The FLIGHT/VIDAS project: Overview

Raymond L Ownby, MD, PhD
And the FLIGHT/VIDAS team
The project

Title: Development and validation of a computer-administered health literacy measure

Funding: National Heart, Lung, and Blood Institute (R01HL096578)

Start: August 10, 2010

End: June 30, 2014
Overall Aim

Our central goal has been to develop and validate a health literacy measure that is:

1. **Computer administered and scored,**
2. **Acceptable to diverse groups,** and
3. **Psychometrically equivalent for Spanish- and English-speaking and older and younger persons.**

*English:* Fostering Literacy for Good Health Today (FLIGHT)

*Spanish:* Vive Desarollando Amplia Salud (VIDAS)
Multidimensional item content

Content: 2004 Institute on Medicine health literacy report domains

Seven areas of health literacy goals

Formats: Educational Testing Service

Prose

Document

Quantitative
<table>
<thead>
<tr>
<th>Goal</th>
<th>Prose</th>
<th>Document</th>
<th>Quantitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health promotion</td>
<td>Read a passage on exercise and identify desirable duration of exercise</td>
<td>Make menu choices based on fat and sodium guidelines</td>
<td>Calculate the number of grams of fat in a package of a product given a per serving value</td>
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<tr>
<td>Understand health information</td>
<td>Read a passage on risk factors for diabetes and identify relevant behaviors that would reduce someone’s risk</td>
<td>Given a checklist of risk factors for diabetes, be able to complete a checklist of risk factors for the disease</td>
<td>Given information on normal and abnormal blood glucose levels, identify normal and abnormal levels</td>
</tr>
<tr>
<td>Apply health information</td>
<td>After being provided with information on physical activity guidelines, identify appropriate exercise duration and frequencies</td>
<td>Given narrative information on exercise frequency and intensity, complete an exercise log</td>
<td>Calculate the number of calories used during exercise give a table of exercises, times, and values</td>
</tr>
<tr>
<td>Navigate the health care system</td>
<td>After reading an informational brochure, be able to describe how specific health care services are covered by an insurance program</td>
<td>Review information from a table on dates and times for applying for specific health care benefits</td>
<td>Calculate relative costs of two insurance plans</td>
</tr>
<tr>
<td>Participate in encounters with health care professionals</td>
<td>After viewing a video of a person’s encounter with a physician providing a new medicine, identify information provided by the physician about dosage and schedule</td>
<td>After viewing a video describing how to apply for long term care insurance, fill out an application</td>
<td>After viewing a video that presents information on desirable weights, calculate one’s own body mass index</td>
</tr>
<tr>
<td>Give informed consent</td>
<td>After reading information about a colonoscopy, describe the risks and benefits of the procedure</td>
<td>After reading an informed consent form, describe risks and benefits of a surgical procedure</td>
<td>Given a graphical representation of the probability of a medication side effect, correctly identify how likely its occurrence will be.</td>
</tr>
<tr>
<td>Understand rights</td>
<td>After reading an explanation of benefits, correctly identify the procedure to appeal a denial of benefits</td>
<td>Given an insurance explanation of benefits on an insurance payment statement, identify an inappropriate denial</td>
<td>After viewing a video presentation on patient rights, correctly determine the number of options available to access services</td>
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Development

Phase I

225 items created
73 Spanish and 69 English speakers

Item screening for difficulty and usefulness in Spanish and English and functioning in older and younger persons

Phase II

98 items
Spanish and English participants
~ 30 participants per group in each language
7 decade-based age groups (N = 475; final N = 500)
Validation via relations to other measures
Touch screen computer
The most common oral health problems are dental caries and gum disease. Caries are usually caused by bacteria that use the sugar in food we eat to produce acid in the mouth. Little by little, this acid destroys the external covering of the teeth and causes caries. Gum disease is caused by specific bacteria that form a plaque that coats the teeth and forms a scale. Gingivitis is a gum disease caused by the accumulation of plaque. Gingivitis causes inflamed gums that bleed easily.

Based on the information in the passage above, how do bacteria cause dental caries?

