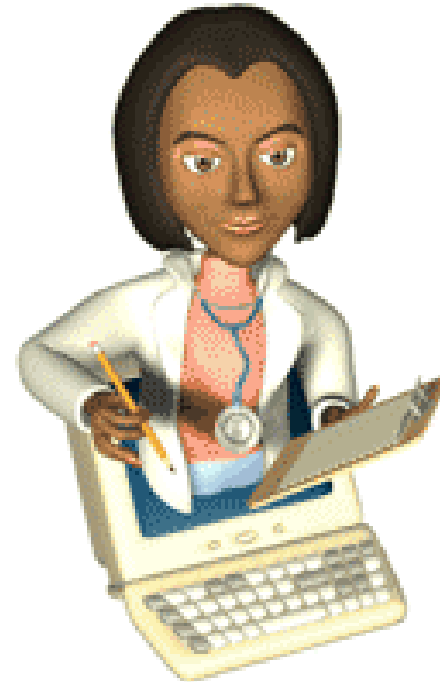
Second Major Advance



- » Computer-Adaptive Testing (CATS)
- » Customized individualized assessment
 - Algorithm to match items to each patient
- » Administers select items from large item pools

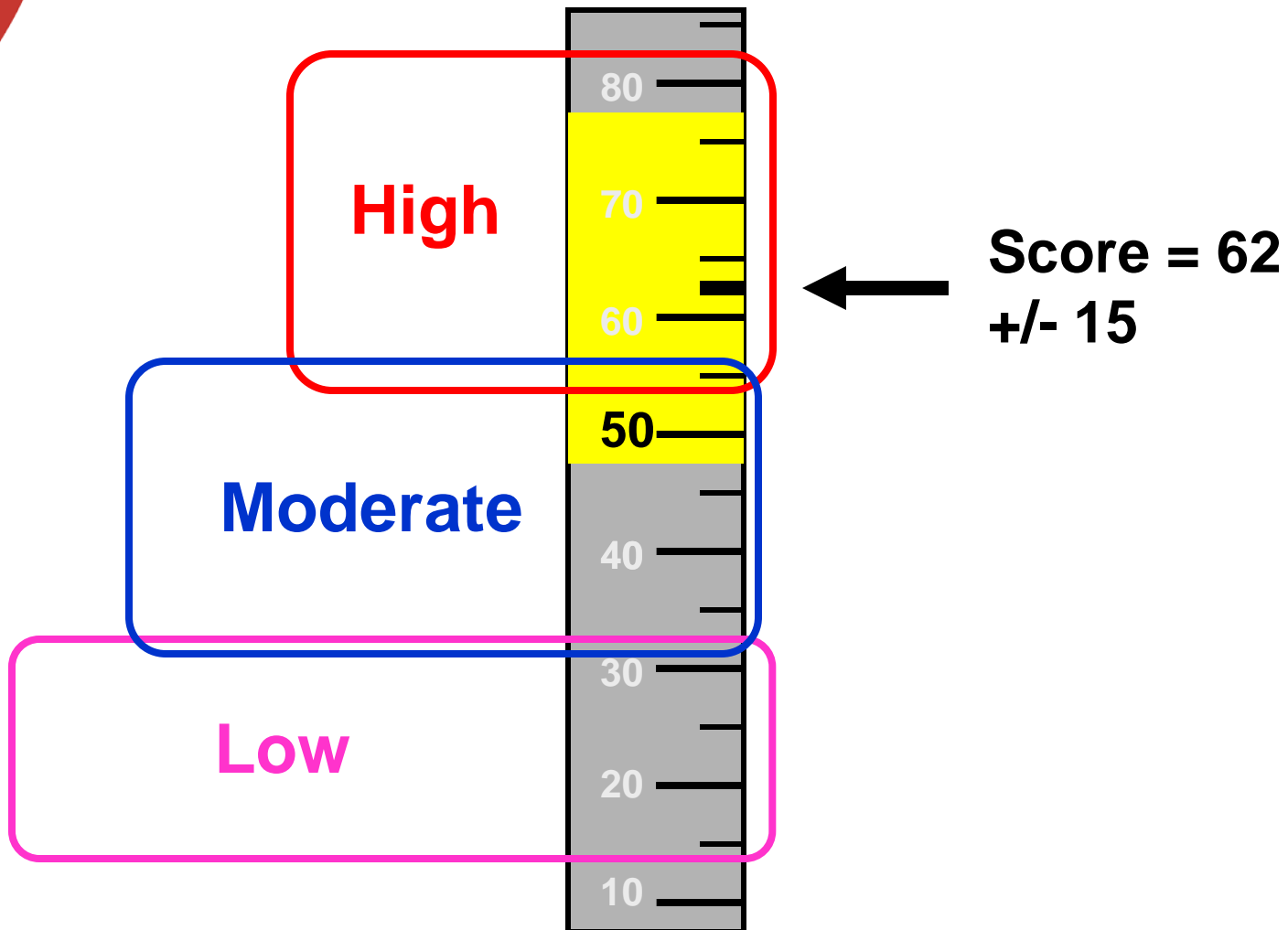
Point-of-contact data entry ...

