

Patient-Reported Outcomes Core Update:

# *Psychometrics on a Friday Afternoon*

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Many new measures of PROs are based on *item banks*.

*Item banks* are used differently than more traditional off-the-shelf PRO measures.

*Item banks* may offer advantages for pragmatic clinical trials in health care systems.



*A **domain** is the specific feeling, function, or perception you want to measure.*

## FACIT Fatigue Scale (Version 4)

Below is a list of statements that other people with your illness have said are important. **Please circle or mark one number per line to indicate your response as it applies to the past 7 days.**

		Not at all	A little bit	Some- what	Quite a bit	Very much
HI7	I feel fatigued .....	0	1	2	3	4
HI12	I feel weak all over .....	0	1	2	3	4
An1	I feel listless ("washed out") .....	0	1	2	3	4
An2	I feel tired.....	0	1	2	3	4
An3	I have trouble <u>starting</u> things because I am tired.....	0	1	2	3	4
An4	I have trouble <u>finishing</u> things because I am tired .....	0	1	2	3	4
An5	I have energy .....	0	1	2	3	4
An7	I am able to do my usual activities .....	0	1	2	3	4
An8	I need to sleep during the day .....	0	1	2	3	4
An12	I am too tired to eat.....	0	1	2	3	4
An14	I need help doing my usual activities .....	0	1	2	3	4
An15	I am frustrated by being too tired to do the things I want to do .....	0	1	2	3	4
An16	I have to limit my social activity because I am tired.....	0	1	2	3	4



# Traditional Off-the-Shelf PRO Measure

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An15	I am frustrated by being too tired to do the things I want to do .....	0	1	2	3	4
An16	I have to limit my social activity because I am tired .....	0	1	2	3	4

Everyone must complete the same items

All items are necessary to obtain a score.

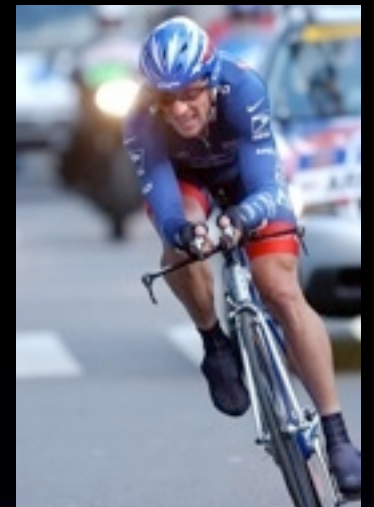
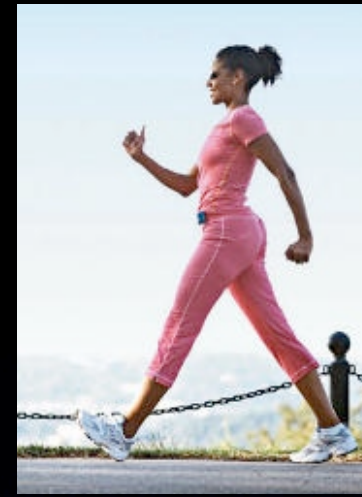
Score might not be on the same metric as other measures of the same thing.

*An **item bank** is a large collection of items measuring a single domain.*

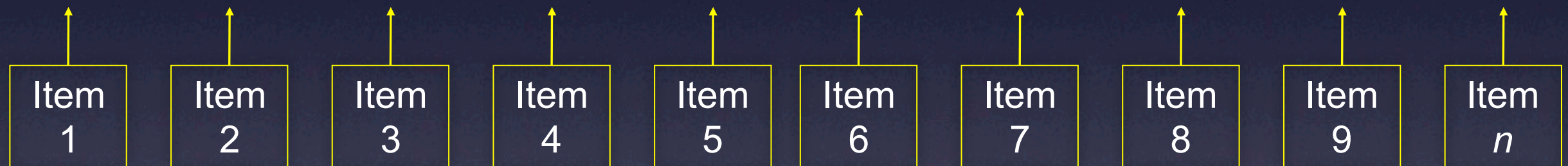
Any and all items can be used to provide  
a score for that domain.

Dynamic, not fixed.





## Physical Functioning Item Bank



Are you able to get in and out of bed?

Are you able to stand without losing your balance for 1 minute?

Are you able to walk from one room to another?

Are you able to walk a block on flat ground?

