

THE RAPID ESTIMATE OF ADULT LITERACY IN MEDICINE (REALM)

TABLE OF CONTENTS

1. Background and rationale 1
2. Equipment and supplies..... 1
3. Safety issues and exclusions 2
4. Participant and exam room preparation..... 2
5. Detailed measurement procedures 2
6. Procedures for performing the measurements at home (if applicable) 3
7. Alert values/follow-up/reporting to participants 3
8. Quality assurance 3
8.1 Training requirements 3
8.2 Certification requirements..... 3
8.3 Quality assurance checklist..... 3
9. References..... 4
10. Data collection form 5

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1. Background and rationale

A major objective of Health ABC is to examine the relationship of socioeconomic factors to both body composition and physical decline in old age. Although years of school completed is commonly used to represent educational attainment, it may not accurately reflect educational background, as the quality of education available varies substantially by geographic region, race, and possibly sex (especially in the 1930's). Several studies have found reading ability to vary widely within a given level of schooling and that grade-equivalent reading level correlates more strongly with health status than years of school completed.

Scores on common measures of cognitive function, the MMSE (from which the Teng 3MS is based) in particular, have been found to vary by educational attainment, largely independent of evidence for decline in function. While formulas exist to “adjust” for differences in education, a recent study found reading level to have a much stronger correlation with MMSE score than other sociodemographic variables including education and that education level makes only a small additional contribution to the regression equation predicting MMSE score. Thus, proper interpretation of scores on tests of cognitive function, such as the 3MS, would benefit from knowledge of participant reading level.

Assessment of reading level will also provide needed data for evaluating the appropriateness of particular instruments and questionnaires for our study population as well as the feasibility of using self-administered forms.

The REALM is a brief, highly reliable (retest correlations $> .9$), and well-validated word recognition based measure of reading level, targeted to identify low literacy. It consists of 66 common lay-medical terms of variable difficulty and takes 1 to 3 minutes to administer. The REALM provides broad grade-range estimates (0-3, 4-6, 7-8, and 9+) of reading level, but raw scores from zero to 66 may also be used. The REALM has been used in several studies involving patient and clinic populations and appears to be well-suited for use in a large-scale epidemiologic study.

2. Equipment and supplies

- Laminated REALM word list
- Hand-held magnifying lens

3. Safety issues and exclusions

Participants who have severe visual impairment, that is, those who are unable to see large print with a magnifying lens should be excluded. Exclusion for severe visual impairment should be recorded on the REALM data collection form (Question #4: “Was the REALM administered?” in the Year 10 Clinic Visit Workbook).

4. Participant and exam room preparation

Testing should be performed in a quiet, well-illuminated room with the participant seated. Participants should be asked whether they need glasses to read and if so, to wear them for testing. A hand-held magnifying lens may be used, if necessary.

5. Detailed measurement procedures

Ask the participant to be seated and to put on the glasses they normally use for reading or doing close work. Give the participant a laminated copy of the REALM (Card #11a of the Year 10 Clinic Visit Response Cards) and say: *“This sheet contains words commonly used by doctors and their patients. Please read aloud as many words as you can from these three lists. Begin with the first word on List 1 and read aloud. When you come to a word you cannot read, do the best you can or say “skip” and go on to the next word.”*

If the participant takes more than 5 seconds on a word, say “skip” and point to the next word, if necessary, to move the participant along. If the participant misses three words in a row, have them pronounce only known words.

Record whether the participant correctly pronounces the word, mispronounces the word, or does not attempt to say the word by filling in the appropriate bubble. Count as correct any self-corrected word. If the participant is reading the words too fast for you to score the test, you can ask them to read the words more slowly: *“Please read the words slowly so that I can keep up with you.”*

Count the number of correct words and record the number on the data collection form. If the participant scores fewer than five words or refuses to take the test, they may not recognize letters well enough to take the vision exam.

Reference values:

<u>Raw Score</u>	<u>Grade Range</u>
0-18	3rd grade and below
19-44	4th to 6th grade
45-60	7th to 8th grade
61-66	high school

6. Procedures for performing the measurements at home (if applicable)

Follow instructions for clinic administration.

7. Alert values/follow-up/reporting to participants

None.

8. Quality assurance

8.1 Training requirements

Examiners must be able to pronounce all words correctly and be familiar with acceptable alternative pronunciations.