- » Provides for efficient data capture without loss of precision
- » Data immediately available to clinicians
- » Data can be easily shared across care settings



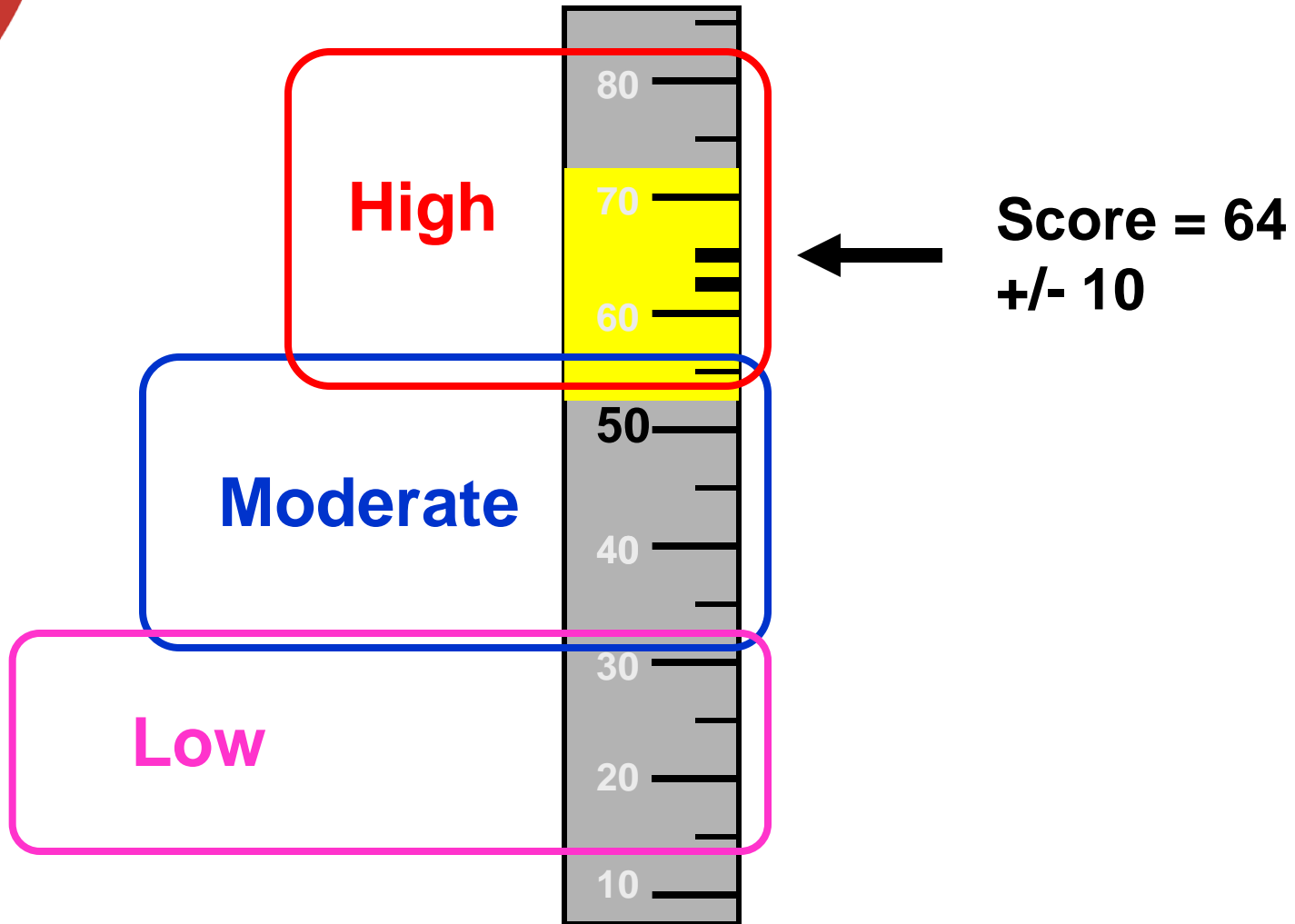
First Question: *Sit at side of bed?*

Answer: No Difficulty



