Crosswalk study

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Agenda — Part 1

1. Background
2. New measures

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Goals and time line

- IRB modifications/applications for each Center
- Provide feedback following feasibility pilot by November 29
- Final revisions to worksheets and instructions, if needed
- WEBINAR: December 12, 2013 12pm – 3pm CDT
- Total estimated additional time for administration of Crosswalk tests: 20-30 minutes (includes delay for Craft Story 21)
- Projected completion date: March 30, 2014

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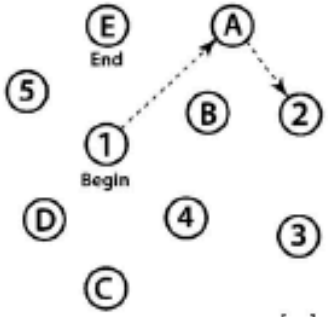
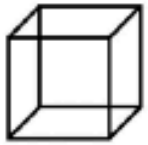
Montreal Cognitive Assessment (MoCA) VERSION 7.1 ORIGINAL VERSION

VISUOSPATIAL / EXECUTIVE





Copy cube

[ ] [ ]

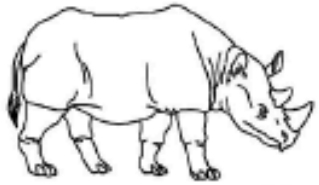
Draw CLOCK (Ten past eleven) (3 points)

[ ] Contour [ ] Numbers [ ] Hands

POINTS __/5

NAMING

[ ]



[ ]

[ ]

__/3

MEMORY Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes.

	FACE	VELVET	CHURCH	DAISY	RED
1st trial					
2nd trial					

No points

ATTENTION Read list of digits (1 digit/ sec.).

Subject has to repeat them in the forward order [ ] 2 1 8 5 4

Subject has to repeat them in the backward order [ ] 7 4 2

__/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors

[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B

__/1

Serial 7 subtraction starting at 100 [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65

4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt**

__/3

LANGUAGE Repeat : I only know that John is the one to help today. [ ]

The cat always hid under the couch when dogs were in the room. [ ]

__/2

Fluency / Name maximum number of words in one minute that begin with the letter F [ ] _____ (N ≥ 11 words)

__/1

ABSTRACTION Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler

__/2

DELAYED RECALL

	FACE	VELVET	CHURCH	DAISY	RED	
Has to recall words WITH NO CUE	[ ]	[ ]	[ ]	[ ]	[ ]	Points for UNCUED recall only
Optional Category cue						
Optional Multiple choice cue						

__/5

ORIENTATION [ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City

__/6

© Z.Nasreddine MD **www.mocatest.org** Normal ≥ 26 / 30

TOTAL __/30

Add 1 point if ≤ 12 yr edu

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3.	**MoCA — Total score** (0–30)	____ ____
3a.	Visuospatial/executive (0–5)	____ ____
3b.	Naming (0–3)	____ ____
3c.	Attention: List of digits (0–2)	____ ____
3d.	Attention: List of letters (0–1)	____ ____
3e.	Attention: Serial 7 subtraction (0–3)	____ ____
3f.	Language: Repeat (0–2)	____ ____
3g.	Language: Fluency (0–1)	____ ____
3h.	Abstraction (0–2)	____ ____
3i.	Delayed recall (0–5)	____ ____
3j.	Orientation (0–6)	____ ____

Number Span Test: Forward

[Say]: **"I am going to ask you to repeat some numbers for me. Wait until I finish saying the numbers an then repeat them in the same order. "For example, if I say 1-8-7, you would say 1-8-7. If I say 2-9-8, what would you say?"** If the subject gives the wrong answer, say, **"Actually, you would say 2-9-8."**

[Say]: **Repeat only the numbers I say each time. You don't have to remember all the numbers you just repeated before this set."** Then start with test items.

