Health care provider evaluation of patient literacy to improve health outcomes

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Outline

- Definition of literacy/health literacy
- Scope of problem
  - US
  - Vermont/Milton
- Summary of research
  - Health outcomes and literacy
  - Literacy and healthcare cost
  - Interventions
- Solutions
  - What we are doing
  - What else can be done
Components of literacy

- Reading Skills
- Writing Skills
- Verbal communication skills
- Health care system navigation
- Health-related decision-making
- Numeracy
Definition of health literacy

AMA (1999)
Ability to perform basic reading and numerical tasks required to function in the health care environment

IOM Healthy People 2010
The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions
### Table 1: Overview of the NAAL Health Literacy Tiers

<table>
<thead>
<tr>
<th>TIER</th>
<th>PERCENTAGE OF THE U.S. POPULATION</th>
<th>EXAMPLES OF KEY ABILITIES</th>
<th>ASSOCIATED HEALTH TASKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below basic</td>
<td>14</td>
<td>Able to locate only straightforward pieces of information in short, simple texts or documents; some patients have even less ability because of nonliteracy in English</td>
<td>Find the date on a hospital appointment slip; identify what is permissible to drink before a medical test based on a short set of instructions</td>
</tr>
<tr>
<td>Basic</td>
<td>22</td>
<td>Find more complex information in short texts and simple documents that are somewhat longer and more complex than those at the below basic level</td>
<td>Give 2 reasons a person with no symptoms of a specific disease should be tested for the disease using information from a patient education handout</td>
</tr>
<tr>
<td>Intermediate</td>
<td>53</td>
<td>Interpret or apply information presented in complex graphs, tables, or other health-related texts or documents</td>
<td>Determine a healthy weight range for a person of a specified height, based on a graph that relates height and weight to body mass index; identify substances that may have an adverse interaction with an over-the-counter drug using information on a drug label</td>
</tr>
<tr>
<td>Proficient</td>
<td>12</td>
<td>Draw abstract inferences, comparing or contrasting multiple pieces of information within complex texts or documents, or apply abstract or complicated information from texts or documents</td>
<td>Evaluate applicability of a legal document in a specific health care situation; calculate an employee’s share of annual health insurance costs using a table that shows how the cost varies based on income and family size</td>
</tr>
</tbody>
</table>

NAAL = National Assessment of Adult Literacy.

Information from reference 2.
Literacy and health literacy in the US

Percentage of adults in each literacy level: 2003

Source: NAAL 2003 national survey
The problem in Milton

- Chittenden County
  - Diabetes deaths and heart disease-related deaths are higher than the state average (4)
  - These are chronic diseases requiring complex personal care and management

- Milton (5)
  - Population: 10,667 (2014) (8th biggest in VT)
  - Relatively higher young population and lower older population
  - More have high school degree, fewer have Bachelor’s
  - Subjective problem
    - Several providers noted clear barriers to understanding in many patients
So what does the research say?
2004 systematic review identifying 44 studies that compared literacy to one or more health outcomes

Patients with low literacy had poorer health outcomes including knowledge, intermediate disease markers, measures of morbidity, general health status, and use of health resources

Patients with low literacy were 1.5 to 3 times more likely to experience a given poor outcome
Lower health literacy was consistently associated with:

- more hospitalizations
- greater use of emergency care
- lower receipt of mammography screening and influenza vaccine
- poorer ability to demonstrate taking medications appropriately
- poorer ability to interpret labels and health messages
- poorer overall health status/higher mortality among elderly person
Cost considerations

- Previous systematic review (7) found few studies of the cost of reduced health literacy but lower health literacy was associated with differential use of the health care system:
  - More hospitalizations
  - Greater use of emergency care

- In one VA hospital: Average per patient cost from 2007-2009 for those with inadequate and marginal health literacy was significantly higher than for those with adequate health literacy ($31,581 versus $17,033), even when controlling for other person-level factors (8)
  - Could save up to 8% of total costs in this pop by meeting needs of those w/ marginal and inadequate literacy
Validated measures of literacy

- Lots of ways to measure literacy (9)
- WRAT-3, REALM, SORT-R assess word recognition
  - REALM only adults
  - WRAT-3 and SORT-R for children
- TOFHLA most useful for health literacy
  - Older people assessed with Test of Functional Health Literacy score lower than younger people but may be due to age-related differential item functioning (DIF) on the TOFHLA (10)
- None of these address realities of clinic assessments
Three screening questions were found to effective in detecting inadequate health literacy (weaker for identifying marginal health literacy)

- How often do you have someone help you read hospital materials?
- How confident are you filling out medical forms by yourself?
- How often do you have problems learning about your medical condition because of difficulty understanding written information?

