


**NIH Toolbox**  
Assessment of Neurological and Behavioral Function

---

## Integrating Health Information into Longitudinal Studies

Hugh C. Hendrie, MB, ChB, DSc  
IU Center for Aging Research  
October 27, 2008



For more information, please visit [www.nihtoolbox.org](http://www.nihtoolbox.org)  
Richard C. Gersthor, PhD, PI: [gersthor@northwestern.edu](mailto:gersthor@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

---

---

---

---

---

---

---

---


---

---

---

---

### Integrating Health Information into Longitudinal Studies



- ◆ Need for the Toolbox: Review of CEHP
- ◆ Characteristics of the Toolbox instruments
- ◆ Potential Use of the Toolbox

---

---

---

---

---

---

---

---


---

---

---

---

### Integrating Health Information into Longitudinal Studies



- ◆ Need for the Toolbox: Review of CEHP
- ◆ Characteristics of the Toolbox instruments
- ◆ Potential Use of the Toolbox

---

---

---

---

---

---

---

---

---

---

---

---

## Trans NIH Cognitive & Emotional Health Project



Goal – to assess the state of longitudinal and epidemiological research on demographic, social, and biological determinants of cognitive and emotional health ... to determine how these pathways reciprocally influence each other.

---

---

---

---

---

---

---

---

## Critical Evaluation Study Committee



- |  |  |   |
|--|--|---|
| Marilyn Albert<br><i>John Hopkins</i>            | Hugh C. Hendrie<br>Committee Chair<br><i>Indiana University</i>        | Sujuan Gao<br><i>Indiana University</i> |
| David Knopman<br><i>Mayo Clinic</i>              | Kristine Yaffe<br><i>University of California<br/>at San Francisco</i> |   |
| Meryl Butters<br><i>University of Pittsburgh</i> | Lenore Launer<br><i>NIA Intramural</i>                                 |   |
| Bruce Cuthbert<br><i>NIMH</i>                    | Emmeline Edwards<br><i>NINDS</i>                                       |   |
|  | Molly Wagster<br><i>NIA</i>  |   |

---

---

---

---

---

---

---

---

## Outcome Focus of the CEHP Review



- Cognitive outcomes-cognitive performance/cognitive decline
- Emotional outcomes-depressive/anxiety symptoms, mastery/resilience

---

---

---

---

---

---

---

---

## Data Source for Longitudinal Studies



- NIH database of large epidemiological studies (n=80)

---

---

---

---

---

---

---

---

## Final Criteria for Inclusion into the Analyses on Cognitive and Emotional Outcomes



- Sample size > 500
- Age predominantly 65 and over
- Longitudinal in design
  - At least one follow up evaluation of cognitive function, OR
  - Single evaluation of cognitive function with exposure measured a certain year prior to cognitive function
- Measurement of memory and at least one other cognitive domain

---

---

---

---

---

---

---

---

## Final Criteria for Inclusion into the Analyses on Cognitive and Emotional Outcomes (cont'd)



- Measurement of depression symptoms and at least one other domain such as quality of life, sense of control, self-efficacy, resilience, hopelessness or optimism
- For emotional outcomes, cross-sectional studies were also included

---

---

---

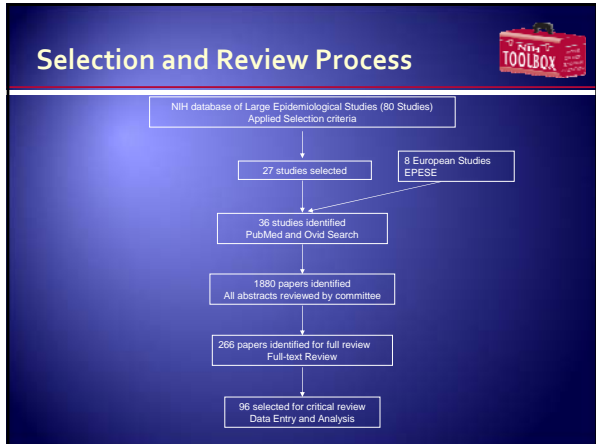
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

## Healthy Brain Review Cognitive Outcomes

Table 1. Number of Papers with various cognitive outcomes (total number of papers = 70)

Cognitive Outcomes	Frequency	Percent
3MS	12	17.14
Attention	5	7.14
Composite Cognitive	10	14.29
Executive Function	4	5.71
Memory Self-Report	1	1.43
Memory Verbal	11	15.71
MMSI	11	15.71
Other Global	16	22.86

---

---

---

---

---

---

---

---

---

---

## Healthy Brain Review Emotional Outcomes

Table 2. Number of Papers with Emotional Outcomes (total number of papers = 34)

Original Outcome Measures in the DB	Frequency	Percent
Anxiety	3	8.82
Depression	21	61.76
Dysphoria	2	5.88
GAD	1	2.94
Major Depression	1	2.94
Mastery	1	2.94
Negative Affect	3	8.82
Panic Attack(s)	1	2.94
Subjective/Emotional Well Being	1	2.94

---

---

---

---

---

---

---

---

---

---

## Conclusions from CEHP Review



- Widespread public interest
- A different set or combination of risk factors (or different emphases) may be identified than those from illness-focused research
- Research in brain health maintenance should be pursued with vigor
- Health Promotion and Disease Prevention are complimentary
- **Cognitive and Emotional health must be studied simultaneously**

---

---

---

---

---

---

---

---

## Suggestions from CEHP Review



1. Secondary Analysis
  - Funding
  - Access to data – manageable format
  - Combined analysis – harmonization
  - Support structure
  - Ongoing analysis of published data
  - Combined cognitive and emotional outcomes

---

---

---

---

---

---

---

---

## Suggestions from CEHP Review



2. Development of standard questionnaires
  - Formation of expert committee
  - Formation of research team to test reliability and validity

---

---

---

---

---

---

---

---

## Suggestions from CEHP Review



### 6. Prevention trials

- Addition of cognitive and emotional outcomes to ongoing trials

### 7. Changing the paradigm

- Biomedical with social scientists, bioethics and others

---

---

---

---

---

---

---

---

## Integrating Health Information into Longitudinal Studies



- Need for the Toolbox: Review of CEHP
- Characteristics of the Toolbox instruments
- Potential Use of the Toolbox

---

---

---

---

---

---

---

---

## Measurement Characteristics



- Comprehensive
- Administration and length
- Sensitive to detecting change over time
- Measurement across the life span

---

---

---

---

---

---

---

---

## Integrating Health Information into Longitudinal Studies



- ◆ Need for the Toolbox: Review of CEHP
- ◆ Characteristics of the Toolbox instruments
- ◆ Potential Use of the Toolbox

---

---

---

---

---

---

---

---

## Toolbox as an outcome



---

---

---

---

---

---

---

---

## Toolbox as a risk factor



---

---

---

---

---

---

---

---

## Potential Uses of the Toolbox



- 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

---

---

---

---

---

---

---

---

## Potential Uses of the Toolbox



- 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

---

---

---

---

---

---

---

---



**NIH Toolbox**  
Assessment of Neurological and Behavioral Function

---

## Integrating Health Information into Longitudinal Studies

Hugh C. Hendrie, MB, ChB, DSc  
IU Center for Aging Research  
October 27, 2008

**NIH Blueprint**  
Tools, Resources and Training

For more information, please visit [www.nihtoolbox.org](http://www.nihtoolbox.org)  
Richard C. Gershon, PhD, PI [gershon@northwestern.edu](mailto: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

---

---

---

---

---

---

---

---