Series length		Response	Response code *incorrect = 0 correct = 1*
3	1-8-4		_____
	2-7-9		_____
4	4-1-6-2		_____
	8-1-9-5		_____
5	6-4-9-2-8		_____
	7-3-8-6-1		_____
6	3-9-2-4-7-5		_____
	6-2-8-3-1-9		_____

Craft Story 21

Maria's / child / Ricky / played / soccer / every Monday / at 3:30. / He / liked / going / to the field / behind / their / house / and joining / the game. / One / day, / he / kicked / the ball / so / hard / that it / went / over / the neighbor's / fence / where three / large / dogs / lived. / The dogs' / owner / heard / loud / barking, / came / out, / and helped / them / retrieve / the ball

Total story units recalled (VERBATIM SCORING): / 44
Total story units recalled (PARAPHRASE SCORING): / 25

Craft S, Newcomer J, Kanne S, Dagogo-Jack S, Cryer P, Sheline Y, Luby J, Dagogo-Jack A, Alderson A. Memory improvement following induced hyperinsulinemia in Alzheimer's disease. Neurobiol Aging. 1996 Jan-Feb;17(1):123-30.

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CRAFT STORY 21 RECALL (IMMEDIATE): VERBATIM SCORING

PERFECT VERBATIM RESPONSE (1.0 POINT): Give the subject 1 point for every bit for which cor
words are recalled exactly and completely. The content words do not need to be recalled by the sul
the same order they were read to receive credit. The words can appear anywhere in the recall.

Maria's	
child	
Ricky	
played	
soccer	
every	
Monday	
three thirty	
he	
liked	
going	
field	

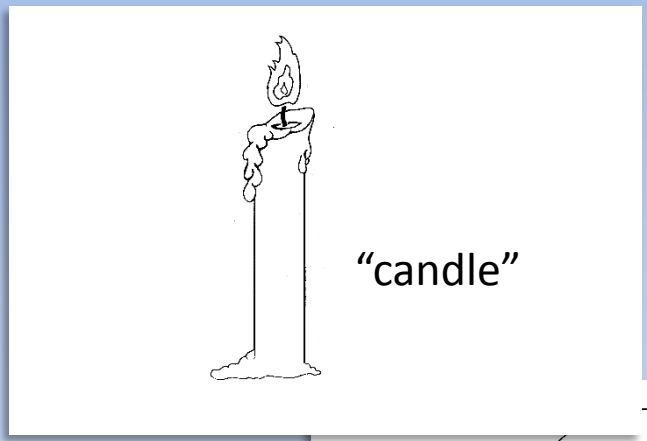
hard	
it	
went	
over	
neighbor's	
fence	
three	
large	
dogs	
lived	
dogs'	
owner	

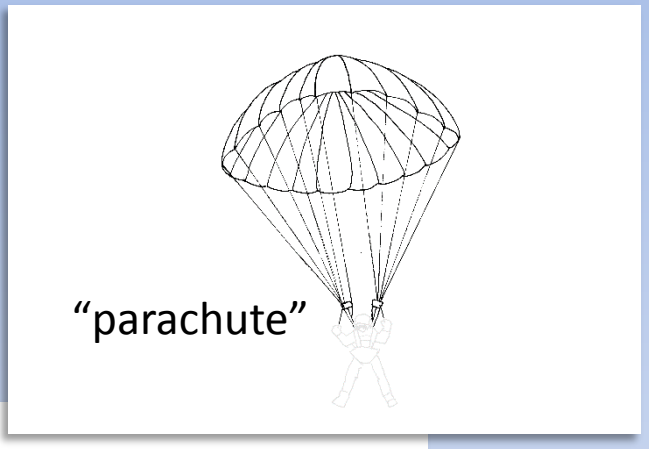
CRAFT STORY 21 RECALL (IMMEDIATE): PARAPHRASE SCORING

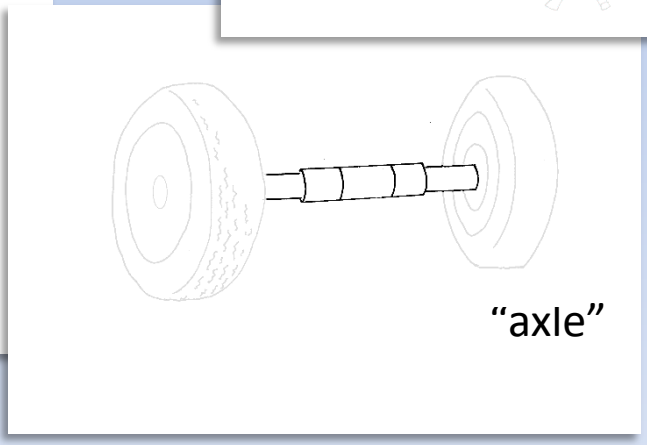
PARAPHRASE RESPONSE (1.0 POINT): Give a point for a response that captures the elements of the story although not necessarily with the exact words (see table below).