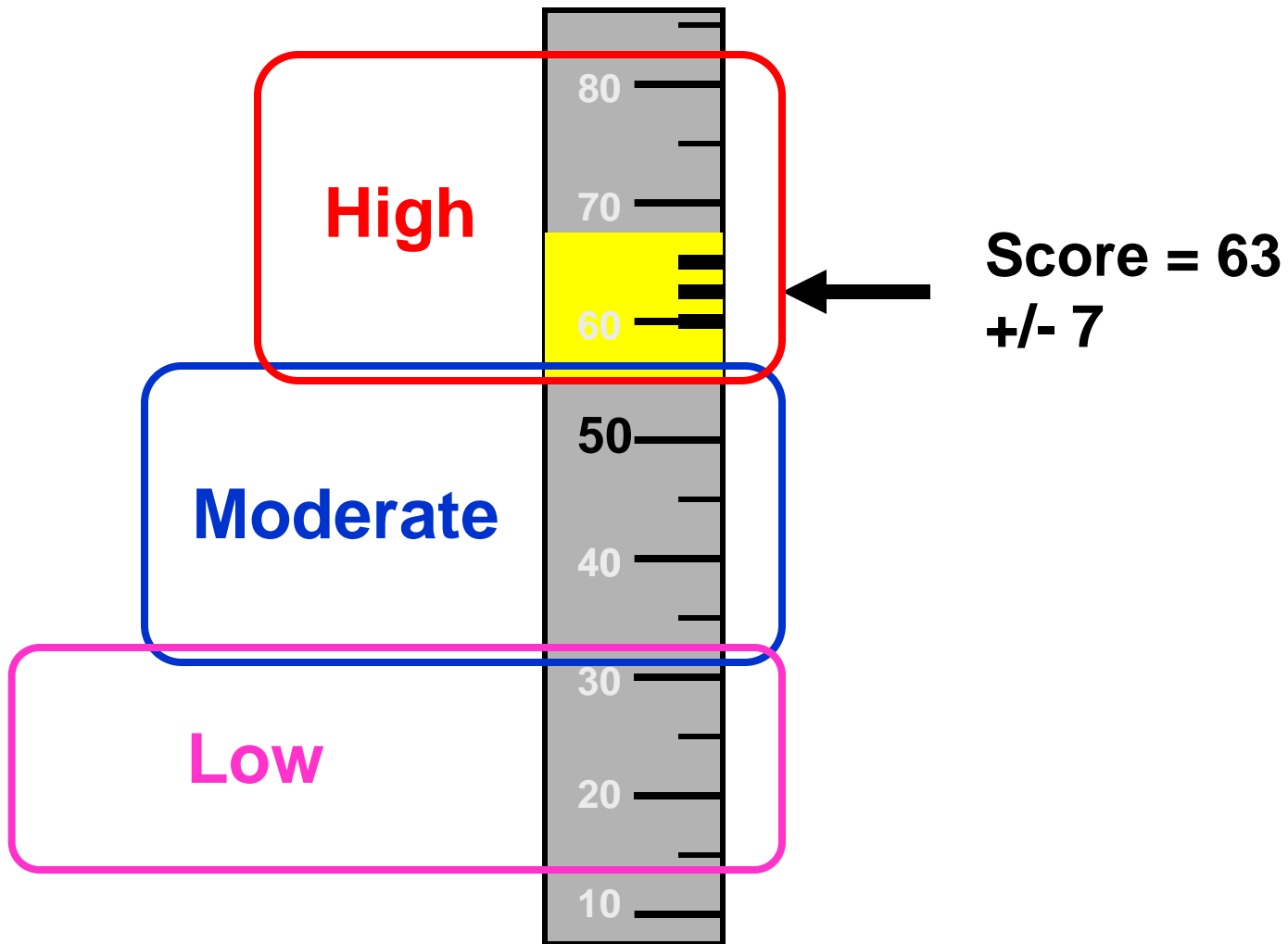
Second Question: *walking indoors?*

Answer: No difficulty



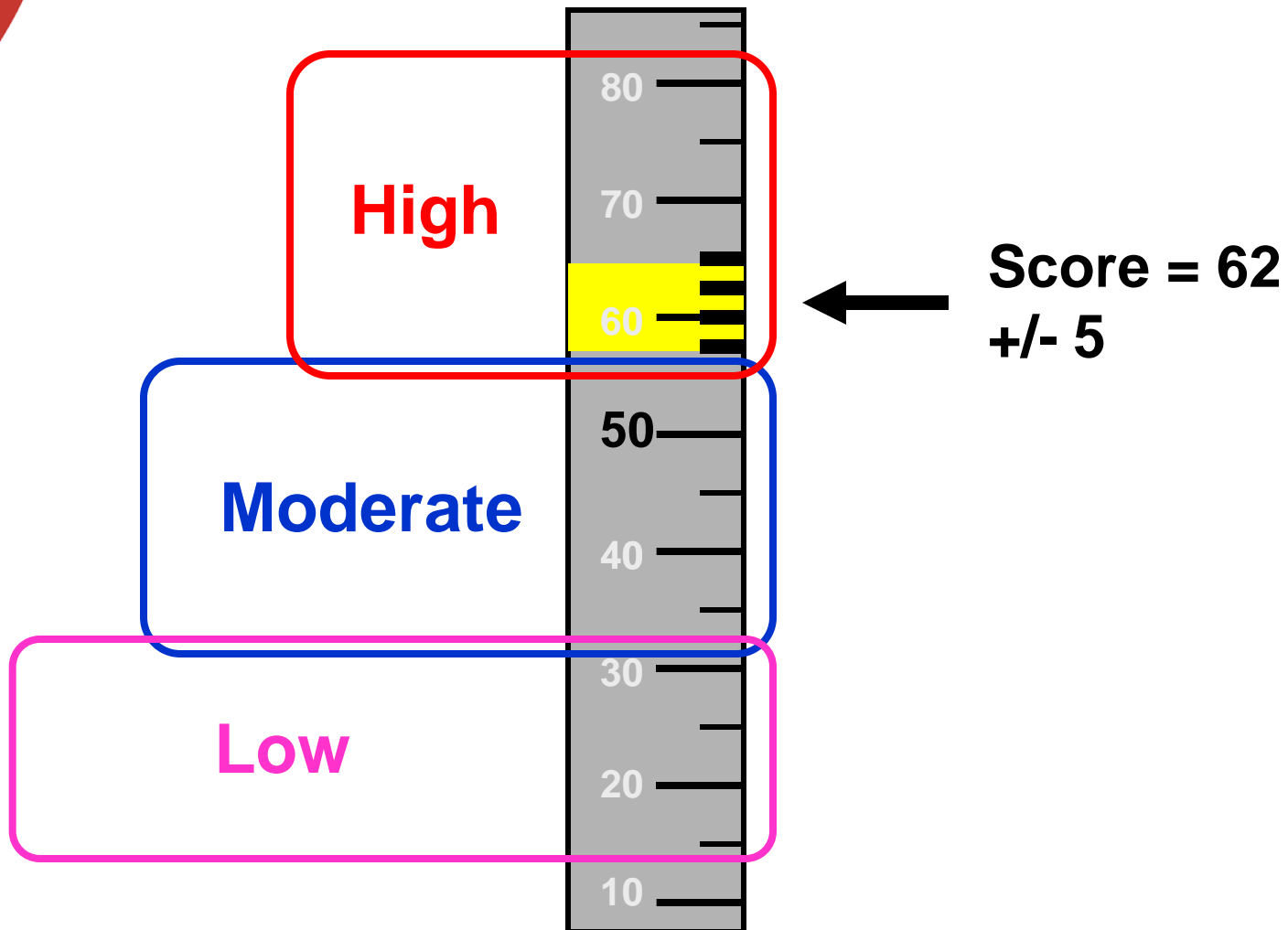
Third Question: *run to catch a bus?*

Answer: some difficulty



Fourth Question: *doing heavy housework?*

Answer: little difficulty



CATs: A New Breed of Outcome Assessment



Neuro-QOL
Quality of Life in Neurological Disorders

Boston University
AM-PAC





Activity Measure for Post-Acute Care (AM-PAC)

- » 259 core items in the AM-PAC Item Bank

Basic Mobility
Daily Activities
Applied Cognitive

How much difficulty do you currently have....