Are you able to run or jog for two miles?

Are you able to run five miles?



# Using a Traditional Off-the-Shelf PRO Measure

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# Using a PRO Item Bank

# Item Bank

```
graph TD; IB[Item Bank] --> FL[Fixed-Length Measures]; IB --> CAT[Computerized Adaptive Tests (CATs)]; FL --> RM[Ready-made]; FL --> MYO[Make-your-own];
```

Fixed-Length  
Measures

Computerized  
Adaptive Tests  
(CATs)

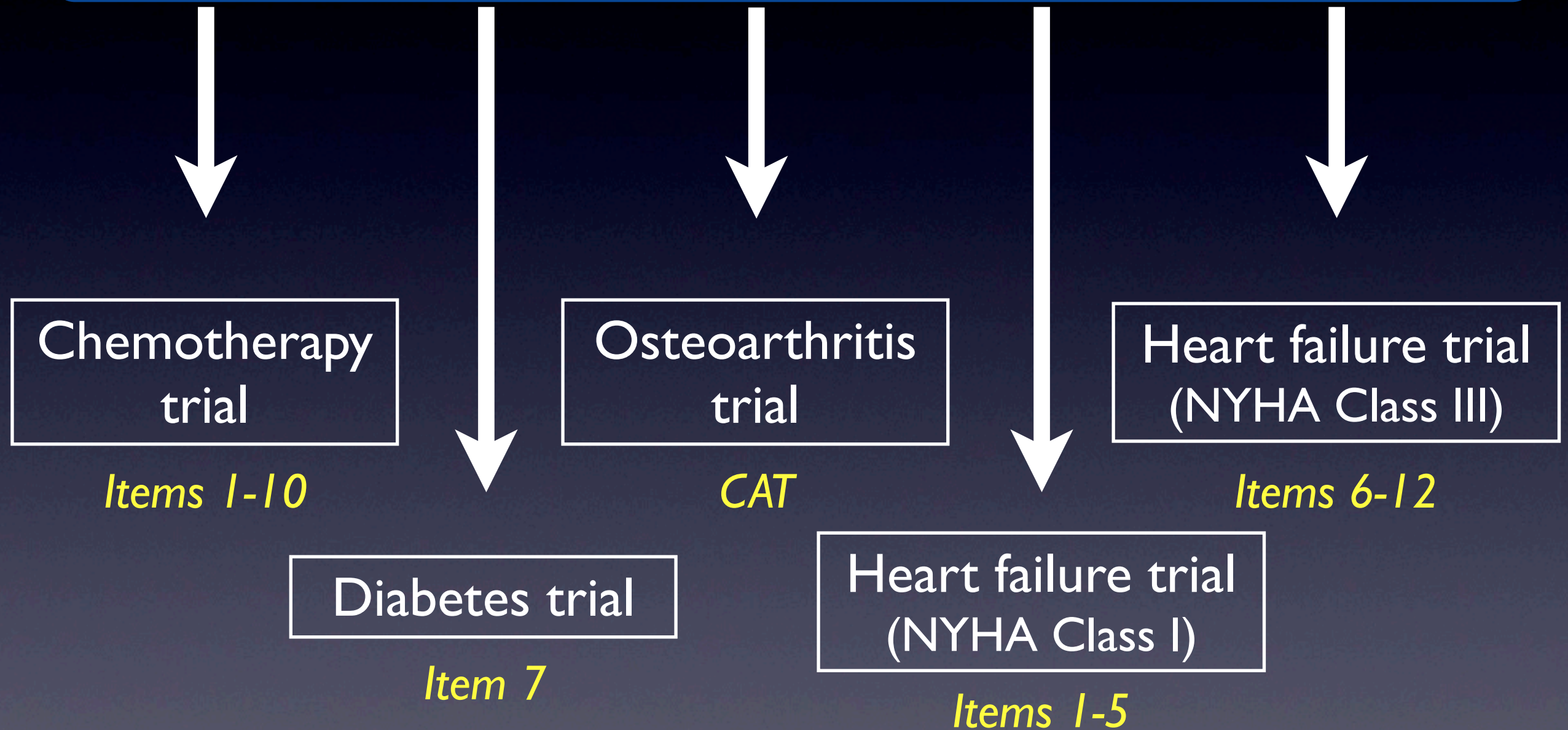
Ready-made

Make-your-own

Next item administered  
depends on answer to  
previous item



# Fatigue Item Bank



*Same metric, same meaning*



# Different Sites, Different Measures

Measure 1  
(in HCS 1)

