Addressing the Problem of Health Literacy: Practical Approaches in Practice

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Topics

• Relationship of health literacy and health outcomes

• Approaches
  – Materials Development
  – “Teach-back” Method
  – Literacy Training

• Examples in Practice
  – Heart Failure
  – Diabetes
What is Health Literacy?

• “The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.”

Healthy People 2010
Why is Health Literacy Important?

• High prevalence of “low health literacy”
• Low health literacy associated with:
  – less knowledge about disease
  – greater risk of hospitalization
  – lower odds of receiving preventive services
  – worse control of chronic illnesses
Literacy in America

• National Adult Literacy Survey (NALS, 1992)
  – Over 90 million Americans had inadequate functional literacy
    • Level 1 or 2 (out of 5)
    – More common among elderly, minorities, immigrants, low SES

• National Assessment of Adult Literacy (NAAL, 2003)
  – New categories
  – Prose results:

  From http://nces.ed.gov/naal/
National Assessment of Adult Literacy (NAAL)

- Most up to date portrait of literacy in U.S.
- Scored on 4 levels
- Lowest 2 levels cannot:
  - Use a bus schedule or bar graph
  - Explain the difference in two types of employee benefits
  - Write a simple letter explaining an error on a bill

n = 19,714

National Center for Education Statistics, U.S. Department of Education
Outcomes Associated with 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 Only
- Substance abuse
- Breastfeeding
- Behavioral problems
- Adherence to medication
- Smoking

Knowledge Only
- Birth control knowledge
- Cervical cancer screening
- Emergency department instructions
- Asthma knowledge
- Hypertension knowledge

Practical Approaches

1. Materials Development
2. Teach-back Method
3. Literacy Training
Development of Educational Materials

- Distilled to essential information
- Collaborated with medical illustrator
- Focus group feedback
- Cognitive interviews
- Revised materials
Use Patient-Friendly Educational Materials

• Simple wording, short sentences
  – 4\textsuperscript{th}-6\textsuperscript{th} grade level
• Picture based
• Focus only on key points
• Emphasize patient concerns
  – What the patient may experience
  – What the patient should do
• Minimize information about disease statistics, anatomy, and physiology
• Be sensitive to cultural preferences
Information Recommended by Guidelines

• General topics
• Explanation of heart failure
• Expected symptoms vs symptoms of worsening heart failure
• Psychological responses
• Self-monitoring with daily weights
• Action plan in case of increased symptoms
• Prognosis
• Advanced directives
• Dietary recommendations
• Sodium restriction
• Fluid restriction

• Alcohol restriction
• Compliance strategies
• Activity and exercise
• Work and leisure activities
• Exercise program
• Sexual activity
• Compliance strategies
• Medications
• Nature of each drug and dosing and side effects
• Coping with a complicated regimen
• Compliance strategies
• Cost issues

Suitability Assessment of Materials

• Content
  – Purpose is evident
  – Content about behaviors
  – Scope is limited
  – Summary or review included

• Literacy Demand
  – Reading grade level
  – Writing style, active voice
  – Vocabulary uses common words
  – Context is given first
  – Learning aids via “road signs”

Doak, Doak, Root. Teaching Patients with Low Literacy Skills. 1996.
Suitability Assessment of Materials

• Graphics
  – Cover graphic shows purpose
  – Type of graphics
  – Relevance of illustrations
  – List, tables, etc. explained
  – Captions used for graphics

• Layout and Typography
  – Layout factors
  – Typography
  – Subheads (“chunking”) used

Doak, Doak, Root. Teaching Patients with Low Literacy Skills. 1996.
Suitability Assessment of Materials

- Learning Stimulation, Motivation
  - Interaction used
  - Behaviors are modeled and specific
  - Motivation—self-efficacy

- Cultural Appropriateness
  - Match in logic, language, experience
  - Cultural image and examples

Doak, Doak, Root. Teaching Patients with Low Literacy Skills. 1996.
“Teach-back”

• Ensuring agreement and understanding about the care plan is essential to achieving adherence

• “We don’t always do a great job of explaining our care plan. Can you tell me in your words how you understand the plan?”