- A) By eliminating scale
- B) By causing gingivitis
- C) By eliminating sugar in the blood
- D) By creating acid in the mouth
- E) By destroying dental plaque
Juana tiene 65 años y no hace ningún tipo de ejercicio. De acuerdo con esta tabla, ¿cuántas calorías necesita ella cada día?

- A) 1,600
- B) 1,800
- C) 2,000
- D) 2,200
- E) 2,400
### Demographics and health literacy

<table>
<thead>
<tr>
<th></th>
<th>English Mean (SD)</th>
<th>Spanish Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>161</td>
<td>198</td>
</tr>
<tr>
<td>Age in Years</td>
<td>52.5 (17.5)</td>
<td>49.8 (15.6)</td>
</tr>
<tr>
<td>Education</td>
<td>13.6 (2.3)</td>
<td>12.4 (2.8)</td>
</tr>
<tr>
<td>Income</td>
<td>$31,188</td>
<td>$27,889</td>
</tr>
<tr>
<td>SES</td>
<td>0.19 (0.80)</td>
<td>-0.14 (0.82)</td>
</tr>
<tr>
<td>Crystallized</td>
<td>95.9 (10.6)</td>
<td>89.6 (9.0)</td>
</tr>
<tr>
<td>Fluid</td>
<td>10.6 (2.3)</td>
<td>10.6 (2.7)</td>
</tr>
<tr>
<td>TOFHLA Reading</td>
<td>46.4 (4.4)</td>
<td>43.3 (7.6)</td>
</tr>
<tr>
<td>TOFHLA Numeracy</td>
<td>47.8 (2.8)</td>
<td>43.5 (6.1)</td>
</tr>
<tr>
<td>Gender: Men/Women</td>
<td>70/91</td>
<td>81/118</td>
</tr>
<tr>
<td>Race: White/Black</td>
<td>91/70</td>
<td>198/0</td>
</tr>
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FLIGHT/VIDAS scales

**General Health Literacy (HL):** The ability to read and complete mental operations on health care information, including identify relevant information in prose, documents, and figures (39 items). Cronbach’s $\alpha = 0.84$.

**Numeracy (NUM):** The application of quantitative skills including arithmetic operations and appraisal of relations among numeric concepts such as ratios and percentages (24 items). Cronbach’s $\alpha = 0.84$. 
FLIGHT/VIDAS scales

Conceptual Health Knowledge (Experimental Scale; FACT): Demonstrate understanding of specific concepts related to health care (15 items). Cronbach’s α = 0.67.

Listening Comprehension (Experimental Scale; LIS): The ability to acquire and remember health information presented orally (13 items). Cronbach’s α = 0.58.
FLIGHT/VIDAS battery

Demographics
  Age, education, occupation, income, subjective social status

Cognition
  Measures of fluid and crystallized general cognitive ability

Academic skills
  Woodcock scales for reading and arithmetic

Health literacy
  TOFHLA, REALM (English), SAHLSA (Spanish)

Health status and health-related quality of life
  MOS SF-36 and EQ5D calculated from it

Health service utilization
Plans for FLIGHT/VIDAS

Make available on the Internet.

Further dissemination of 20-item short form
  Shows good reliability and validity
  Takes ~ 10-15 minutes to administer and can be integrated into electronic health records.

Make test manual available with norms and full validity data.

Follow-up computer interventions for chronic disease management and patient navigation skills.
Today’s panel

Josh Caballero, PharmD – Medication management scale and its use in counseling

Robin J Jacobs, PhD – Social status and health literacy

Drenna Waldrop-Valverde, PhD – New short form for the TOFHLA with new cutoff scores

   Also poster this afternoon on cutoff scores, and a paper on TOFHLA and elderly tomorrow AM

Amarilis Acevedo, PhD – Health literacy in English and Spanish speakers, and bilingual participants’ performance in both languages

All presentations draw on data from the FLIGHT/VIDAS project
Acknowledgment

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The team

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More information at:

http://www.flightvidas.org

Links to papers

Demonstration videos

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