Text	General rule	Points
Maria's	"Maria" or variant of the name	
child	"child" or a phrase denoting that it was a young person	
Ricky	"Ricky" or variant of the name	
played	"played" is required	
soccer	"soccer" is required	
every Monday	"Monday" or an indication that the activity occurred on a weekday	
at 3:30.	An indication that the activity took place in the afternoon	
He liked going to the field	An indication that he went to an outdoor area	
behind their house	"House" or a word denoting a house	
and joining	An indication that he participated	
the game.	"Game" in any context	
One day	"One day" is required	
he kicked	An indication that he performed the activity with his foot	
the ball	"ball" is required	

Selected MINT items







Ivanova I, Salmon DP, Gollan TH. The Multilingual Naming Test in Alzheimer's Disease: Clues to the Origin of Naming Impairments. J Int Neuropsychol Soc. 2013 Jan 8:1-12.

Gollan TH, Weissburger G, Runnqvist E, Montoya RI, Cera CM. Self-ratings of spoken language dominance: A Multilingual Naming Test (MINT) and preliminary norms for young and aging Spanish–English bilinguals. Bilingualism: Language and Cognition. 2011;13:215-8.

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Multilingual Naming Test (MINT)

INSTRUCTIONS AND CUING

[Say]: **"I am going to show you some pictures of objects, one at a time. Please tell me the name of each object, that is, tell me what it is called. If you cannot think of the name try to make your best guess. If you don't know what the object is, I will try to help you. Do you have any questions?"**

				Uncued	Semantic cue		Phonemic cue	
Item #	English	Semantic cue	Spontaneous Response(s)	correct	correct	Incorrect	correct	Incorrect
1	Butterfly	an insect						
2	Glove	an article of clothing						
3	Lightbulb	used to see better and is turned on electrically						
4	Watch	used to tell the time						
5	Candle	is used in the dark to make light						
6	Clown	found in a circus						
7	Kite	a toy that uses the wind to make it fly						
8	Rainbow	it's colorful and is found in the sky after it rains						
9	Witch	a woman with magical powers						

Agenda — Part 2

1. Detailed time line for the crosswalk study
2. Feasibility phase
3. Web training
4. Crosswalk study
   - Study design
   - Data collection & submission
   - Analysis method
5. Questions and discussion

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Timeline for crosswalk study proposed by CTF

- September 2013
  Officially announce crosswalk: documents posted, obtain IRB approval, begin feasibility phase ✓
- October - November 29, 2013
  Feasibility findings and questions due to NACC's Clinical Core Bulletin Board
- December 12, 2013
  Web training
- December 13, – March 31, 2014 (projected)
  Collect data, perform interim analysis
- April 2014 (projected)
  Final data analysis
- April 26, 2014
  Present at ADC meeting

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Feasibility phase

Now – Nov 29, 2013

- Administer crosswalk tests to up to five UDS subjects (control, MCI, early AD)
- Identify any questions or potential problems related to:
  - Test materials
  - Administration instructions
  - Scoring
- Submit all UDS2 data per usual protocol
- Do NOT submit new test scores to NACC
- Do NOT email Sandy directly

