The Synergy of Improvement Science and Implementation Science.

The Science of Process Management

Gerard P. Brennan, PT, PhD, FAPTA
Senior Clinical Research Scientist, Rehabilitation Services
Intermountain Healthcare
Salt Lake City, UT
Intermountain Healthcare
Not-for-Profit System
Based in Salt Lake City, Utah

PREVENTION & WELLNESS
88,000 Healthy Plates sold in hospital cafes
12,000 Utah students participating in LiVe Well assemblies
58 Schools in Step Express program
57,000 Healthy Living participants

INSURANCE
800,000 Members

HOSPITALS & CLINICS
22 Hospitals
(Including children's & orthopedics)
2,700 Beds
180 Intermountain Clinics

OUR TEAM
5,000 Affiliated physicians
1,400 Medical Group doctors & advanced practice clinicians
35,000 Employees
3,000 Volunteers
470 Volunteer Trustees
Implementation Science: A New Frontier for Rehab

This emerging scientific discipline provides opportunities for both researchers and clinical leaders to develop strategies to improve the quality and effectiveness of rehabilitative care.

- Understand how to use principles of implementation science to drive evidence-based practices into the community.

My purpose is to demonstrate the synergy of “implementation and improvement sciences” using a specific example of our work at Intermountain Healthcare.
Two Complementary Fields

Quality Improvement Science:
• Refers to systems-level work to improve the quality, safety, and value of health care service
• Pragmatic approach to reduce poor performance.
• Measures performance to achieve improvement.

Implementation Science:
• Refers to work to promote the systematic uptake of EBP interventions into practice and policy.
• Focuses on timely and appropriate uptake of evidence.
Implementation

• The means by which an intervention is assimilated into an organization.

• The critical “gateway” represents the organization’s decision to adopt an intervention and the routine use of the intervention.

• The transition period is the time during which the stakeholders become increasingly skillful, consistent, and committed in their use of an intervention.
How good is U.S. healthcare?

• Americans receive about half of recommended (evidence-based) medical care processes.
• The gap between what we know works and what is actually done is substantial and warrants attention.

How to bridge this gap between what we know works and the care we deliver

No simple solution…

• Healthcare system is complex and diverse.

The key to any solution is the routine availability of information on performance at all levels.

Need to focus on automating the entry and retrieval of key data for:

• Clinical decision making
• Measurement and reporting of quality
So . . . are you planning a change?

Need to evaluate implementation outcomes to assess:

- Extent of effectiveness of the effort in a specific setting
- The sustainability of the effort
- Does it promote dissemination to other settings

There is a need to measure performance to achieve improvement

Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science
Laura J Damschroder, David C Aron, Rosalind E Keith, Susan R Kirsh, Jeffery A Alexander and Julie C Lowery
Implementation Science 2009, 4:50

Why is implementation science important now? The healing professions are changing

<table>
<thead>
<tr>
<th>FROM CRAFT-BASED PRACTICE</th>
<th>TO PROFESSION-BASED PRACTICE</th>
<th>EARLY EXPERIENCE SHOWS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Individual therapists working alone</td>
<td>• Groups of peers treating patients in a similar setting</td>
<td>• Less expensive (facility can staff, train, supply and organize to a simple core process)</td>
</tr>
<tr>
<td>• Hand-craft a customized solution for each patient</td>
<td>• Plan coordinated care delivery processes which therapists adapt to individual patient needs</td>
<td>• Less complex (fewer mistakes and dropped handoffs, less conflict)</td>
</tr>
<tr>
<td>• Based on core ethical commitment to the patient and</td>
<td></td>
<td>• Better patient outcomes</td>
</tr>
<tr>
<td>• Vast personal knowledge gained from training and experience</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Intermountain Healthcare
Improvement Science

Key points — shared baseline to implement EBP

1. Select a high priority clinical condition
2. Generate an evidence-based ‘best practice’ guideline
3. Blend the guideline into the flow of clinical work
   - Staffing, training, supplies, physical layout, educational training materials, measurement/information flow
4. Embed data systems to track (1) protocol variations (2) short- and long-term results
   - Intermediate and final clinical, cost, and patient satisfaction outcomes
5. Demand that clinicians vary based on individual patient needs
6. Measure, learn from and (over time) eliminate variation arising from professionals; retain variation arising from patients (mass customization)
1. Identify high priority clinical process
2. Build an evidence-based **BEST** Practice protocol

3. Blend it into the clinical workflow.
Blend the guideline into a standard clinical workflow
Example form the EMR: iCentra

