Health Literacy Research: Opportunities to Improve Population Health

Panel for the 4th Annual Health Literacy Research Research Conference
Conflict of Interest

Dr. Sanders chairs a scientific board for Mercurian, Inc., which is developing patient portals for families of children with chronic conditions.

The Panelists have no other conflicts of interest to disclose.
Goals

1. Review the associations between HL and population health outcomes.

2. Explore policy-relevant strategies to address literacy-sensitive health inequities.

3. Discuss implications for health system reform.
Our Panel

- Lee M. Sanders, MD, MPH
  - Stanford University

- Diane Levin-Zamir, PhD, MPH
  - Clalit Health Services, Tel Aviv, Israel

- Jean Rafael, MD, MPH
  - Baylor College of Medicine

- Joseph Selby, MD, MPH
  - Patient Centered Research Institute
Questions

1. How can health literacy research best guide efforts to reduce health disparities?

2. How can health literacy research best guide efforts to improve the effectiveness and efficiency of health-care systems?
1. Review the associations between HL and population health outcomes.

2. Explore policy-relevant strategies to address literacy-sensitive health inequities.

3. Discuss implications for health system reform.
Aliyah

PMH: Down syndrome, prematurity (ex-26-week), chronic lung disease, GERD, gastrostomy tube

Social Hx: Unemployed mother with limited English proficiency; recently divorced; 2 other children; no preschool / child care.

Problem: Mother gets conflicting instructions from GI, pulmonary, cardiology, nutritionist, speech pathology, and school nurse.

How can HL research help solve a problem like Aliyah’s?
Health Literacy Framework

Skills / ability

Health Literacy

Demands / complexity

Health Literacy Skills

"Below Basic" Skills

- Use the dosage chart on over-the-counter medicine.
- Understand an appointment slip.
- Enter names / DOB on health insurance form

"Basic" Skills

- Interpret a growth chart
- Follow a prescription to “take medicine on an empty stomach”
- Determine when a child’s next vaccine is due, using a CDC vaccine schedule
# Health Information Complexity

<table>
<thead>
<tr>
<th>Category</th>
<th>Reading Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Websites</td>
<td>10th-grade&lt;sup&gt;i&lt;/sup&gt;</td>
</tr>
<tr>
<td>Insurance Enrollment</td>
<td>10&lt;sup&gt;th&lt;/sup&gt; grade (7&lt;sup&gt;th&lt;/sup&gt; – 12&lt;sup&gt;th&lt;/sup&gt;)&lt;sup&gt;y&lt;/sup&gt;</td>
</tr>
<tr>
<td>Patient handouts</td>
<td>10&lt;sup&gt;th&lt;/sup&gt;-grade (6th - 16th) &lt;sup&gt;ii,iii,iv,vi,vii&lt;/sup&gt;</td>
</tr>
<tr>
<td>Medication Labels</td>
<td>8&lt;sup&gt;th&lt;/sup&gt;-grade &lt;sup&gt;x&lt;/sup&gt;</td>
</tr>
<tr>
<td>US Adult Reading Level</td>
<td>8&lt;sup&gt;th&lt;/sup&gt;-grade (median)</td>
</tr>
<tr>
<td>Vaccine information</td>
<td>7&lt;sup&gt;th&lt;/sup&gt;-grade (5&lt;sup&gt;th&lt;/sup&gt; - 10&lt;sup&gt;th&lt;/sup&gt;) &lt;sup&gt;viii,ix&lt;/sup&gt;</td>
</tr>
</tbody>
</table>


“Public Health Malpractice?” Roter D 2008
Poor Health Outcomes Associated with Low Adult Health Literacy

Health Outcomes/Health Services
- General health status
- Hospitalization
- Prostate cancer stage
- Depression
- Asthma
- Diabetes control
- HIV control
- Mammography
- Pap smear
- Pneumococcal immunization
- Influenza immunization
- STD screening
- Cost

Behaviors
- Substance abuse
- Violent behavior
- Breastfeeding
- Behavioral problems
- Adherence to medication
- Smoking

Knowledge
- Birth control knowledge
- Cervical cancer screening
- ED instructions
- Asthma knowledge
- Diabetes knowledge
- Hypertension knowledge

Poor Child Health Outcomes Associated with Low Parent Literacy

Child / Family Health Behaviors
- Tobacco use*
- Substance use
- Decreased breastfeeding*
- Poor nutritional choices**
- Adolescent STDs
- Violence / Injury

Maternal / Child Health Outcomes
- Maternal depression**
- Injury-prone behaviors*
- Child developmental / behavioral problems*
- Worse control of child chronic illness*

