Rapid Estimate of Adolescent Literacy in Medicine (REALM-Teen)

Administration Manual

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Background

Low literacy is a prevalent social problem in the United States.\textsuperscript{1,2} Almost half (43\%) of American adults have basic or below-basic literacy levels according to the 2003 National Assessment of Adult Literacy, and 66 percent of high school students have similarly low levels on the National Assessment of Educational Progress.

Identifying low literacy in adolescents could be helpful to health professionals, as a screen for academic problems, a potential marker for health risk behaviors, and to know when to tailor health information. We know that low literacy is a risk factor for school failure and school drop out,\textsuperscript{3,4} both of which are associated with increased health risk behaviors in teens.\textsuperscript{13-16}

Approximately one quarter of American adolescents are reading well below grade level.\textsuperscript{4} These students do not have the reading skills to comprehend information found in their textbooks and are at risk for falling further behind and eventually dropping out of school. Currently, almost one third of ninth grade students (one half among minority students) do not finish high school.\textsuperscript{17}

The authors have developed a brief literacy screening test for use with adolescents in healthcare settings. The test is modeled on the Rapid Estimate of Adult Literacy in Medicine (REALM),\textsuperscript{20,23,24} the most commonly cited literacy test in adult healthcare settings. This test will allow health professionals to screen youth in grades 6-12 for below-grade reading.

Pertinent Definitions

**Literacy** in the United States is defined as “an individual’s ability to read, write and speak in English, and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one’s goals and develop one’s knowledge and potential.”

**Health Literacy** is the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.

**Word Recognition Tests** are tests in which an individual reads aloud from a list of individual words. These tests measure an individual’s ability to pronounce words in ascending order of difficulty. Though not designed to measure comprehension, word recognition tests are useful predictors of general reading ability in English. If an individual has difficulty pronouncing words in isolation, which is a beginning level reading skill, he or she is likely to have difficulty with comprehension (a higher order skill).


**Reading Comprehension Tests** measure an individual’s ability to derive meaning from printed words. Comprehension can focus on an individual’s understanding of a word, phrase, sentence, longer passage or an individual’s interpretation of the information. Most reading comprehension tests assess the individual’s ability to understand text written at different levels of difficulty.
Examples: Comprehension Subtest, Cloze Technique, Test of Functional Health Literacy in Adults (TOFHLA), PIAT-R Comprehensive Subtest.

**Description of the Test**

The Rapid Estimate of Adolescent Literacy or REALM-Teen is a valid, reliable, easy-to-administer tool that will allow health professionals to screen youth in grades 6-12 for below-grade reading.

The REALM-Teen can be administered and scored in under three minutes with minimal training, and is strongly correlated with standardized literacy assessments such as the SORT-R and the WRAT-3 tests.

The REALM-Teen is a reading recognition instrument, modeled after the Rapid Estimate of Adult Literacy in Medicine (REALM), the most commonly used tool to screen adults for low literacy in health care settings. The REALM-Teen is a reading recognition instrument which measures an individual’s ability to pronounce words in ascending order of difficulty. All test words are commonly used adolescent health terms.

This one-page instrument consisting of 66 health words arranged in increasing order of difficulty on three widely spaced columns on lime green paper. Adolescents taking the REALM-Teen are asked to say the words out loud beginning with the first word in the left-hand column.

All words on the REALM-Teen come from words used in Academy of Pediatrics patient education materials for adolescents.

Dictionary pronunciation is the scoring standard (A dictionary is the recognized guide for people seeking help in pronouncing unfamiliar words, regardless of their culture or the region of the country in which they reside). An adolescent’s raw score is the total number of correctly pronounced words.

Test scores, expressed as grade-level estimates, can be compared to a patient’s current grade level to determine reading skills below grade level. For instance, an adolescent patient enrolled in the 9th grade who scores a 54 on the REALM-Teen (6th-7th grade level) would be assessed as reading below grade level. In this manner, this tool can aid in alerting clinicians and researchers to possible reading and academic difficulties and may serve to identify teens at greater risk for engaging in negative health behaviors.

The REALM-Teen is a word recognition test-not a reading comprehension instrument. Adolescents are asked to de-code or pronounce words.