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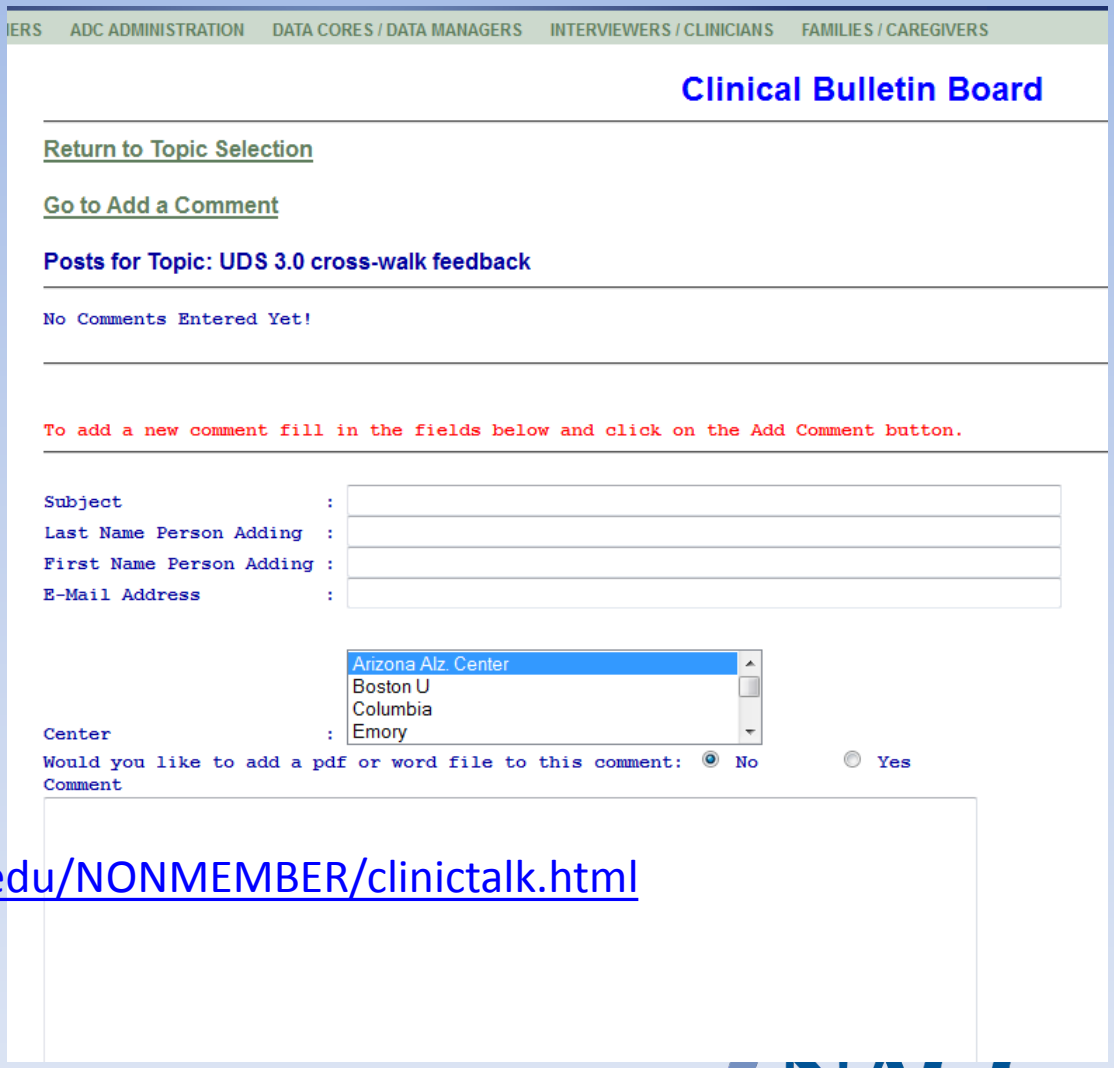
Feasibility phase

- Communicate feedback via NACC Clinical Core Bulletin Board
- Select Topic 1—UDS 3.0 Crosswalk Feedback



https://www.alz.washington.edu/NONMEMBER/clinictalk.html

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Web training

Dec 12, 2013

- **Who should attend?**
  - All Center staff responsible for administration and scoring of UDS neuropsychological battery
- **How long will it last?**
  - Allow three hours: 12pm – 3pm CDT
- **What will we cover?**
  - Test-by-test instructions, stimuli, scoring
  - Sequence of administration of old and new tests
  - Data form completion and submission
  - Questions and answers

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Crosswalk study design

Dec 13, 2013 – March 2014?

- Centers volunteer to participate
- Subjects receive both current UDS battery and tests proposed for UDS 3.0
- Order of current vs. new battery randomized by Center
- Include subjects with a wide range of cognitive abilities at both initial and follow-up visits
- Interim analysis