Family-Centered Medical Home
- Uninsurance**
- Increased ED use*
- Decreased “usual source of care”**
- Decreased Access to WIC, TANF**
- Worse Care Coordination

*Adj. for SES; **Strong association

Child Health Insurance and Parent HL
(2003 NAAL)

Literacy and Child Urgent Care Use

Relative Risk

All Children

N = 276

* p=.06, adjusted for parent and child age, gender; parent educational status, and English-language proficiency

Children < 5 years old

Cost of Health Literacy

Estimated $106 – 236 billion in “preventable” costs per year associated with low literacy

– $10,000 per adult per year
– 7 to 17% of all healthcare expenditures

Friedland 2002; Vernon 2007
Leading health agencies have identified Health Literacy as a priority issue for addressing quality of care and patient safety

- IOM
- AHRQ
- *Healthy People* 2020
- AMA
- AAP
- Joint Commission
- CDC
- FDA
- NIH
IOM Roundtable: Attributes of a Health-Literate System

- Effective Bidirectional Communication
- Embedded Policies and Practices
- Augmented Workforce
- Accessible Educational Technology Infrastructure
- Organizational Commitment

Schillinger 2012
Communication Tools

1. Teach Back
2. Limited Messages
3. Clear Language
4. Visual Aids

Schillinger 2012
Keep Your Toddler Growing Healthy!

Milk or water is best. Your toddler does not need juice or other sugary drinks. 

Be active with your toddler. TV time is not active time.

Plan The Dinner Plate – for your 15-18 month old
It’s easy to do – just split the plate into 3 parts, the largest part for vegetables.

Cuáles bebidas debo darles a mi niño pequeño?

No le dé a su niño pequeño
- Jugo que no es 100% jugo de fruta
- Agua
- Leche

Le de no darle
- Bebidas deportivas
- Bebidas para energía

This dinner plate has:
- 2 servings vegetables
- 1 serving rice & beans
- 1 serving fish

Start with 1 tablespoon of each food and let your toddler ask for more!

R01 – NICHD (Rothman, Sanders, Yin, Perrin)
Hospital and Clinic Policies

1. Include HL in Patient Safety
2. AHRQ Universal Precautions
3. HL in informed consent and d/c planning, and other care transitions

Schillinger 2012
Universal Precautions Toolkit

Access
- Transportation
- Insurance
- Scheduling
- Support Systems

Knowledge
- Medical Information
- Communication
- Understanding
- Language/Culture

Behavior
- Self-efficacy
- Adherence
- Self-care
- Social Reinforcement

Improved Health Outcomes

Tools to Improve
Supportive Systems

Tools to Improve
Spoken and Written Communication

Tools to Improve
Self-management and Empowerment

Agency for Healthcare Research and Quality
1. Navigators/Coordinators
2. Interpreters
3. Diverse staff
4. HL Training and Goals

Effective Bidirectional Communication
Embedded Policies and Practices
Augmented Workforce
Accessible Educational Technology Infrastructure
Organizational Commitment

Schillinger 2012
1. Patient Portals
2. Clear, Customized Information:
   - Services
   - Costs
   - Risks
   - Plans

Effective Bidirectional Communication
Embedded Policies and Practices
Augmented Workforce
Accessible Educational Technology Infrastructure
Organizational Commitment
## eHealth Literacy: Mobile Devices

### The demographics of smartphone users who go online mostly using their cell phone (May 2011)

<table>
<thead>
<tr>
<th>Category</th>
<th>% who go online mostly using their cell phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>All smartphone owners (age 18+, n=688)</td>
<td>25%</td>
</tr>
<tr>
<td>Men (n=349)</td>
<td>24%</td>
</tr>
<tr>
<td>Women (n=339)</td>
<td>26%</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>White, non-Hispanic (n=417)</td>
<td>17%</td>
</tr>
<tr>
<td>Black/Hispanic (n=206)</td>
<td>38%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>18-29 (n=177)</td>
<td>42%</td>
</tr>
<tr>
<td>30-49 (n=256)</td>
<td>21%</td>
</tr>
<tr>
<td>50+ (n=240)</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Household Income</strong></td>
<td></td>
</tr>
<tr>
<td>Less than $30,000/yr (n=131)</td>
<td>40%</td>
</tr>
<tr>
<td>$30,000-$49,999 (n=118)</td>
<td>29%</td>
</tr>
<tr>
<td>$50,000+ (n=334)</td>
<td>17%</td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
</tr>
<tr>
<td>High school grad (n=169)</td>
<td>33%</td>
</tr>
<tr>
<td>Some college (n=171)</td>
<td>27%</td>
</tr>
<tr>
<td>College+ (n=308)</td>
<td>13%</td>
</tr>
</tbody>
</table>

**Source:** The Pew Research Center's Internet & American Life Project, April 26 – May 22, 2011 Spring Tracking Survey. n=2,277 adult internet users ages 18 and older, including 755 cell phone interviews. Interviews were conducted in English and Spanish.