Item 1  
Item 2  
Item 3  
Item 4  
Item 5



*Metric 1*

Measure 2  
(in HCS 2)

Item 1  
Item 2  
Item 3  
Item 4



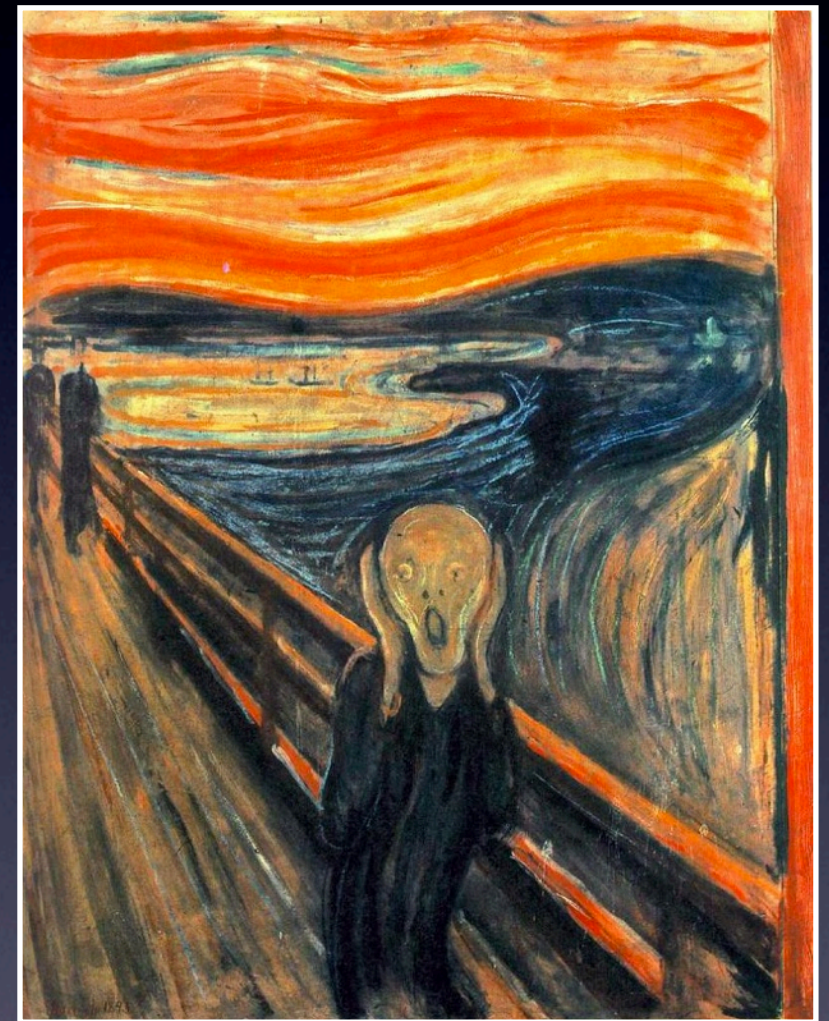
*Metric 2*

Measure 3  
(in HCS 3)

Item 1  
Item 2  
Item 3  
Item 4  
Item 5  
Item 6



*Metric 3*





# Item Bank

Measure 1  
(in HCS 1)

Item 1  
Item 2  
Item 3  
Item 4  
Item 5

Measure 2  
(in HCS 2)

Item 1  
Item 2  
Item 3  
Item 4

Measure 3  
(in HCS 3)

Item 1  
Item 2  
Item 3  
Item 4  
Item 5  
Item 6

Other items

Item 1  
Item 2  
Item 3  
Item 4

→ One Metric

Traditional PRO Measure	PRO Item Bank
All items are required to compute a score	Any and all subsets of items can generate a score
Everyone must take same items	Different people can get different items
Use it “off the shelf”	Use items in bank to create measure for specific use
Scores not easily comparable to scores from another measure of the same domain	Cross-walk between scores from different measures in the same item bank