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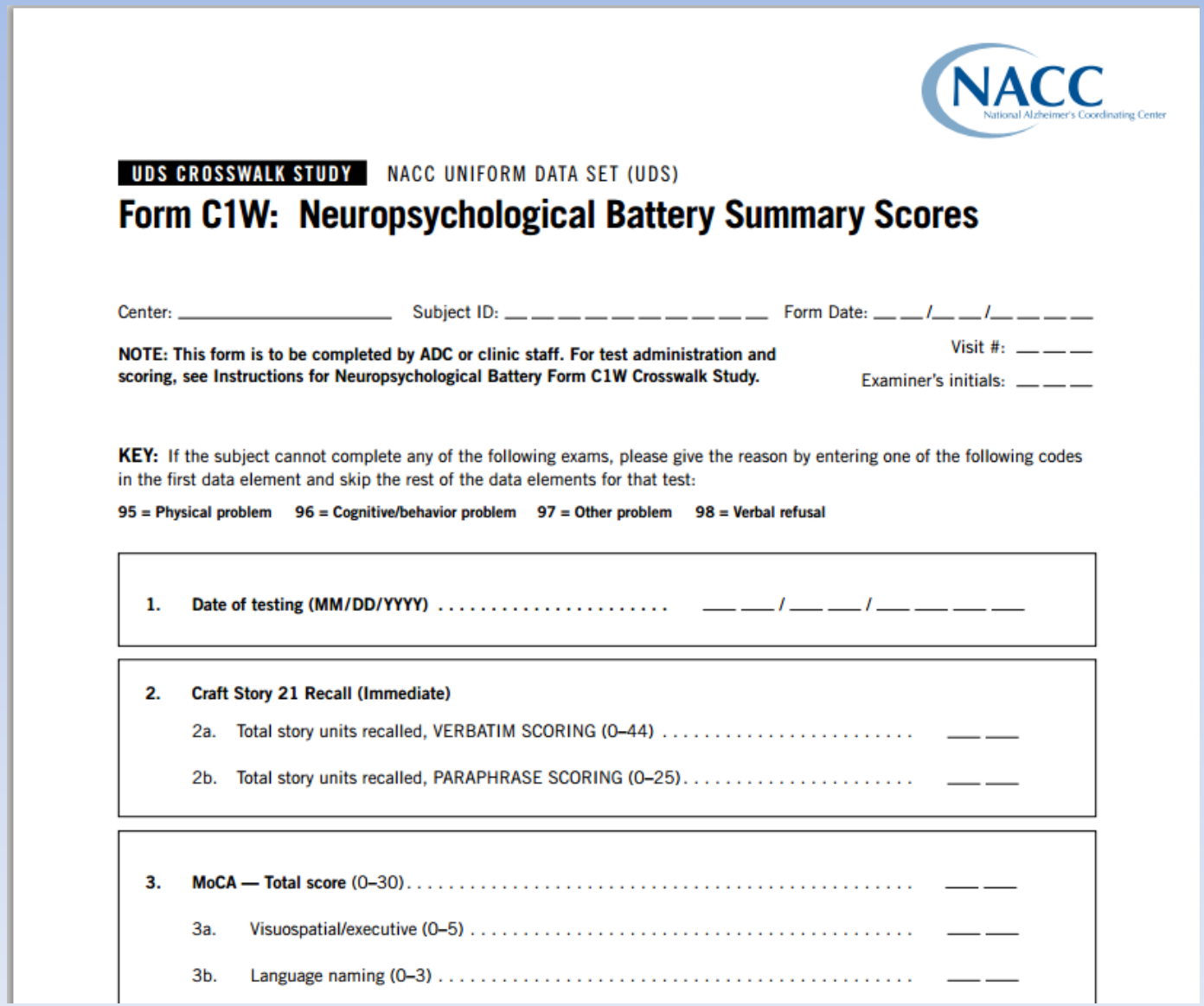
Data collection



UDS CROSSWALK STUDY NACC UNIFORM DATA SET (UDS)

Form C1W: Neuropsychological Battery Summary Scores

Center: _____ Subject ID: _ _ _ _ _ _ _ _ _ _ Form Date: _ _/_ _/_ _ _ _

NOTE: This form is to be completed by ADC or clinic staff. For test administration and scoring, see Instructions for Neuropsychological Battery Form C1W Crosswalk Study.

Visit #: _ _ _

Examiner's initials: _ _ _

KEY: If the subject cannot complete any of the following exams, please give the reason by entering one of the following codes in the first data element and skip the rest of the data elements for that test:

95 = Physical problem **96 = Cognitive/behavior problem** **97 = Other problem** **98 = Verbal refusal**

1. **Date of testing (MM/DD/YYYY)** . . . . . _ _/_ _/_ _ _ _

2. **Craft Story 21 Recall (Immediate)**
   - 2a. Total story units recalled, VERBATIM SCORING (0–44) . . . . . _ _
   - 2b. Total story units recalled, PARAPHRASE SCORING (0–25) . . . . . _ _

3. **MoCA — Total score** (0–30) . . . . . _ _
   - 3a. Visuospatial/executive (0–5) . . . . . _ _
   - 3b. Language naming (0–3) . . . . . _ _

Forms:

C1W

A1

C1

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Crosswalk data collection and submission

Dec 13, 2013 – March 2014?