How much assistance do you currently use...

- » **CAT** version designed for use in and across rehabilitation settings with neurologic, orthopedic and complex medical patients needing rehabilitation
- » Available in >20 languages

AM-Pac's 3 Activity Domains

Applied Cognitive	Daily Activities	Basic Mobility
Communication	Grooming and Hygiene	Bend/Stand/ Carry
Print Information	Feeding and Meal Prep	Ambulation
New Learning	Dressing	Transfers
Social	Instrumental	WC Skills



Potential Applications



Using CAT Data to Monitor Post Acute Care Recovery Trajectories

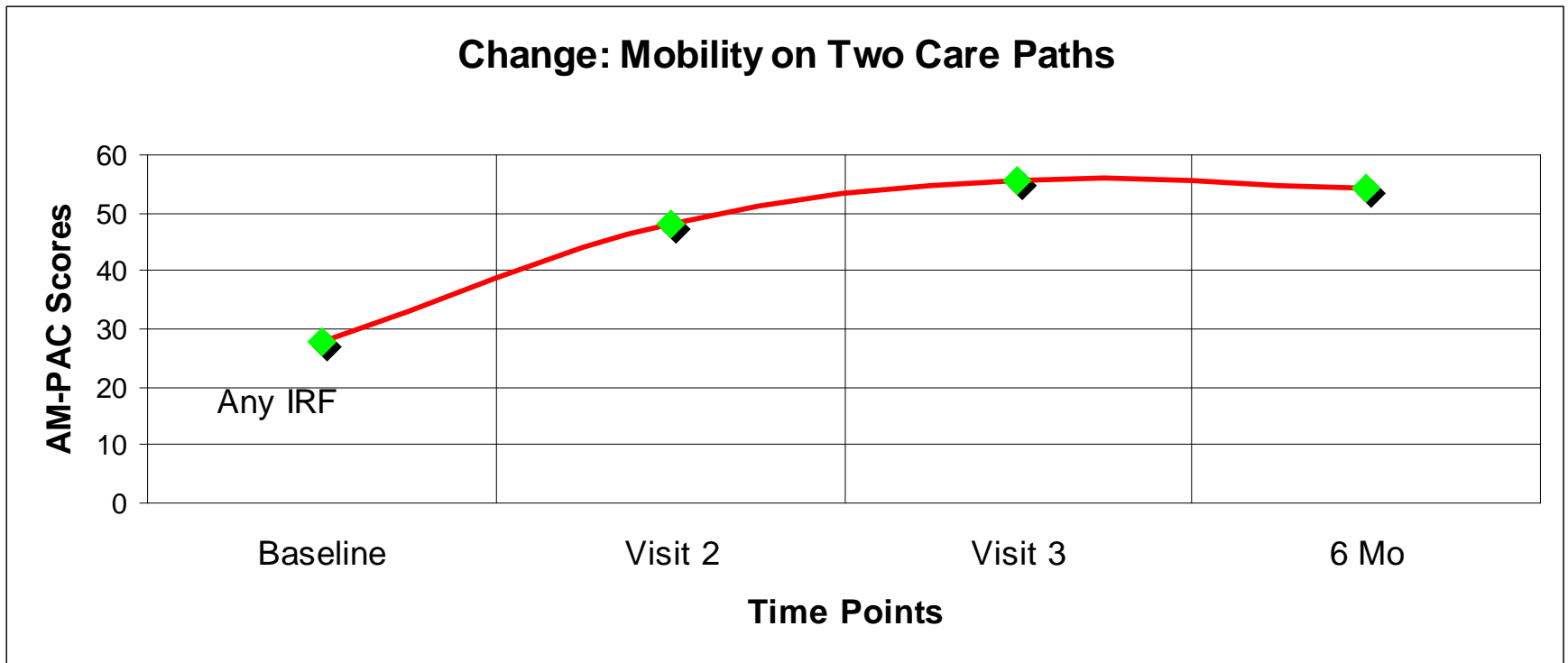


Kaiser Stroke Outcome Study

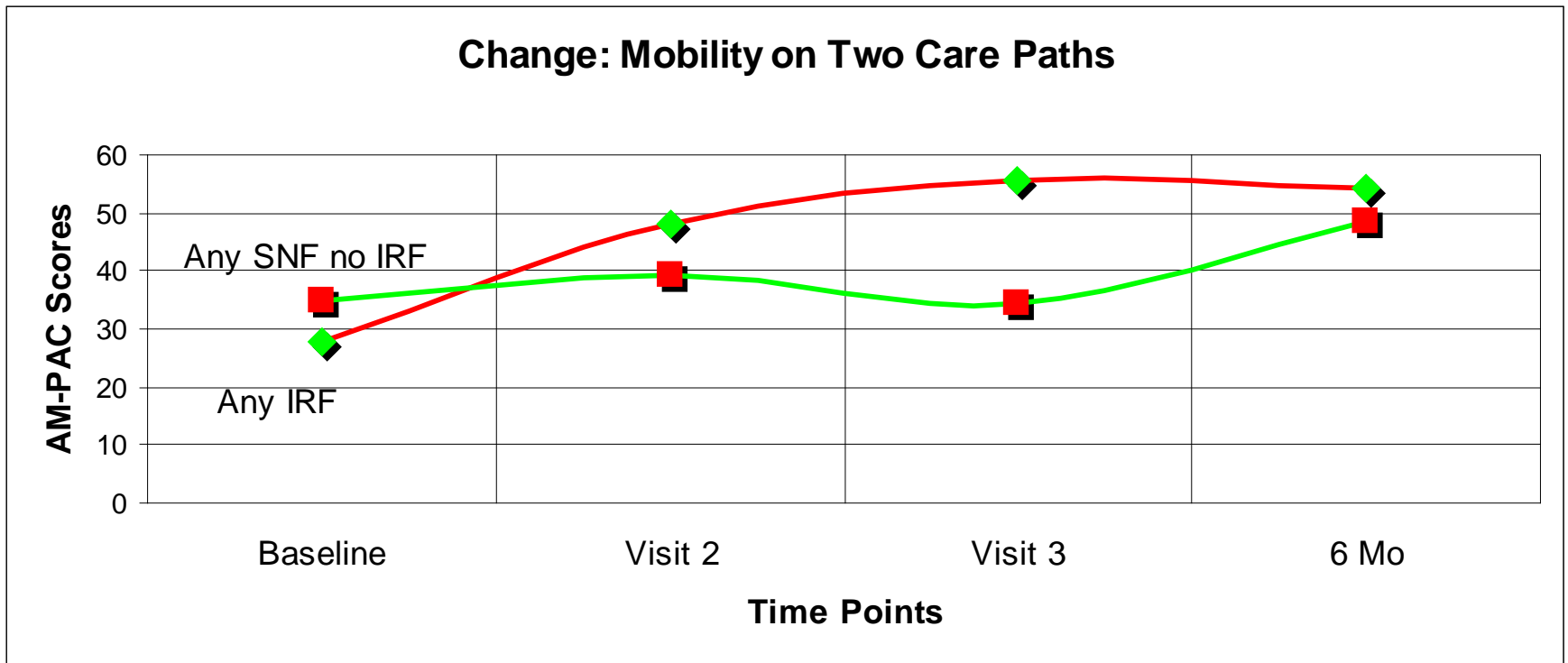
Goals:

- › Monitor functional recovery trajectories of stroke survivors (N=200)
- › From acute hospital discharge through episode of post acute care
- › Tracked settings where care was received

