



NIH Toolbox
Assessment of Neurological and Behavioral Function

**WHAT TOOLBOX PROMISES:
ADVANCES OVER CURRENT APPROACHES,
UNIQUE FEATURES, AND PRODUCTS**


Molly V. Wagster, PhD
National Institute on Aging  

October 27, 2008

NIH Blueprint
Team, Resources and Training



For more information, please visit www.nihtoolbox.org
Richard C. Gerstman, PhD, PI gerstman@northwestern.edu


This study is funded in whole or in part with Federal funds from the Blueprint for Neuroscience Research, National Institutes of Health under Contract No. HHS-N-260-2006-00007-C

**The Cognitive and Emotional Health
Project: The Healthy Brain** 



Sponsors: NIA, NIMH, NINDS

- International workshop
 - Create a panel to conduct critical analysis of existing studies
- Critical Evaluation Study – Blue ribbon panel
 - Secondary analyses
 - Ancillary studies/prevention trials
 - Development of standard questionnaire to measure cognitive and emotional health

**Needs Assessment for
NIH Blueprint Proposal** 

- Project Team members
- Extramural/Intramural Research Community
- Cognitive and Emotional Health Project
 - Suggestions from Critical Evaluation Study Committee

Responsiveness to Goals



- Assessment of multiple indicators important for wide range of Institute/Center/Office missions
- Current assessment tools not uniform and universal for all research needs in Neuroscience community
- Not a duplication of other completed or ongoing activities
- Intent to provide a national resource for the scientific community and across NIH



NIH Toolbox Concept



- Develop unified/integrated measures (assessment tool) of multiple indicators (cognitive, emotional, motor, sensory) of neural and behavioral **health** functioning for use in large cohort studies and clinical trials
- Could be used as a form of "common currency" across diverse study designs and populations
- Would maximize yield from large, expensive studies with minimal increment in subject burden and cost



Characteristics of the Toolbox



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



Characteristics of the Toolbox



• Multidimensional

- Cognition
 - Motor
 - Emotion
 - Sensory
- 
- Taste
 - Olfaction
 - Audition
 - Vision
 - Vestibular Balance
 - Somatosensation



Characteristics of the Toolbox



• Versatile

- Monitor change over time
- Readily portable from one type of study design to another
- Incorporate ways to 'crosswalk' to existing and previous studies
- Avoid ceiling and floor effects



Characteristics of the Toolbox



• Brief

- Ensure low respondent burden



Characteristics of the Toolbox



- ♦ Methodologically sound
 - Fulfill appropriate psychometric characteristics
 - Demonstrate validity and reliability



Characteristics of the Toolbox



- ♦ State-of-the-art
 - Employ modern psychometric approaches to measurement of latent dimensions
 - To the extent possible, use Item Response Theory models and computer adaptive testing



Characteristics of the Toolbox



- ♦ Diverse
 - Demonstrate known measurement properties across cultures and age ranges
 - English and Spanish versions to be developed and validated



Characteristics of the Toolbox



- **Dynamic**
 - Capable of being adapted over time in response to scientific and/or technological advances



Characteristics of the Toolbox



- Where possible, objective measures favored over self-report
- To be made freely available and free of charge to the scientific research community



What the Toolbox is not:



- Not a diagnostic tool
- Will not target disease outcomes
- Not conceptualized to substitute for the in-depth assessment of a domain or subdomain



NIH Toolbox for Assessment of Neurological & Behavioral Function



- Contract awarded September 2006 (FY06) to NorthShore University HealthSystem Research Institute, Richard Gershon, PhD [PI]

Other Principals –

- David Cella, PhD – NorthShore
- Nathan Fox, PhD – University of Maryland
- Richard Havlik, MD - Westat
- Hugh Hendrie, MB, ChB, DSc – Indiana University



Conducted in Two Phases



- Phase I (2 years) – ID of content area, expert interviews, research on instrumentation, development of draft instruments
- Phase II (3 years) – Field testing, refinement, norming, delivery of final product and procedure manual



Vision for the Final Toolbox





- Four Domain level batteries
- Individual instruments fully normed for ages 3 – 85 years
- Tool “shed” of additional instruments





NIH Toolbox
Assessment of Neurological and Behavioral Function

**WHAT TOOLBOX PROMISES:
ADVANCES OVER CURRENT APPROACHES,
UNIQUE FEATURES, AND PRODUCTS**

Molly V. Wagster, PhD
National Institute on Aging  

October 27, 2008



For more information, please visit www.nihtoolbox.org
Richard C. Gershon, PhD, PI gershon@northwestern.edu

This study is funded in whole or in part with Federal funds from the Blueprint for Neuroscience Research, National Institutes of Health under Contract No. HHS-N-260-2006-00007-C