# Examples of PRO Resources Based on Item Banks

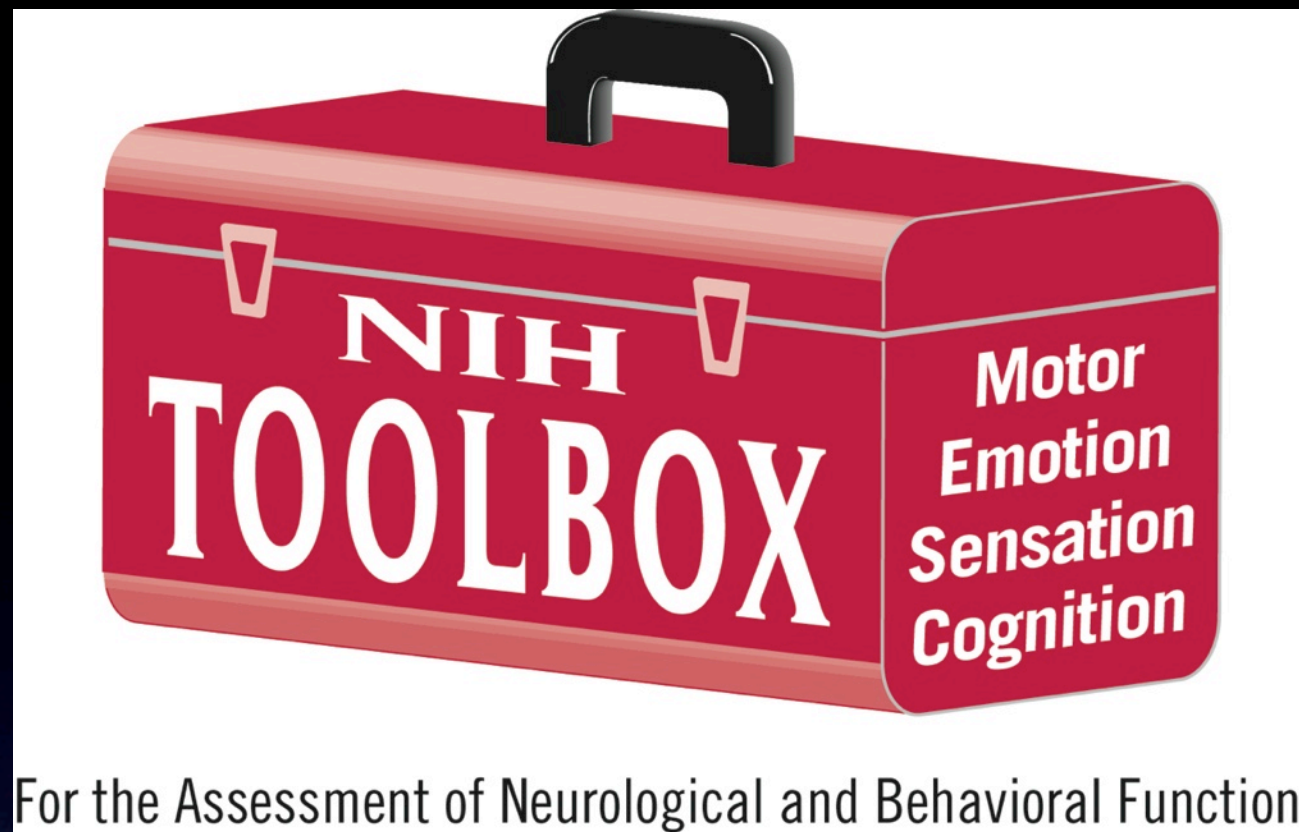


Adult and pediatric item banks  
measuring domains relevant across  
chronic diseases

Freely available

[www.nihpromis.org](http://www.nihpromis.org)





Multidimensional set of brief measures  
assessing cognitive, emotional, motor  
and sensory function from ages 3-85

Freely available

[www.nihtoolbox.org](http://www.nihtoolbox.org)



Core set of instruments for use in  
chronic neurological conditions  
(supplemental set for specific diseases,  
patient subgroups)

Freely available

[www.neuroqol.org](http://www.neuroqol.org)



# QualityMetric's Dynamic Health Assessments<sup>®</sup>

Computerized adaptive test platform

Measures

*SF-36 domains*

*Headache impact*

*Arthritis impact*

Must pay to use

[www.qualitymetric.com](http://www.qualitymetric.com)

# Possibilities



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