<table>
<thead>
<tr>
<th>Classification Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manipulation</strong></td>
</tr>
<tr>
<td>- Symptoms &lt; 16 days</td>
</tr>
<tr>
<td>- No symptoms distal to knee</td>
</tr>
<tr>
<td>- Lumbar hypomobility</td>
</tr>
<tr>
<td>- FABOW &lt; 13</td>
</tr>
<tr>
<td>- Hip internal rotation &gt; 35 degrees</td>
</tr>
<tr>
<td><strong>Specific Exercise</strong></td>
</tr>
<tr>
<td>- Flexion</td>
</tr>
<tr>
<td>- Extension</td>
</tr>
<tr>
<td>- Lateral shift</td>
</tr>
<tr>
<td>- Centralizes with movements</td>
</tr>
<tr>
<td>- Directional preference - decreased pain or improved symptoms w/ movement or position</td>
</tr>
<tr>
<td><strong>Stabilization</strong></td>
</tr>
<tr>
<td>- Age &lt; 40 years</td>
</tr>
<tr>
<td>- Abnormal movements w/ AROM</td>
</tr>
<tr>
<td>- Positive prone instability</td>
</tr>
<tr>
<td>- Average SLP ROM &gt; S1 degr</td>
</tr>
<tr>
<td>- Lumbar hypomobility</td>
</tr>
<tr>
<td><strong>Traction</strong></td>
</tr>
<tr>
<td>- Peripheralizes w/ multiple movements</td>
</tr>
<tr>
<td>- Sign of nerve root compression</td>
</tr>
<tr>
<td>- No centralization or directional preference</td>
</tr>
<tr>
<td><strong>Classification Comment</strong></td>
</tr>
</tbody>
</table>
4. Embed data systems to track the outcomes

Measuring Process Compliance with the Low Back Pain Treatment-Based Classification System

A Quality Improvement Initiative

Kate Minick, PhD, DPT, OCS, CSCS
Gerard Brennan, PT, PhD, FAPTA

Intermountain Healthcare
Healing for life
PURPOSE of the Intervention

To measure physical therapists’ compliance with a standard workflow to evaluate patients with LBP using the Treatment-Based Classification and to assess the effect of compliance on reducing the rate of failures of care.

- Failure rate is the proportion of patients who fail to achieve a MCID on the Modified Oswestry
4. Embed data systems to track the outcomes

What is needed?

- Create a Measurement Infrastructure
- Track the process of care and the outcome
- Make it possible to assess the effect of local efforts to improve quality
Quality Review Template: “the Scorecard”

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>EVALUATE</th>
<th>Complete form from L→R until column P populates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entry Key:</strong></td>
<td>0 = No</td>
<td>1 = Yes</td>
</tr>
<tr>
<td><strong>Does the patient have:</strong></td>
<td><strong>Nerve Root Compression</strong></td>
<td>Does the patient:</td>
</tr>
<tr>
<td><strong>Specific Exercise</strong>:</td>
<td><strong>Extension</strong></td>
<td><strong>Specific Exercise</strong>:</td>
</tr>
<tr>
<td><strong>Manipulation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stabilization</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Methods:

“Inner Setting” the structural, political, cultural context through which implementation process occurs.

- Therapists were re-educated on TBC through online modules at the start of 2017
- A Quality Review Tool (QRT) was developed in Excel to standardize the chart audit and was piloted (TRIALABILITY) on 20 charts with 5 test reviewers
- Following refinement of the QRT, 7 reviewers completed a 90-minute audit training
“Outer Setting”: the economic, political, and social context

• Pay for Performance incentive for PTs
• Clinical outcomes being incorporated into therapist’s job performance reviews
• The effect of the peer’s opinions of the leadership and overall professional engagement.
Methods

- Each reviewer completed 20-22 patient chart reviews each quarter using the electronic health record
- Reviewers’ clinical questions were resolved with group consensus
- Compliance was defined as a therapist making a correct classification and matching the first treatment to that classification
- Pearson $X^2$ was used to measure the association between:
  - classification and compliance,
  - as well as compliance and FTP rate
- Results for each clinic were compiled and disseminated to clinic managers
## Quality Review “Scorecard”