8.2 Certification requirements

- Read and study manual
- Pronounce all 66 words correctly
- Conduct exam on two participants while being observed by the QC officer using the QC checklist
- Discuss problems and questions with local expert or QC officer



8.3 Quality assurance checklist

- Testing is done in a quiet, well-illuminated room
- Participant asked whether they need glasses to read, and if so, to wear them for testing
- Recites instructions correctly
- No more than 5 seconds given to participant to say a word before examiner says “skip” and points to the next word
- Participant is asked to read only known words if they miss three words in a row
- Number of correct words recorded on the data collection form
- Correctly completes form
- Checks form for completeness

9. References

1. Baker DW, Parker RM, Williams MV, Clark WS, Nurs J. The relationship of patient reading ability to self-reported health and use of health services. *Am J Public Health* 1997;87:1027-1030.
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4. Davis TC, Long SW, Jackson RH, Mayeaux EJ, George RB, Murphy PW, Crouch MA. Rapid estimate of adult literacy in medicine: A shortened screening instrument. *Fam Med* 1993;25:391-395.
5. Davis TC, Michielutte R, Askov EN, Williams MV, Weiss BD. Practical assessment of adult literacy in health care. *Health Ed Beh* 1998;25(5):613-624.
6. Weiss BD, Reed R, Kligman EW, Abyad A. Literacy and performance on the Mini-Mental State Examination. *J Am Geriatr Soc* 1995;43:807-810.
7. Williams MV, Baker DW, Honig EG, Lee TM, Nowlan A. Inadequate literacy is a barrier to asthma knowledge and self-care. *Chest* 1998;114:1008-1015.
8. Williams MV, Baker DW, Parker RM, Nurss JR. Relationship of functional health literacy to patients' knowledge of their chronic disease: A study of patients with hypertension and diabetes. *Arch Intern Med* 1998;158:166-172.

10. Data collection form

 20191		HABC Enrollment ID # <input type="text"/>	Acrostic <input type="text"/>	Type of Annual Contact <input type="radio"/> Year 8 <input checked="" type="radio"/> Year 10
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**RAPID ESTIMATE OF ADULT
LITERACY IN MEDICINE (REALM)**

1. Do you usually wear glasses to read?
(*Examiner Note: Determine if participant wears glasses for reading.*)

Yes No

Ask the participant to put on their reading glasses.

2. Place a copy of the REALM before the participant and say:
(*Examiner Note: REQUIRED - Show card #11a.*)

"This sheet contains words commonly used by doctors and their patients. Please read aloud as many words as you can from these three lists. Begin with the first word on List 1 and read aloud. When you come to a word you cannot read, do the best you can or say 'skip' and go on to the next word."

If the participant takes more than five seconds on a word, say "skip" and point to the next word, if necessary, to move the participant along. If the participant misses three words in a row, have them pronounce only known words.

Record whether the participant correctly pronounces the word, mispronounces the word, or doesn't attempt to say the word by filling in the appropriate bubble. Count as correct any self-corrected word.

Count the number of correct words and record the number.





HABC Enrollment ID #	Acrostic	Type of Annual Contact
<input type="text"/>	<input type="text"/>	<input type="radio"/> Year 8 <input checked="" type="radio"/> Year 10

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LIST 1	Correct	Incorrect	No attempt	LIST 2	Correct	Incorrect	No attempt	LIST 3	Correct	Incorrect	No attempt
1. fat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	23. fatigue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	45. allergic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. flu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	24. pelvic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	46. menstrual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. pill	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	25. jaundice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	47. testicle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. dose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	26. infection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	48. colitis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. eye	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	27. exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	49. emergency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	28. behavior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	50. medication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. smear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	29. prescription	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	51. occupation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. nerves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	30. notify	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	52. sexually	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. germs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	31. gallbladder	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	53. alcoholism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. meals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	32. calories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	54. irritation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	33. depression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	55. constipation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. cancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	34. miscarriage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	56. gonorrhea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. caffeine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	35. pregnancy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	57. inflammatory	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. attack	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	36. arthritis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	58. diabetes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. kidney	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	37. nutrition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	59. hepatitis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. hormones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	38. menopause	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	60. antibiotics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. herpes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	39. appendix	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	61. diagnosis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. seizure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	40. abnormal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	62. potassium	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. bowel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	41. syphilis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	63. anemia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. asthma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	42. hemorrhoids	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	64. obesity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. rectal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	43. nausea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	65. osteoporosis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. incest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	44. directed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	66. impetigo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Total number of words correct: words

4. Was the REALM administered? Yes No, participant had poor vision No, participant refused