• Some evidence that use of “teach-back” is associated with better diabetes control
Teach-back

Explain

Assess

Clarify

Understanding

NC Program on Health Literacy
Literacy Training

- Improving patients’ reading ability helps address underlying problem
- Resource-intensive: requires significant time and effort for students and teachers
- Goal: one year of adult education can produce one additional grade level in reading skill
- Small improvements may have big effects on patient health outcomes and well-being
Approaches in Practice

1. Heart Failure Program and Randomized Control Trial

2. Diabetes Management Program
Living with Heart Failure Program

- Focus on self-management training
  - 1-hour individualized education session
  - Education booklet < 6th grade level
  - Scheduled follow-up phone calls

- Digital bathroom scale provided
- Easy access to care team (1-800 number)
- Help with barriers to care
- No efforts to adjust/change medication
Development of Educational Materials

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Information Recommended by Guidelines

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Information We Included

- Explanation of heart failure
- Expected symptoms vs symptoms of worsening heart failure
- Self-monitoring with daily weights
- Action plan in case of increased symptoms
- Sodium restriction
- Compliance strategies

Congestive Heart Failure

With congestive heart failure, the heart cannot pump the blood well. As a result, blood doesn’t flow well.

Fluid leaks out of your blood vessels and backs up in the lungs and the legs.

Salt makes it harder for your body to get rid of fluid. You should avoid salt.

Fluid in lungs

Fluid in legs
How Bad Is Your Congestive Heart Failure?
You can tell how well your heart is doing by how you feel and what you can do.

**SWELLING**
- Good – No Swelling
- OK – Swelling in Ankle or Shin
- Bad – Swelling in Knee Area

Call the UNC Clinic / 919-843-6480

**WALKING**
- Good – You can walk easily with no shortness of breath
- OK – Shortness of breath when walking fast
- Bad – Short of breath at rest

Call the UNC Clinic / 919-843-6480

**SLEEPING**
- Good – Sleeping flat, no shortness of breath
- OK – Needing 2 pillows or more to avoid shortness of breath
- Bad – Have to sleep upright to avoid shortness of breath

Call the UNC Clinic / 919-843-6480

NC Program on Health Literacy
<table>
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<tr>
<th></th>
<th>If you weigh</th>
<th>How many fluid pills?</th>
<th>Swelling</th>
<th>Weight</th>
<th>Number of Fluid Pills</th>
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</table>

**Good Weight**
Additional Program Elements

- Scheduled phone calls
- Reinforce teaching
- Motivate patients
- Address transportation barriers
- Help patients enroll in pharmacy assistance program
Randomized Controlled Trial
Research Question

Can a heart failure disease management intervention, targeted toward patients with low literacy, improve quality of life and reduce hospitalizations?
Design of RCT

Disease Management compared to Usual Care

Included patients with low and high literacy for a pre-specified sub-group analysis
Methods

- Patients from general internal medicine and cardiology outpatient practices
- Ages 35-80
- Clinical diagnosis of HF
- NYHA Class 2-4 symptoms within 3 mo.
- Exclusions: dementia, Cr > 4.0, on supplemental O2, substance abuse
Outcome Measures

• Primary Outcomes
  – HF-quality of life
  – Hospitalization or death

• Secondary Outcomes
  – HF knowledge
  – HF specific self-efficacy
  – HF self-care behavior
Follow-up

Enrolled and randomized
129

Control
65
Withdrawal: 2
58 (95%)

Intervention
64
Withdrawal: 6
56 (95%)

6 month
56 (93%)
Death: 5

12 month
50 (85%)
Death: 5
# Baseline Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control (n=65)</th>
<th>Intervention (n=64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age, years (SD)</td>
<td>62 (10)</td>
<td>63 (10)</td>
</tr>
<tr>
<td>African American, %</td>
<td>55%</td>
<td>56%</td>
</tr>
<tr>
<td>Male, %</td>
<td>42%</td>
<td>58%</td>
</tr>
<tr>
<td>Education, years</td>
<td>9.8 + 2.8</td>
<td>9.1 + 3.2</td>
</tr>
<tr>
<td>Income &lt;15,000/yr, %</td>
<td>68%</td>
<td>69%</td>
</tr>
<tr>
<td>Medicaid, %</td>
<td>32%</td>
<td>36%</td>
</tr>
<tr>
<td>Medicare, %</td>
<td>73%</td>
<td>72%</td>
</tr>
<tr>
<td>Literacy (S-TOFHLA) Inadequate, %</td>
<td>40%</td>
<td>45%</td>
</tr>
</tbody>
</table>
## Improved HF Knowledge, Self-Efficacy, and Self-Care Behavior

