Health Literacy Lessons from Medical Interpreting: Outcomes, Errors, and Understanding

The Center for Immigrant Health
New York University School of Medicine
Hard to Separate the Two

- There is great overlap
The Center for Immigrant Health
NYU School of Medicine

- Founded in 1989

- Network of community members/CBOs/FBOs, providers, researchers, facilities and administrators, program and policymakers

- Mission: To facilitate the delivery of linguistically, culturally, and epidemiologically sensitive health services to newcomer populations
The Center for Immigrant Health

- Research
- Education, Information Dissemination
- Program and Policy Development
  - Access, Cancer, TB, CVD, Tobacco Cessation, Technology
- Language and Culture Overarch all Program Areas
% LEP Change by State

Source: The Access Project & National Health Law Program
Language Barriers: Impact on Health Care

- Less likely to receive care
- Less likely to report symptoms
- Less likely to understand care/have care recommendations explained to them
- Increased risk of medical errors
- Reduced quality of care
- Increased risk of unethical care
- Less satisfied with care
New New York State Hospital Regulations

- Language Assistance and Patient Rights
- Sept. 13, 2006
- Response to lawsuits against facilities
- “To strengthen communications provisions for persons who do not speak English or do not speak it well”
- Addition of two rights to the Patient's Bill of Rights to be consistent with the Public Health Law

- The hospital shall develop a Language Assistance Program to ensure meaningful access to the hospital’s services and reasonable accommodation for all patients who require language assistance.
CIH Language Access Programs

Training

Face-face, On-line, Language Lab
Interpreter Assessment and Training
Provider Training

Novel Interpreting Strategies Development
Technology(Online AV Patient Learning Programs)

Outcomes Research
Policy Development and Implementation
Intervention: Remote Simultaneous Medical Interpreting System (RSIMI)

- Trained Simultaneous Medical Interpreters
- Remotely Located, Pooled Resource
- Spanish, Mandarin, Cantonese, Bengla
Error Analysis and Efficiency: Study Design

Scripted Encounters:
- Bengali: Breast Cancer
- Spanish and Chinese: TB, Menopause, Diabetes, Depression

RSMI, Proximate Consecutive, Over-the-telephone Consecutive, Ad Hoc

Patient/Doctor Actors

Encounters Audiotaped and Transcribed
Error Analysis Tool

- Word-by-word, and by concept
- Linguistic errors: meaningful and non-meaningful
- Medical errors: no, mild, moderate, high, and life-threatening significance
Linguist and 3 physicians, at least 2 bilingual

Scored separately, then discussed differences until consensus
## Results/Bengali: Training

<table>
<thead>
<tr>
<th>Variable</th>
<th>Multivariate Regression</th>
<th>Chi-Square Analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted OR</td>
<td>Adjusted OR (Confidence Intervals)</td>
</tr>
<tr>
<td>Any concept error</td>
<td>Mild errors</td>
<td>Moderate or greater errors</td>
</tr>
<tr>
<td>Interpreters³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trained</td>
<td>0.13***</td>
<td>0.11*** (0.06, 0.21)</td>
</tr>
<tr>
<td>Ad hoc</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Vocabulary Precision Rate³</td>
<td></td>
<td></td>
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<tr>
<td>&lt;40.0%***</td>
<td>13.10***</td>
<td></td>
</tr>
<tr>
<td>41 - 79%**</td>
<td>3.98***</td>
<td>2.65*** (1.75, 4.00)</td>
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<tr>
<td>&gt;79%</td>
<td>1.00</td>
<td>1.00</td>
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</tbody>
</table>

1 Training p<0.05, 2 Training p<0.01, 3 Training p<0.001

* Variable p<0.05, ** Variable p<0.01, *** Variable p<0.001

Note: Multivariate logistic regression model also adjusted for mode of interpreting and time per utterance.
Dr: The results were positive which means that you carry the gene that puts you at risk for developing breast cancer

Int: The results were correct

Dr: One important thing that you have going for you is the fact that the cancer has probably been caught early

Int: One important thing is the fact that the cancer is working quickly in your body

Dr: The doxy could hurt your heart

Int: The doxy can give you pain
Spanish Error Analysis: Results

RSMI versus non-RSMI

RSMI 30% as likely to result in potential medical error

**p<0.05
<table>
<thead>
<tr>
<th>Scenario</th>
<th>Odds Ratio</th>
<th>Significance</th>
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<tbody>
<tr>
<td>Trained Proximate Consecutive</td>
<td>6.3***</td>
<td></td>
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<tr>
<td>Trained Remote Consecutive</td>
<td>7.54***</td>
<td></td>
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<tr>
<td>Ad Hoc (18 yrs experience)</td>
<td>1.71</td>
<td></td>
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<tr>
<td>Trained Remote Simultaneous</td>
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</tbody>
</table>

***p<0.001
Outcomes
Research Questions

Does RSMI Improve Timely Diagnosis of Depression?

Does RSMI Facilitate Appropriate Follow-up Care?
Research Questions

- Does RSMI Improve Adherence to Screening Guidelines?
- Does RSMI Improve Outcomes for Chronic Diseases? 
  
  *Diabetes, Hypertension, and Hypercholesterolemia*
Research Questions

- Does RSMI lead to fewer interpreting errors?
- Is RSMI a more efficient form of interpreting?
- Does RSMI lead to improved understanding of exit instructions?
Cost Analysis Research

Questions

- Are visit lengths different across different modalities?
- Are there fewer repeat visits to achieve the same outcomes?
- Are there differences in test ordering behaviors, hence, costs?
- What are the opportunity costs vis-a-vis staff time?
- Hospitalizations/ER visits prevented
Randomized Control for Discordant (Spanish-English, Mandarin-English, Cantonese-English)

- RSMI
- Usual and Customary
- Language Concordant Encounters: English-English, Spanish-Spanish, Chinese-Chinese
Data Collection: Depression, Medical Outcomes, Understanding

Clinic: One Year Cohort
- Intake Questionnaire, including Beck Depression Index, PAM
- Chart Reviews, Pt Interviews, Outcomes Tracking for 1 Year after Enrollment
- Exit Interviews
- Enrollment Complete Cohort Follow-up: 887 patients

ER: One Visit
- Intake Questionnaire
- Audiotaped Visits
- Exit Interviews
- Patient Understanding Scale
- Enrollment Complete: 447 patients
Patient Satisfaction/Understanding Perception

- ER and Clinic Combined
- First Visits
- Language Concordant (E-E, Sp-Sp, M-M, Ca-Ca), RSMI, Usual and Customary
Implications for Practice

For Spanish-language encounters, RSMI will likely provide the most accurate results, and better patient outcomes.

Utilization of RSMI in interpreted language discordant encounters will lead to shorter visit times.

Utilize only trained medical interpreters.
Implications for Policy

Training matters….training programs should be systematized.

Investment in dissemination of RSMI to users of telephone interpreting services will provide cost savings(?)

For Spanish-language encounters, RSMI will likely provide the most accurate results, and better patient outcomes(?)

First ever randomized trial of impact of varying modes of interpreting. Results can provide basis for institutional and federal/ state/ local policy evidence-based decision-making.