**Design and Development**

We recruited adolescents for one-time, in-person interviews from a pediatric private practice primary care clinic, five middle schools, three high schools, and two summer programs in Louisiana and in North
Carolina. A total of 1,533 adolescents participated in structured interviews that included a general demographic survey.

Validity

Criterion validity was based on correlations between REALM-Teen raw scores and the raw scores of the most current versions of two standardized reading tests commonly administered to adolescents, the Slosson Oral Reading Test-Revised (SORT-R) \(^22\) and the Wide Range Achievement Test-3 (WRAT-3). \(^21\)

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Correlation of REALM with SORT and WRAT-3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SORT</td>
</tr>
<tr>
<td>Correlation Coefficient</td>
<td>.93</td>
</tr>
<tr>
<td>P Value</td>
<td>p&lt;.0001</td>
</tr>
</tbody>
</table>

Reliability

Test-retest reliability was determined by calculating the Pearson r correlation between scores on the REALM-Teen at baseline and at one-week follow-up.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test-Retest (n=100)</td>
<td>.98</td>
</tr>
</tbody>
</table>

When to use the REALM-Teen

Before deciding to screen adolescents for below-grade level literacy, health professionals need to consider

- where patients will be tested.
- who will do the testing, and how they will be trained.
- how results will be used and documented. \(^{Note:} \text{For some adolescents, particularly those with low literacy, test-taking may be an unpleasant experience in school; being given a literacy test in a health care setting, no matter how it is presented, can be a stressful.} \)

Previous studies in adult medicine found patients with low literacy are often ashamed and try to hide their problem. Clinicians and research assistants must be sensitive to these possibilities in screening for low literacy in adolescents.

REALM-Teen Administration
Testing Materials Needed:

- Laminated patient word list.
- Examiner record form.
- Clipboard.
- Pencil.

Personal Data Lines:

Patient Name/Subject #: Record the patient’s name or assigned subject number.

Race: Record the patient’s race.

Gender: Record the patient’s gender.

Age: Record the patient’s age.

Grade: Record current grade of the patient.

Date: Record the date of administration.

Site: Record the location.

Examiner: Record the examiner’s name.

Administration and Scoring:

1. Give the patient the laminated copy of the REALM-Teen word list. Attach the examiner record form to the clipboard. Hold the clipboard at an angle such that the patient is not distracted by your scoring procedure.

In your own words, introduce the REALM-Teen to the patient:

In a research setting or for research purposes:

- “We are trying to get an idea of what health words people your age are familiar with.”
- “What I need you to do is say each of the words out loud to me starting here [point to first word with pencil].”
- “Say all the words you know. If you come to a word you don’t know, you can sound it out or just skip it and go on.”
- If the patient stops, say, “Look down this list, [point] are there any other words you recognize?”

In a clinical setting:
• “Sometimes in this office, we may use medical words that patients aren’t familiar with.”
• “We would like you to take a look at this list of words to help us get an idea of what medical words you are familiar with. This will help us know what kinds of patient education to give you.”
• “Start with the first word, [point to first word with pencil] please say all of the words you know.”
• “If you come to a word you do not know, you can sound it out or just skip it and go on.” If patient stops do as above.

| Special Note: Do not use the words “read” and “test” when introducing and administering the REALM-Teen. These words may make patients feel uncomfortable and unwilling to participate.
| Please say these words for me.” |

2. If the patient takes more than 5 seconds on a word, encourage the patient to move along saying, “Let’s try the next word.”

If the patient begins to miss every word of appears to be struggling or frustrated, tell the patient, “Look down at the list, are there any other words on this list that you recognize?”

3. Count as an error any word that is not attempted or mispronounced (see “Special Considerations” for pronunciation/scoring guidelines).

4. Scoring options:
   a. Place a check mark (√) in the box next to each word the patient pronounces correctly.
   OR
   b. Place an X in the box next to each word the patient does not attempt or mispronounces.

Scoring should be strict, but take into consideration any problems which could be related to dialect or articulation difficulties. Use the dictionary if in doubt. Count as correct any self-corrected word.

5. Count the number of correct words in each list to give you the “Raw Score”. Match this score with its grade equivalent found in Table 3.