- Forms to submit via usual Center protocol:
  - **Form A1** (UDS2 subject demographics form)
  - **Form C1** (UDS2 summary scores form)
- Forms to submit via web data entry or e-form:
  - **Form C1W** (crosswalk study summary scores form)
- Submit all three forms **within 1 week** of subject's visit
  - To allow proper data monitoring
  - To allow prompt study completion
- Submit remainder of UDS forms as usual for QA, finalization, etc.

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Sample size

- Desired sample = 1500 (Kolen and Brennan)
- Penn study had >500 subjects
- Need to observe every value in range
- Subject recruitment depends on Center participation

Number of Centers participating	Number of subjects needed per Center
10	150
15	100
20	75
25	60

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Method: Equipercentile equating

- Standardized testing/education literature
- Penn study (Roalf et al.):
  - Compared MMSE and MoCA
  - 321 AD, 126 MCI, and 140 CN

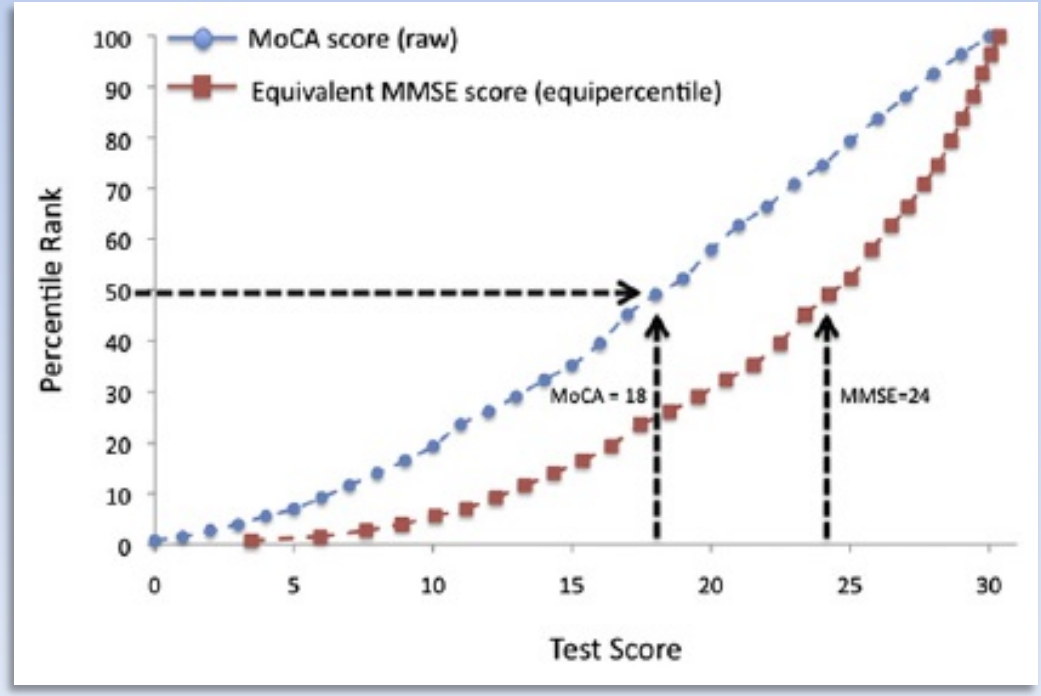

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Table 4

Conversion table for MMSE and MoCA screening measures based on equipercentile equating in 321 AD, 126 MCI, and 140 HC*

Raw MoCA score	Equivalent MMSE score
0	3
1	6
2	8
3	9
4	10
5	11
6	12
7	13
8	14
9	15
10	16
11	17
12	19
13	20
14	21
15	22
16	22
17	23
18	24
19	25
20	26
21	26
22	27
23	28
24	28
25	29
26	29
27	29
28	30
29	30
30	30

*Equivalent scores were derived from equipercentile equating with log-linear smoothing.

- Provide table and/or derived data element to investigators
- Publish findings

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Additional analyses

Data available to ADC researchers post-analysis by CTF subgroup and NACC for:

- Validation study
- Assessment of test properties
- Analysis using other equating methods, such as multiple imputation, IRT, etc.

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Statistical Work Group

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Questions? Comments?

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