<table>
<thead>
<tr>
<th>6 Month Outcome</th>
<th>Control</th>
<th>Intervention</th>
<th>Difference (CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge change</td>
<td>-2</td>
<td>10</td>
<td>12 (4, 19)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Self-efficacy change</td>
<td>-0.5</td>
<td>1.3</td>
<td>2 (0.5, 3.1)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Daily weight measurement, %</td>
<td>21</td>
<td>88</td>
<td>67 (53, 81)</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>
Reduced Hospital Admission or Death Incidence Rate

Unadjusted Incidence Rate Ratio (IRR)
0.66 [0.38, 1.12]

Adjusted IRR
0.56 [0.32, 0.95]

*Adjusted for baseline HFQOL, B-blocker use, digoxin use, systolic dysfunction and hypertension
Inadequate Literacy
Lower Admission Incidence Rate

Unadjusted Incidence Rate Ratio (IRR)
0.69 [0.28, 1.75]

Adjusted* IRR
0.38 [0.16, 0.88]

*Adjusted for baseline HFQOL, B-blocker use, ACEI or ARB use, and hypertension

DeWalt et al BMC Health Serv Res. 2006 13:30
How Well did Patients Do with Materials?

- 56 patients completed 6 months of intervention
- Low literacy patients more likely to use the log sheets: 92% vs. 71%, p=0.05

DeWalt et al BMC Health Serv Res. 2006 13:30
## Adherence to Instructions--Errors

<table>
<thead>
<tr>
<th>Literacy</th>
<th>Inadequate</th>
<th>Adequate/marginal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weeks 3-7</strong></td>
<td><strong>6.7</strong></td>
<td><strong>3.6</strong></td>
</tr>
<tr>
<td><strong>Mean errors</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Weeks 18-22</strong></td>
<td><strong>3.6</strong></td>
<td><strong>4.2</strong></td>
</tr>
<tr>
<td><strong>Mean errors</strong></td>
<td></td>
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</table>

DeWalt et al BMC Health Serv Res. 2006 13:30
Conclusions

• HF disease management improves knowledge, self-efficacy, and self-care behavior

• HF disease management decreases the rate of hospitalization or death, particularly for patients with low literacy skills
Conclusion of Adherence Analysis

• Low literacy patients more likely to use materials

• Low literacy patients are less adherent to the care plan early after instruction

• Learning occurs over time, not just with one session!
Practice Re-design: Diabetes Care
Diabetes Disease Management

- Tracking registry
- Patient education
- Care coordination
- Phone follow-up
- Use of treatment and monitoring algorithms
- Address barriers of insurance, transportation, and communication
Educational Strategies

- Patient centered learning
- Therapeutic alliance
- Teach-back method
- Repetition/reinforcement
- Survival skills
Care Coordination

- Call patient at least once a month
- Review self-care skills
- Help to navigate health care system
Evaluation with RCT

Disease Management

112 patients

compared to

Usual Care

106 patients
Outcome Measures

• Primary Measures
  – A1C
  – Blood pressure
  – Aspirin use

• Secondary Measures
  – Diabetes knowledge
  – Treatment satisfaction
  – Medical visits
  – Potential harms
Improvement in HbA1c

**HbA1c Levels Over Time**

- **Control**
- **Intervention**

Key Differences:
- * Difference 0.7%, 95% CI (-0.08, 1.51)
- ** Difference 0.8%, 95% CI (-0.09, 1.73)

Diabetes Control: Results for Patients with Literacy Above 6th Grade Level

Diabetes Control: Results for Patients with Literacy at or Below 6th Grade Level

Summary

• Disease management is an effective tool for improving health outcomes

• Benefits appear greater for vulnerable patients

• Self-care mastery occurs over time and requires reinforcement, but is not limited to highly educated patients

• Combining organized care with systemic reforms (e.g. access to care, payment reform) likely synergistic
The End

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