**Special Considerations for Administration and Scoring:**
Examiner Sensitivity:

Many low literate patients will attempt to hide their deficiency. Ensure that you approach each patient with respect and compassion. You may need to provide encouragement and reassurance. A positive, respectful attitude is essential for all examiners. (Remember, many people with low literacy feel ashamed.) Be sensitive.

Pronunciation:

Dictionary pronunciation is the scoring standard.

Count a word as correct if the word is pronounced correctly and no additions or deletions have been made to the beginning or ending of the word. For example: A patient who says “alcohol” would not receive credit for the word “alcoholism”; “eyes” would not receive credit for the word “eye”; “nervous” and “nerve” would not receive credit for “nerves”. Words pronounced with a dialect or accent should be counted as correct provided there are no additions or deletions to the word. Particular attention should be paid for patients who use English as a second language.

Comprehension and Interpretation of Words:

Reading recognition does not imply comprehension or proper interpretation. The REALM-Teen is a reading-recognition test. If a patient indicates that he/she knows the meaning of the word but is unable to say it, no credit is given. Persons interested in assessing patient comprehension are referred to the PIAT Comprehensive Subtest.

Patients Who Speak Another Language:

The REALM-Teen is a reading-recognition test and is a reliable screening instrument to assess literacy in English. Reading-recognition is not useful in assessing literacy in other languages. For example, Spanish literacy is affected by the nature of the Spanish language. Spanish has regular phoneme-grapheme correspondence, meaning that one sound is usually represented by one letter and vice versa. Therefore, compared to English, it is relatively easy to sound out and pronounce words in Spanish if one can recognize letters, making it relatively easy for low-level readers to score high on word recognition tests. The REALM-Teen has not and cannot be translated into other languages for valid administration. Persons wishing to assess Spanish-speaking patients are referred to the Test of Functional Health Literacy in Adults-Spanish (TOFHLA-S). However, it has not been tested with adolescents.
### Score Interpretation

**Table 3**

<table>
<thead>
<tr>
<th>Raw Score</th>
<th>Grade Range Equivalent</th>
<th>Literacy Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-37</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Grade and Below</td>
<td>These adolescents will have a 5 fold quarter likelihood of reading below grade level. They are reading below grade level and may be at risk of school failure.</td>
</tr>
<tr>
<td>38-44</td>
<td>4&lt;sup&gt;th&lt;/sup&gt; to 5&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td></td>
</tr>
<tr>
<td>45-58</td>
<td>6&lt;sup&gt;th&lt;/sup&gt; to 7&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td>Will struggle with most patient education materials; may have skills to pass GED.</td>
</tr>
<tr>
<td>59-62</td>
<td>8&lt;sup&gt;th&lt;/sup&gt; to 9&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td></td>
</tr>
</tbody>
</table>
63-66  10th Grade and Above  Will be able to read most patient education materials.

**Ordering the REALM-Teen**

Additional copies of the REALM-Teen and supplies can be obtained through the Health Education and Literacy office of the Louisiana State University Health Sciences Center-Shreveport. Contact: Terry Davis, PhD, Department of Pediatrics, P.O. Box 33932, Shreveport, LA 71130; (318) 675-5813; tDavis1@lsuhsc.edu.

**Other Literacy Instruments Used in Health Care Settings**

**Word Recognition:**

Slossan Oral Reading Test-Revised (SORT-R)
Slossan Educational Publications, Inc.
P.O. Box 280
East Aurora, NY 14052
1-800-828-4800; Fax: 1-800-655-3840

Wide Range Achievement-Third Edition (WRAT-3)
Jastak Associates, Inc.
P.O. Box 3410
Wilmington, DE 19804
1-800-221-9728

Peabody Individual Achievement Test-Revised (PIAT-R)
American Guidance Service, Inc.
P.O. Box 99
Circle Pines, MN 55014
612-786-4343

**Health Comprehension (English and Spanish):**

Test of Functional Health Literacy in Adults (TOFHLA) and Spanish-TOFHLA (S-TOFHLA)
Peppercorn Books and Press
PO Box 693
Snow Camp, NC 27349
877-574-1634

Instrument for Diagnosis of Reading (Instrumento Para Diagnosticar Lecturas)