Opposition: confidentiality, patient embarrassment, lack of effective interventions

BUT, identification of problem important – can quickly ID patients who may need special methods of communication in busy clinical settings (i.e. need to be booked for more time, OR get assistance so that they don’t need to take up more time)
<table>
<thead>
<tr>
<th>Question</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>+LR (95% CI)</th>
<th>-LR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Problems Learning”*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ Never</td>
<td>1.00</td>
<td>0.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>≥ Occasionally</td>
<td>0.79</td>
<td>0.65</td>
<td>2.26 (1.65–3.08)</td>
<td>0.33 (0.17–0.82)</td>
</tr>
<tr>
<td>≥ Sometimes</td>
<td>0.57</td>
<td>0.78</td>
<td>2.61 (1.58–4.29)</td>
<td>0.55 (0.36–1.12)</td>
</tr>
<tr>
<td>≥ Often</td>
<td>0.43</td>
<td>0.92</td>
<td>5.11 (2.52–10.37)</td>
<td>0.62 (0.45–1.21)</td>
</tr>
<tr>
<td>≥ Always</td>
<td>0.14</td>
<td>0.99</td>
<td>22.14 (3.36–145.90)</td>
<td>0.86 (0.51–1.52)</td>
</tr>
<tr>
<td>“Confident With Forms”†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ Extremely</td>
<td>1.00</td>
<td>0.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>≤ Quite a bit</td>
<td>0.87</td>
<td>0.41</td>
<td>1.47 (1.18–1.83)</td>
<td>0.32 (0.11–0.80)</td>
</tr>
<tr>
<td>≤ Somewhat</td>
<td>0.80</td>
<td>0.77</td>
<td>3.51 (2.54–4.86)</td>
<td>0.26 (0.15–0.70)</td>
</tr>
<tr>
<td>≤ A little bit</td>
<td>0.40</td>
<td>0.93</td>
<td>5.55 (2.64–11.45)</td>
<td>0.65 (0.47–1.21)</td>
</tr>
<tr>
<td>≤ Not at all</td>
<td>0.33</td>
<td>0.98</td>
<td>15.05 (5.40–41.90)</td>
<td>0.68 (0.44–1.26)</td>
</tr>
<tr>
<td>“Help Read”‡</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ Never</td>
<td>1.00</td>
<td>0.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>≥ Occasionally</td>
<td>0.93</td>
<td>0.65</td>
<td>2.69 (2.20–3.29)</td>
<td>0.10 (0.03–0.50)</td>
</tr>
<tr>
<td>≥ Sometimes</td>
<td>0.73</td>
<td>0.83</td>
<td>4.30 (2.91–6.36)</td>
<td>0.32 (0.20–0.79)</td>
</tr>
<tr>
<td>≥ Often</td>
<td>0.67</td>
<td>0.90</td>
<td>6.60 (4.06–10.73)</td>
<td>0.37 (0.25–0.85)</td>
</tr>
<tr>
<td>≥ Always</td>
<td>0.27</td>
<td>0.98</td>
<td>14.09 (4.44–44.69)</td>
<td>0.75 (0.49–1.34)</td>
</tr>
</tbody>
</table>

LR—likelihood ratio; plus sign, positive; minus sign, negative
CI—confidence interval

* “Problems Learning”: “How often do you have problems learning about your medical condition because of difficulty understanding written information?” ≥ specifies responses that are equal to or indicate a higher frequency of problems learning about their medical condition than that response level.

† “Confident With Forms”: “How confident are you filling out medical forms by yourself?” ≤ specifies responses that are equal to or indicate lower confidence filling out medical forms than that response level.