### Cell phone activities by race/ethnicity

<table>
<thead>
<tr>
<th>Activity</th>
<th>White, non-Hispanic (n=1343)</th>
<th>Black, non-Hispanic (n=232)</th>
<th>Hispanic (n=196)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send or receive text messages</td>
<td>70</td>
<td>76</td>
<td>83*</td>
</tr>
<tr>
<td>Take a picture</td>
<td>71</td>
<td>70</td>
<td>79*</td>
</tr>
<tr>
<td>Access the internet</td>
<td>39</td>
<td>56*</td>
<td>51*</td>
</tr>
<tr>
<td>Send a photo or video to someone</td>
<td>52</td>
<td>56*</td>
<td>61*</td>
</tr>
<tr>
<td>Send or receive email</td>
<td>34</td>
<td>46*</td>
<td>43*</td>
</tr>
<tr>
<td>Download an app</td>
<td>28</td>
<td>36*</td>
<td>36*</td>
</tr>
<tr>
<td>Play a game</td>
<td>31</td>
<td>43*</td>
<td>40*</td>
</tr>
<tr>
<td>Play music</td>
<td>27</td>
<td>45*</td>
<td>47*</td>
</tr>
<tr>
<td>Record a video</td>
<td>30</td>
<td>41*</td>
<td>42*</td>
</tr>
<tr>
<td>Access a social networking site</td>
<td>25</td>
<td>39*</td>
<td>35*</td>
</tr>
<tr>
<td>Watch a video</td>
<td>21</td>
<td>33*</td>
<td>39*</td>
</tr>
<tr>
<td>Post a photo or video online</td>
<td>18</td>
<td>30*</td>
<td>28*</td>
</tr>
<tr>
<td>Check bank balance or do online banking</td>
<td>15</td>
<td>27*</td>
<td>25*</td>
</tr>
<tr>
<td>Participate in a video call or video chat</td>
<td>4</td>
<td>10*</td>
<td>12*</td>
</tr>
<tr>
<td><strong>Mean (out of 14)</strong></td>
<td>4.7</td>
<td>6.1</td>
<td>6.2</td>
</tr>
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</table>

*indicates statistically significant differences compared with whites.

**Source:** The Pew Research Center's Internet & American Life Project, April 26 – May 22, 2011 Spring Tracking Survey. n=2,277 adults ages 18 and older, including 755 cell phone interviews. Interviews were conducted in English and Spanish.
National Leadership

1. Incentives forPt. Understanding
2. Assess HL Needs

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# US DHHS National Action Plan

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<tr>
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<th>Accessible, actionable health information</th>
</tr>
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<tbody>
<tr>
<td>#2</td>
<td>Health care system change</td>
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US DHHS 2010
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Health Literacy Research: Assessing the U.S. Health Policy Roadmap?

- Better Access
  - healthcare.gov
- Better Quality
  - AHRQ toolkit
- Lower Costs
  - CAHPS HL items
  - Rehospitalization

1. Review the associations between HL and population health outcomes.

2. Explore specific, policy-relevant strategies to address literacy-sensitive health inequities.

3. Discuss implications for health system reform.
“Guiding” Questions

1. How can health literacy research best guide efforts to improve population health by reducing health disparities?

2. How can health literacy research best guide efforts to improve patient care by improving the effectiveness and efficiency of health-care systems?
Our Panel

- Diane Levin-Zamir, MD
  - Health behavior research
- Jean Rafael, MD
  - Chronic illness research
- Joseph Selby, MD
  - Health services research
Policy Solutions: “Beyond Low-Literacy Handouts”

**Regulation / Standardization**
- Medication dosing (Yin, Sanders 2010)
  - Insurance enrollment forms (Sanders 2007)
  - Informed Consent Documents (Paasche-Orlow 2003)
  - Advanced Directives (Sudore 2007)

**Payment Reform**
- Institutional incentives connected to the patient’s ability to understand.
- Fully informed choices in Health Insurance Exchanges

**Innovation**
- Health navigators: real and virtual (Murphy 1996; Lorig KR 2001; Flores 2005)
- Interactive patient portals (Meade 1994; Davis 1998; Wydra 2001)