Visual Evidence
Increasing Usability of Systematic Reviews in Health Systems Guidelines Development

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Disclaimer

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We do not have any conflicts to disclose.
“Research is creating new knowledge.”

—Neil Armstrong
Integrating research and practice
Large volume of complex data

- 1,398 pages
- 300+ pages
- 1,000+ pages

- Extensive executive summary: 25 pages
- Complex evidence tables: 62 tables
- Detailed figures: 52 figures
Dissemination challenges

• Increasing dimensionality
  – 5 types of pain
  – 8 interventions
  – 6 outcomes

• Rigid structure
  – Defined scope
  – Set template
  – Research questions
Chronic pain report

- Condition → intervention → outcome

### Key Question 1: Chronic Pain

#### Exercise for Chronic Pain

**Key Points**

- Exercise was associated with an attention control difference [SMD] = -0.3 were no effects on inter
- 0.48 to 0.18, I²=51%) Disability Index (ODI).
- Exercise was associated with an attention control difference of 0.81 on a 0 to 10 scale pooled MD = -1.37, 95% CI = 2.38 to -0.32 term and long-term).
- No trial evaluated exercises involving the sections for other therapies.

<table>
<thead>
<tr>
<th>Author, Year, Followup, Pain Duration, Study Quality</th>
<th>Intervention</th>
<th>Population</th>
<th>Control N Mean (SD)</th>
<th>Exercise N Mean (SD)</th>
<th>SMD (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myamoto, 2013[2]</td>
<td>A. Muscle performance (Plates) (n=43), 12 sessions over 6 weeks</td>
<td>A vs. B Age: 41.1 years Female: 40, 21% Baseline 9.7 vs. 1.1 Baseline (0-10 VA vs. 6.5)</td>
<td>77,12.2 (6.7)</td>
<td>77,10.3 (7.5)</td>
<td>0.32 (0.05, 0.64)</td>
</tr>
<tr>
<td>Goldby, 2005 AOMI</td>
<td>A. Combined exercise (n=37) (stretching, coordination, and muscle strengthening exercises), 24 sessions over 8 weeks</td>
<td>A vs. B Age: 45.1 Female: 24, 21% Baseline 13.9 vs. 1.1 Baseline (0-10 VA vs. 6.5)</td>
<td>43,3.7 (5.6)</td>
<td>43,4.5 (4.5)</td>
<td>0.00 (0.00, 0.00)</td>
</tr>
<tr>
<td>Kankaanpaa, 1999 AOMI</td>
<td>A. Exercise (Plates) (n=30), 24 sessions over 12 weeks</td>
<td>A vs. B Age: 48.1 Female: 27, 77% Baseline 1.1 vs. 1.1 Baseline</td>
<td>40,2.9 (10.5)</td>
<td>40,1.7 (10.5)</td>
<td>-0.56 (0.13, -0.03)</td>
</tr>
</tbody>
</table>

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https://effectivehealthcare.ahrq.gov/topics/nonpharma-treatment-pain/research-2018
Comparing evidence

Drill down
I have a patient with chronic low back and neck pain. What is an effective treatment to help with short and intermediate-term pain?

Slice and dice
I have a patient who wants to try acupuncture to relieve chronic low back and neck pain. Will this be effective in the short and intermediate term?
Current approach

- Condition \(\rightarrow\) intervention \(\rightarrow\) outcome

<table>
<thead>
<tr>
<th></th>
<th>Chronic low back pain</th>
<th>Chronic neck pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise</td>
<td>Pages 19-25</td>
<td>Pages 97-106</td>
</tr>
<tr>
<td></td>
<td>Table 5</td>
<td>Table 18</td>
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<tr>
<td></td>
<td>Figures 4-5</td>
<td>Figures 26-27</td>
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<td>Acupuncture</td>
<td>Appendix D: 883 pages</td>
<td>Pages 120-128</td>
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<td></td>
<td>Appendix E: 18 pages</td>
<td>Table 23</td>
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<td></td>
<td>Figures 30-31</td>
<td>Figures 30-31</td>
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<tr>
<td>Summary</td>
<td>Tables A-B</td>
<td>Tables C-D</td>
</tr>
<tr>
<td>Individual Studies</td>
<td>Appendices D-E</td>
<td>Appendices D-E</td>
</tr>
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</table>
AHRQ EPC pilot projects

- **Problem**: AHRQ wants to improve accessibility and usability of evidence from systematic reviews
- **Solution**: Engage EPCs to develop and pilot test potential tools to enhance evidence uptake

- **Purpose**: Identify and test interactive methods to make the large amount of data included in an EPC systematic review more accessible for developers of clinical practice guidelines
EPC project plan

• Use published systematic review on chronic pain
• Software selection criteria
  – Existing, off the shelf product
  – No or minimal need for informatics training
• Gather feedback from guideline developers (stakeholders)
Unscrambling the eggs

- Data extracted from PDF, organized into relational structure
  - 356 rows of data, 202 different studies
  - 80% of work
- Developed report for a Guidelines Committee
DEMONSTRATION

Live Demo
Reception of Design

- Interviews with six OHSU guideline development and implementation stakeholders

Formulate specific questions based on local needs ✓

Access data simultaneously across disparate geographies ✓

Share templates across EPCs ✓

Less robust level of detail ✗

Varying levels of clinician expertise ✗

Dashboard will be project-dependent ✗
Caveats/Limitations

• Supplement, not replace
• Quantitatively focused
• Aggregation cannot be changed
• Heavy reliance on data structure
Next Steps/Call to Action

- Integration of informatics professionals
- A step towards improving dissemination
  - New ways to present data
    - Integrate pilot project into future reviews
  - Accessibility
    - Feedback from additional stakeholders
Thank You

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To learn more about the Pacific Northwest Evidence-based Practice Center, visit www.ohsu.edu/epc

To learn more about the Department of Medical Informatics and Clinical Epidemiology, visit www.ohsu.edu/dmice