‡ “Help Read”: “How often do you have someone help you read hospital materials?” ≥ specifies responses that are equal to or indicate a higher frequency of having someone help them read than that response level.
Examined interventions for people with low literacy on health outcomes, health knowledge, health behaviors, use of health care resources, intermediate markers of disease status, and measures of morbidity or mortality.

Most commonly assessed health knowledge, effectiveness of interventions were mixed.

- Most studies created brochures/pamphlets written at lower reading level – time and resource-intensive evaluations.
- No studies used global health status (such as SF-36) as a health outcome, and no studies looked at effect of intervention on costs, charges, or reimbursements; no studies looked at interventions affecting health disparities based on race, ethnicity, culture, or age.
What to do – what you are already doing?

- Reach out and read (14)
  - Only for kids
- Using teach back, written instructions to patient
  - Consider patients who primarily use oral versus written instructions (15)
What to do – local resources

- Local resources
  - “One of our goals here is to be a place where people can access information....In town there are not any free places to meet and not have to buy something, that’s really what our goal is: to be a space to connect people to the information to what they’re looking for...to be a community hub” – Meghan Bellavance, Director, Milton Public Library

- Community dinners → UVM Medical Center community outreach (Kristin Fontaine, Pediatric Outreach Coordinator)
  - Addresses the stigma issue

- MFCC
- CHT
What to do - providers

- **Provider information**
  - Use those screening questions
    - If positive, consider doing the full TOFHLA
  - Community resources
    - CHT, library, MFCC, community dinners, etc.
  - Choosing the right resources
    - UTD
    - AAFP
- **Residency/Milton is not your last step**
  - AAFP has information on creating patient handouts
  - Other communities will likely have similar/increased challenges → identify your local resources
## Summary recommendations from AAFP

### SORT: KEY RECOMMENDATIONS FOR PRACTICE

<table>
<thead>
<tr>
<th>CLINICAL RECOMMENDATION</th>
<th>EVIDENCE RATING</th>
<th>REFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use universal health literacy precautions with all patients, regardless of their literacy or education levels.</td>
<td>C</td>
<td>10, 30, 31</td>
</tr>
<tr>
<td>Prioritize and limit information to three key points for each visit.</td>
<td>C</td>
<td>30</td>
</tr>
<tr>
<td>Use the teach-back method to assess patient comprehension of information.</td>
<td>C</td>
<td>10, 30, 36</td>
</tr>
<tr>
<td>Simplify forms and offer assistance with form completion.</td>
<td>C</td>
<td>10, 30</td>
</tr>
</tbody>
</table>
References

4. Champlain Valley AHEC. “Vermont County Profiles for Medical and Health Sciences Students/Residents: Student and resident experiences in community health”

- PIAAC = Program for the International Assessment of Adult Competencies
- Adults w/ high school diploma used text-based health information sources, adults w/out high school diploma used oral sources
- Those w/out high school diploma who use the internet reported largest increase in health status
- Internet is a key role in enhancing health status and enabling use of preventive measures
¾ AAFP patient education materials were above average reading level of American adults

- Mean grade level was 9.4, US adult average reading 8th grade level (see below for ref)

Residents lacked confidence to screen and counsel adults about literacy

- Add’l study showed residents unable to identify patients who have low literacy (see note for reference)

Used a Reach Out and Read program

Reviewed prospect of shortening Rapid Estimate of Adult Literacy in Medicine (REALM)
Figure 2-5. Percentage of adults in each health literacy level, by race/ethnicity: 2003

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>Percent Below Basic</th>
<th>Below Basic</th>
<th>Intermediat</th>
<th>Proficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>19</td>
<td>58</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>24</td>
<td>41</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>44</td>
<td>23</td>
<td>31</td>
<td>2</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>15</td>
<td>18</td>
<td>45</td>
<td>16</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>20</td>
<td>28</td>
<td>45</td>
<td>3</td>
</tr>
<tr>
<td>Multiracial</td>
<td>19</td>
<td>20</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

NOTE: Data may not sum to totals because of rounding. Adults are defined as people 15 years of age and older living in households or groups. Adults who could not be interviewed because of language barriers or cognitive or mental disabilities (5 percent in 2003) are excluded from this figure. All adults of Hispanic origin are classified as Hispanic, regardless of race. The Asian/Pacific Islander category includes Native Hawaiians and other Pacific Islanders. Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy.