The Use of Clinical Outcomes Data to Demonstrate Physical Therapists’ Value

James J. Irrgang PT, PhD, ATC, FAPTA
Stephen Hunter PT, DPT, OCS

Disclosure
Stephen Hunter serves on the APTA Scientific Advisory Panel for the Physical Therapy Outcomes Registry
Stephen Hunter works full time for Intermountain Healthcare which has made an outcomes software program called ROMS commercially available
Stephan Hunter PT, DPT, OCS
Intermountain Healthcare

Not-for-Profit Integrated 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
- 57 Schools in Step Express program
- 57,000 Healthy Living participants

INSURANCE
- 750,000 Members

HOSPITALS & CLINICS
- 22 Hospitals
- 2,700 Beds
- 500 Intermountain Clinics

OUR TEAM
- 5000 Affiliated Physicians
- 1,400 Medical Group Doctors & Advanced practice clinicians
- 35,000 Employees
- 3,000 Volunteers
- 470 Volunteer Trustees

Utah has among the lowest healthcare costs in the nation.

My Role

- 33 years with Intermountain
- Manage 12 out-patient clinics
- In the clinic 2 days a week
- Integration\operationalize evidence into practice
Why outcomes now?

“The playing field is changing”

Payers are moving to value based payments

- CMS
  - 2016: 30% of FFS payments based on value and provided through alternative payment models
  - 2018: 50% of FFS payments based on value and provided under alternative models that base payments on quality of care

- Private Commercial Payers
  - To shift 75% of operations to contracts designed to improve quality and lower costs by 2020*
    » Aetna
    Blue Cross Blue Shield of Massachusetts
    Blue Shield of California
    Health Care Service Corporation

*Health Care Transformation Task Force 2016
Patients are paying more for health care

[Graph showing average monthly worker premium contributions paid by covered workers for single and family coverage from 1999 to 2011.]
Providers accepting more accountability

• Recent (non-scientific) survey of over 1000 predominately PT practice managers.
• 80% collect outcomes to improve care
• 75% collect outcomes to meet government regulations

Value Definition

Value = \frac{Quality}{Cost} \quad \text{Value} = \frac{Service + \text{Outcome}}{Cost + \text{Waste}}

Costs can be related to prevention (I term "upstream"), reducing cost with the current episode and avoidance of downstream costs
Why Data?

“Where there is no [standard] there can be no improvement.”

“Anything that does not add value to the customer is waste.”

Taiichi Ohno Toyota

To Improve Quality

Measure the outcome

Reduce waste with a more standard process of care
What to measure?

• PROMS vs Performance based outcomes
  – Examples
  – Uses
  – Advantages and Disadvantages

Quality and Cost are 2 sides of the same coin
When quality increases, cost decreases

Published examples in PT
• Spine 2008
• Archives 2013
• Health Services Research 2015
The Value Article

**Physical Therapy for Acute Low Back Pain**

*Associations with Subsequent Healthcare Costs*

Fritz JM, Cleland JA, Speckman M, Brennan GP, Hunter SJ


- 493 patients included in the analysis were Select Health patients
- Examined physical therapy outcomes related to adherence for these patients
- Examined subsequent health care consumption and charges for 1-year after physical therapy services
  - 18 (4%) no longer covered by Select Health (n=475)

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The Value Article

Adherent care in Physical Therapy was associated with:

- A mean reduction in PT charges of about $170
- A mean reduction in overall cost of care for 1-year of approximately $1400
- 18% relative risk reduction (RRR) for additional care
- 37% RRR for muscle relaxant prescriptions
- 56% RRR for MRI
- 58% RRR for fluoroscopically-guided injections
• Initial management by a primary care physician within 14 days of acute non-complicated low back pain  n=2184
• 13% were referred to physical therapy, 38% were prescribed opioid pain medication
• Total health care costs were analyzed after one year

“...Initial physical therapy did not significantly contribute to the total healthcare costs...”
“...the strategy most determinate of increased healthcare costs and utilization was opioid prescription medication...”
Almost a $5000 per case difference.

