



The NIH Toolbox – Assessment of Neurological and Behavioral Function

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BACKGROUND

The NIH Toolbox for Assessment of Neurological and Behavioral Function is a five-year project to identify, create and validate brief comprehensive assessment tools to measure outcomes in longitudinal, epidemiological and intervention studies across the life span in the areas of cognition, emotion, motor and sensory function. The project is one of the initiatives in the NIH Blueprint for Neuroscience Research.

While many epidemiological studies collect information on cognition and emotion as well as motor and sensory function, there is little consistency in actual measures used across studies. As a result, between study comparisons and data pooling is difficult if not impossible.

OBJECTIVES

- Provide a form of “common currency” across diverse study designs and populations
- Maximize yield from large, expensive studies with minimal increment in subject burden and cost
- Four domain level batteries
- Individual instruments fully normed for ages 3-85 years
- Provide tool “shed” of additional instruments

DOMAIN FRAMEWORK

Cognitive Function
Executive Function, Episodic Memory, Working Memory, Processing Speed, Language, Attention

Motor Function
Locomotion, Strength, Non-Vestibular Balance, Endurance, Dexterity

Emotional Health
Negative Affect, Positive Affect, Perceived Social Support/Integration, Coping/Adaptive Capacity

Sensory Function
Vision, Audition, Vestibular Balance, Somatosensation, Taste, Olfaction

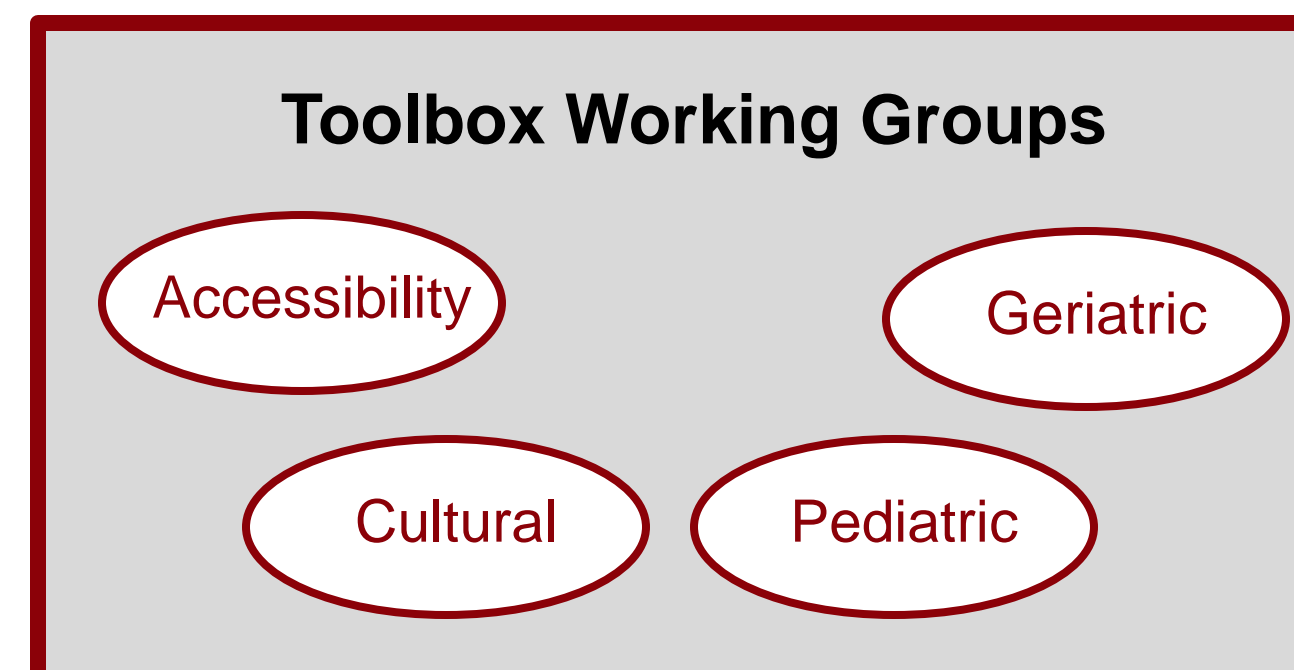
METHODS

Conducted in two phases:

- **Phase I** (2 years)- identification of content area, expert interviews, research on instrumentation, and development of draft instruments
- **Phase II** (3 years)-field testing, refinement, general population survey, delivery of final product and procedure manual
 - **Phase IIA** -final instrument selection, Spanish translations, development of a single technology platform, materials production, calibration of items for computerized adapted testing (CAT) instruments, validation testing of new instruments, concurrent validation with legacy instruments
 - **Phase IIB** -general population survey:
 - National random sample with N = 5,800
 - 50% Spanish-speaking, 50% English-speaking
 - Ages 3-85
 - All primary batteries administered to entire sample
 - **Phase IIC** (2011)-calculate scoring crosswalks with legacy instruments, development of technical manual, delivery of final Toolbox at a public conference

Toolbox Characteristics

- Multidimensional
- Versatile
- Brief
- Methodologically sound
- State-of-the-art
- Diverse
- Dynamic



Geriatric Working Group Overview

Three main topics addressed:

1. Working with the elderly
2. Concept of Universal Design
3. Computer use in the elderly

Working with the elderly:

- Establish respect
- Avoid hurrying older people
- Avoid jargon
- Be alert for sensory impairment
- Be alert for signs of stress
- Consider effects of medication or diurnal variation

See:

www.nia.nih.gov/HealthInformation/Publications/WorkingwithYourOlderPatient/

Concept of Universal Design:

- Equitable use
- Flexibility in use
- Simple and intuitive use
- Perceptible information
- Tolerance for error
- Low physical effort
- Size and space for approach and use

See:

www.design.ncsu.edu/cud/

Computer use in the elderly:

The elderly can learn to use a computer effectively even when an individual has limited previous experience. Using different presentation and input methods should be considered to provide assistance.

POTENTIAL USES

- Add dimensions to ongoing large cohort health-related studies both for risk-modifying factors and for outcomes
- Add dimension to ongoing prevention trials
- Complement studies of cognition/emotion
- Allow comparisons between studies
- Encourage the use of ongoing systematic reviews

How to Keep up to Date with the NIH Toolbox

- Go to www.nihtoolbox.org
- Read the quarterly newsletter
 - Available on the website
 - Distribution: 400 copies