Mobility Functional Recovery Trajectory by Setting

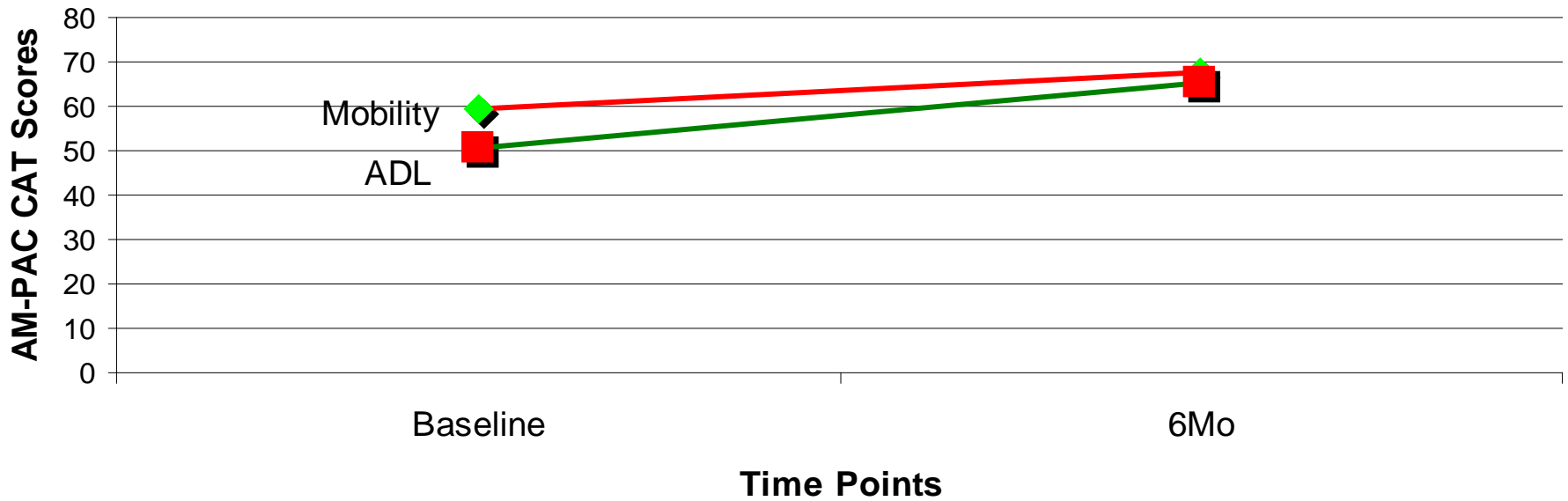


Mobility Functional Recovery Trajectory by Setting



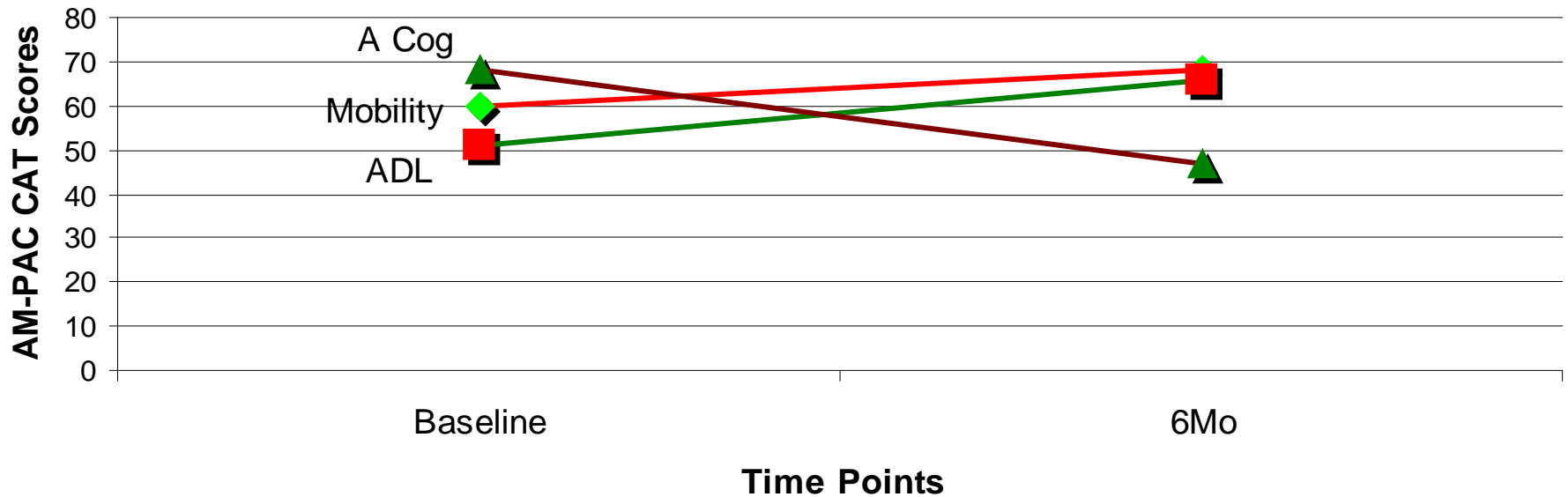
Recovery Trajectory by Functional Domain

Change: Hospital > Home No Services



Recovery Trajectory by Functional Domain

Change: Hospital > Home No Services





In Summary...

IRT and CAT technology is transforming outcome assessment

Contemporary outcomes measures have great potential for point of care assessment of patient-centered outcomes

Can be used in research and clinical practice monitoring the outcomes of patients with stroke and other conditions