Acts of Strategy


- Providers should use process improvements to boost quality of care for patients: better outcomes, enhanced care experience.
- Improving value is more important than short-term fee-for-service profit.
- Not gaming the system by targeting only patients in contracts that would yield financial rewards
Compelling Business Case to Act Now


- Sustainability
- Experience in managing risk
  - Using evidence based care practices to ensure appropriate utilization.
  - Starting sooner will lead to being better positioned for success.
- Relationship building
  - Collaborate with stakeholders. Health systems want closer alignment to providers that can help achieve higher value in evolving marketplace.
- Lack of alternatives

Outcome collection must be part of the daily PT Workflow

1. Patient enters the clinic
2. Patient fills out questionnaire
3. PSR enters 2 results into ROMS (disability, pain)
4. PT evaluates the patient
5. PT determines a classification. Enters into ROMS
6. Continuous tracking and outcomes improvement
7. PT defines patient treatment plan
**Time** | **Treatment** | **Milestones** | **Compliance Measures**
--- | --- | --- | ---
**Phase 1**<br>Aproximately 0-4 Weeks Postoperative<br>Visits 1-6 | **ROM**<sup>2</sup>  
- Exercise bike for ROM 5-10 minutes, forward and/or backward pedaling with no resistance until able to perform full revolution at the lowest seat height.  
- Supine active-assistive wall slides for knee flexion ROM  
- Passive knee extension stretch with manual pressure  
- Seated bag hang or prone bag hang providing low load long duration stretch (weight and time may vary to achieve goal)  
- Patellar mobilizations all directions as necessary<sup>3</sup> | Able to complete 3 full reps without fatigue<sup>4</sup>  
Pain at rest < 4/10<sup>5</sup>  
AROM/PROM < 10-90<sup>6</sup> | Measures of pain and disability.  
Measure AROM/PROM each visit  
Interventions in each category:  
1. ROM  
2. Volitional strength  
3. Balance/Agility  
Perform NMES per protocol at least one visit during entire episode of PT care.  
Implement passive stretch program with Bag Hang.  
*Not needed if patient has full knee extension ROM (0-degrees). Must document that you performed bag hang every visit or patient achieved full extension (0-deg) by end of care.**

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**TKA Failure to Progress 2011 to 2015**
In 2015, Intermountain implemented the Ortho Section Care Process Guideline for Neck Pain.

YTD we have reduced Neck Pain “Failure to Improve” from 46.7% to 34.7%.

Can Physical Therapists reduce the harm exposed to our Patients?

“Wrong-site surgery is one of the most serious and talked about safety failures—But it could be said that any surgery that hasn’t been proven to benefit the patient is a wrong-site surgery.”

— Jack Wennberg MD, Dartmouth University

Applying this concept to physical therapy, any therapy that hasn’t been proven to benefit the patient is “wrong site therapy”
Improving Value In PT

Value = Service + Outcome
   Cost + Waste

Establish a standard process of care
Measure the process to reduce variation and improve the outcome
Continually refine and improve

New Advances in Measuring Patient-Reported Outcomes

James Irrgang PT PhD ATC FAPTA
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University of Pittsburgh

Scientific Director
Physical Therapy Outcomes Registry
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• Research Support: NIAMS R01AR056630 (ACL Trial), R01AR064047-01 (Knee CAT Study); DoD W81XWH-15-1-0655 (StaR Trial for MLKI), AOSSM (Review & Update of IKDC-SKF)

↑ Value = \frac{↑ \text{Health Outcomes Achieved}}{↓ \text{Costs}}

Measuring Value Inherently Requires Measuring Health Outcomes
Patient-Centered Outcomes

“Outcomes of Medical Care that are Important to Patients”

What Outcomes Are Most Important to Patients???