### Low Back Pain Treatment-Based Classification Quality Review

<table>
<thead>
<tr>
<th>Evalution</th>
<th>Best Fit Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete form from L→R until column O populates</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Therapist</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sp Ex Extension</td>
<td>Sp Ex Flexion</td>
</tr>
<tr>
<td></td>
<td>Manipulation</td>
<td>Traction</td>
</tr>
<tr>
<td></td>
<td>Stabilization</td>
<td></td>
</tr>
</tbody>
</table>

| Entry Key: | 0 = No  
|           | 1 = Yes  
|           | 9 = Missing |

<table>
<thead>
<tr>
<th>Patient MRN</th>
<th>Therapist’s Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Sp Ex Extension</td>
</tr>
<tr>
<td>B</td>
<td>Sp Ex Flexion</td>
</tr>
<tr>
<td>C</td>
<td>Stabilization</td>
</tr>
<tr>
<td>D</td>
<td>Traction</td>
</tr>
<tr>
<td>E</td>
<td>Stabilization</td>
</tr>
</tbody>
</table>

### Quality Review Criteria

1. **Scorecard Criteria:**
   - Symptoms: extending to buttck/legs
   - Pain with mobility testing, FABQ-score<19
   - Hypomobility
   - Increasing episode frequency

2. **Other Criteria:**
   - Other Flexion criteria: ↓ pain with fix, ≥50 years old, spinal stenosis
   - Other Traction criteria: extending to buttck/legs, nablity to centralize w/ data regrowth, leg intensit, leg flexibil

### Treatment Adherence

- Collected: 60%
- Correct Classification: 62.5%
- Therapist's Classification: Correct?
- Correct Classification AND Treatment Adherence:
- Total Compliance: 62.5%

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**Note:** Formulas and logic expressions are shown for the scorecard criteria, but they are not directly readable in the image. They involve logical operators and conditional statements based on patient data.
## Results – 4th quarter 2017

### Low Back Pain Treatment-Based Classification Quality Review

#### Algorithm

<table>
<thead>
<tr>
<th>Therapist Classification</th>
<th>Best Fit Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sp Ex Extension</td>
<td>Hypomobility, pain with mobility testing, FABQ &gt; 19, hip IR &gt; 35, no peripheralization</td>
</tr>
<tr>
<td>Sp Ex Flexion</td>
<td>Other flexion criteria: extending to buttocks/legs, inability to centralize w/ repeated rmnt, leg intensity &gt; back, generalized flexibility</td>
</tr>
<tr>
<td>Manipulation</td>
<td>Other manipulation criteria: hypermobility, increasing episode frequency, 3+ episodes, generalized flexibility</td>
</tr>
<tr>
<td>Stabilization</td>
<td>Other traction criteria: extending to buttocks/legs, inability to centralize w/ repeated rmnt, leg intensity &gt; back, generalized flexibility</td>
</tr>
</tbody>
</table>

#### Evaluation

<table>
<thead>
<tr>
<th>Therapist's Classification</th>
<th>1st Treatment Adherent?</th>
<th>Correct Classification</th>
<th>Therapist's Classification Decision Correct?</th>
<th>Correct Classification AND Treatment Adherence Match?</th>
<th>Total Compliance</th>
</tr>
</thead>
</table>
Results

Matched and Incomplete Charts

- 2017: 57.0% Matched, 29.1% Incomplete
- 2018: 62.0% Matched, 19.7% Incomplete
<table>
<thead>
<tr>
<th>Classification</th>
<th>MCID Success</th>
<th>MCID Failure</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matched</td>
<td>163</td>
<td>55</td>
<td>218</td>
</tr>
<tr>
<td>Not Matched</td>
<td>91</td>
<td>55</td>
<td>146</td>
</tr>
<tr>
<td></td>
<td>254</td>
<td>110</td>
<td>364</td>
</tr>
</tbody>
</table>

Pearson chi2(4) = 6.4188, p=0.011
How does the LBP example illustrate the Synergy of Implementation Science and Improvement Science?

**Improvement Science**
- Systems-level work to improve quality (clinical outcomes); value
- Measured performance to achieve improvement

**Implementation Science**
- Worked to promote systematic uptake of EBP interventions into practice and to impact policy.
- Focused on the timely and appropriate uptake of EBP
Summary: How does the LBP example illustrate the principles of Implementation Science (CQI)

1. “Gateway”: our decision to implement and measure a process.
2. “Transition period”: the time for therapists to develop skill, consistency, and commitment to the process.
3. Evaluated the effectiveness locally and across settings to demonstrate that the process is sustainable and can be disseminated.
4. Implementation (deployment) considered:
   - “Inner setting” structural, political, and cultural contexts
   - “Outer setting” economic, political, and social contexts
Thank you!

gerard.brennan@imail.org