Patient-Reported Outcomes

Commonly Measure:

- Patient’s perception of:
  - Symptoms
  - Activity
  - Participation
Selecting Clinical Outcome Measures

Consider:

• Purpose of measurement
• Relevance to patient population
• Psychometric characteristics:
  – Reliability
  – Validity
  – Responsiveness
• Patient & clinician burden

Patient-Reported Outcomes

Health Related Quality of Life

• One’s perceptions of his/her health
• Physical, social & psychological domains of health

Impairment of Body Structure & Function

Activity Limitations & Participation Restrictions
Patient-Reported Outcomes

Types of PROs:

- General measures
- Specific measures:
  - Region specific
  - Disease specific
  - Patient specific

Psychometric Considerations

Traditional Concerns:

- Reliability – consistency
- Validity - accuracy
- Responsiveness – ability to detect change
Contemporary Concept of Validity

Validation is the ongoing collection of evidence to support interpretation & use of a measure for a specific purpose

Contemporary Concept of Validity

Implies:

– Outcome measure itself is not “validated”
– Rather there is evidence to support use of an outcome measure for a specific purpose
– Requires ongoing collection of evidence to support each intended use
“We Used a Validated Instrument”

Psychometric Considerations

Interpretability of PROs:

- Minimal Detectable Change (MDC) – change beyond measurement error

- Minimally Clinical Important Difference/Change (MCID/MCIC) – change that is important to patient
What Outcome Is Important to Patients??

Change from Baseline vs. Final Status of Patient???

Feeling Better vs. Feeling Well???

Patient Acceptable Symptom State (PASS)

“Feeling Well”:

“Taking into account all of the activities that you have during your daily life, your level of pain and also your functional impairment, do you consider your current state satisfactory?”

Yes or No
Patient Acceptable Symptom State

IKDC Subjective Knee Form:
  • Satisfied with current state:
    – Yes – 86.1 +/- 9.7
    – No – 62.0 +/- 14.4
  • ROC analysis indicates score of 77.6 best distinguishes satisfied from non-satisfied symptom state
    – Sensitivity - .86
    – Specificity - .95

Muller et al, AJSM (accepted Apr 2016)

Did An Individual Patient Experience a Meaningful Clinical Outcome?
Meaningful Clinical Outcome

Case Example:

- 33 year old male that is 12 years status post ACL reconstruction that has 2 cm grade 3 chondral lesion on medial femoral condyle
- Complains of persistent pain and swelling over last 12 months – baseline IKDC Subjective Knee Form Score is 55
- Underwent microfracture Feb 2010 with 3 months of post-operative physical therapy
- At 1 year post-op visit, IKDC Subjective Knee Form score has improved to 80 representing a change of 25 from baseline score

Meaningful Clinical Outcome

Case Example:

- MDC at 12 months for patients undergoing articular cartilage procedure is 13.7 – therefore improvement is beyond measurement error
- MCID at 12 months for patients after articular cartilage procedure is 16.7 – therefore improvement is important to patient
- PASS for patients 1 to 5 years after ACL reconstruction is 77.6 – therefore patient is likely satisfied with current state of knee
- Population average for males 25 to 34 yrs. of age is 94 ± 9 – therefore patient is still ~ 1.5 SD below normal for population

Greco et al 2010
Muller et al 2013
Anderson et al 2006
Classical Test Theory

• PRO measures based on CTT consist of fixed set of items administered to all individuals regardless of appropriateness of item for a given individual
• Requires balance of number of items & range of function to be measured

Classical Test Theory

Generic Measures of Physical Function:

• Items selected to measure broad range of physical function including items relevant for low and high functioning individuals
• Items represent both mobility & daily activity
• Some items not relevant for some individuals depending on region of impairment & level of function
• Function imprecisely measured, particularly at extremes of physical function
Classical Test Theory

Specific Measures of Physical Function:

• Items selected to measure targeted range of physical function that is likely to be affected by specific condition or region of impairment
• Results in improved measurement precision within targeted range of function, however....
• Susceptible to floor/ceiling effects when used to assess function outside of targeted range

Classical Test Theory

Other Limitations:

• PRO measures based on CTT are created using separate measurement scales
• Result is that scores from different PRO measures are not directly comparable

Use of Multiple PROs Likely to Lead to Measurement Chaos
New Directions for Measuring Patient-Reported Outcomes

Item Response Theory (IRT) & Computer Adaptive Tests (CAT)

Item Response Theory

- Underlying premise is that performance of individual can be modeled by characteristics of the person and the item
- As ability of individual increases, probability of choosing “correct” response increases

Item Characteristic Curve (ICC)
Item Response Theory

- Items are calibrated on the same scale as the “latent trait” that is being measured

Latent Trait – Example – “Mobility”

- Low Mobility
- High Mobility

IRT Permits the Development & Implementation of Computer Adaptive Tests (CAT)
Computer Adaptive Tests

• Utilize properties of IRT to create test tailored to an individual's level of function/disability

Computer Adaptive Test

Algorithm - Example:

• Based upon age & sex, computer selects initial item
  – Example – 70 year old male the question might be “Can you walk a block?”
• Response to previous question determines next question:
  – If yes, computer bypasses “easier” questions selects more “difficult” question: “Can you walk a mile?”
• Process continues iteratively until function is estimated with predetermined level of precision or pre-determined number of items administered
Computer Adaptive Tests

Advantages:

• More efficient test (i.e. fewer items administered – typically 4 to 8 questions)
• More precise measurement of functioning & disability (i.e. decreased measurement error)

Examples of Existing CATs to Measure PROs

• PROMIS
• AM-PAC
Patient-Reported Outcomes Measurement Information System (PROMIS)

- PROMIS Domains:
  - Physical function
  - Mental function
  - Social well-being

PROMIS CAT Demonstration

https://www.assessmentcenter.net/
Activity Measure for Post-Acute Care (AM-PAC)

• CAT measure of activity limitations for post-acute care settings
• Domains include:
  – Basic Mobility - 131 items measuring basic movement & physical functioning activities
  – Daily Activity - 88 items measuring basic self-care & IADL
  – Applied Cognitive - 50 items measuring higher level cognitive functions necessary for independent living
• Measures aspects of difficulty, assistance & limitations when performing activities

Jette et al 2013

Short Form Versions of IRT-Calibrated Item Banks

• Currently CATs are NOT fully implemented within multiple computer platforms
• Paper-based short form versions can be created by carefully selecting subsets of items from IRT-calibrated item banks
• For example, separate short forms for the AM-PAC have been inpatient & outpatient settings – each accounts for different levels of ability & type of activities typically performed in each setting
  – Six Clicks Inpatient Form
  – Medicare Outpatient Forms (with/without wheelchair items)
  – Generic Outpatient Form

Jette et al 2013
Because of the Properties of IRT, t-Scores Based Upon Different Versions of Short Forms are Comparable

Raw Scores from Short Forms Are Not Comparable

AM-PAC Short Forms
Example of Comparable Scores:

• Generic Basic Mobility Outpatient Short Form:
  – Raw score of 35 converts to a t-score of 50.95 with SE of 2.03
• Medicare Basic Mobility Outpatient Short Form (without wheelchair questions):
  – Raw score of 20 converts to t-score of 50.94 with SE of 1.91
• Medicare Basic Mobility Outpatient Short Form (wheelchair questions):
  – Raw score of 33 converts to t-score of 51.19 with SE of 2.03

Jette et al 2013
Use of Process of Care & Clinical Outcomes Data to Assess Value

James Irrgang PT PhD ATC FAPTA
Professor & Chair, Department of Physical Therapy
University of Pittsburgh

Scientific Director
Physical Therapy Outcomes Registry

“Physical therapist must become equipped with skills necessary to function within effective health care system to identify what works, for what conditions, under what circumstances and at what costs”

Jette AM, 2012
What Skills are Needed by Physical Therapists in Today’s Health Care Environment to Practice and Thrive??

Face Into the Storm

43rd Mary McMillan Lecture
Alan M Jette PT PhD FAPTA
2012 Annual Conference of the APTA

• Knowledge & application of the principles of evidence-based practice
• Interest in and use of data
• Ability to recognize & develop solutions uncovered by data

Jette AM: Face into the storm.
PT Score Card

Delitto – 2001 Maley Lecture

<table>
<thead>
<tr>
<th>Yr.</th>
<th># Pts:</th>
<th>RA: Change in Outcome/Patient</th>
<th>Average Visits</th>
<th>Δ/Visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Positive Deviants

- Individuals or groups who are able to find better solutions to problems than their peers
- Need to identify “positive deviants” & discover their successful behaviors & strategies
- Develop a plan of action to promote their adoption by all

### “Positive Deviants”

Data for Patients with Neck Pain from 3 PTs

<table>
<thead>
<tr>
<th></th>
<th>PT 1</th>
<th>PT 2</th>
<th>PT 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Patients</td>
<td>16</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Average NDI – SOC</td>
<td>24.4</td>
<td>49.2</td>
<td>36.8</td>
</tr>
<tr>
<td>Average NDI – DC</td>
<td>6.6</td>
<td>44.0</td>
<td>27.6</td>
</tr>
<tr>
<td>Average NDI – Change</td>
<td>17.8</td>
<td>5.2</td>
<td>9.2</td>
</tr>
<tr>
<td>Average Visits</td>
<td>3.2</td>
<td>1.9</td>
<td>5.2</td>
</tr>
<tr>
<td>Change/Visit</td>
<td>5.6/V</td>
<td>2.7/V</td>
<td>1.8/V</td>
</tr>
</tbody>
</table>

### “Positive Deviants”

<table>
<thead>
<tr>
<th></th>
<th>PT 1</th>
<th>PT 2</th>
<th>PT 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical Mob/Manip</td>
<td>87.5%</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>Thoracic Mob/Manip</td>
<td>93.8%</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>Traction</td>
<td>12.5%</td>
<td>10%</td>
<td>90%</td>
</tr>
<tr>
<td>Coord or Strength Ex</td>
<td>100%</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>Stretching Ex</td>
<td>93.8%</td>
<td>70%</td>
<td>40%</td>
</tr>
<tr>
<td>UQ Nerve Mob</td>
<td>18.8%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Patient Education</td>
<td>93.8%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Physical Agents</td>
<td>18.8%</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>
“Positive Deviants”

Question Becomes:

• Are these variations in treatment warranted?

• Are the outcomes achieved by each of these PTs related to variation in treatment or due to some other factors?

“Positive Deviant”

Richard E. Erhard PT DC
Interest In & Analysis of Data & Ability to Recognize & Develop Solutions Uncovered by Data

What Data Are Needed?
Consider:
- Personal characteristics of patients
- Diagnosis/classification of patient
- Relevant clinical outcomes
- Process of care data
2010 Orthopaedic Section
Strategic Plan

Strategic Outcome 1 – Standards of Practice

Objective B – Develop National Orthopaedic Physical Therapy Outcomes Database (NOPTOD)

Neck Pain Pilot Project

Purpose:

• Determine member interest, feasibility & burden for collecting process of care & clinical outcomes data
• Collect & analyze clinical & process outcomes data based on Neck Pain Clinical Practice Guidelines

Irrgang & Gil: OPTP 2014
Neck Pain Pilot Project

Data Included:

- Subject, PT & clinic ID
- Episode
- Patient characteristics
- Symptoms
- Examination findings
- Classification
- Interventions
- Outcomes

All Data De-ID’ed

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Neck Pain Pilot Project

Results – Patient Characteristics (n ~ 250):

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs.)</td>
<td>50.4 +/- 19.6 (13 – 87)</td>
</tr>
<tr>
<td>Female (%)</td>
<td>158 (63.7%)</td>
</tr>
<tr>
<td>Height (inches)</td>
<td>67 +/- 4 (54 – 76)</td>
</tr>
<tr>
<td>Weight (lbs.)</td>
<td>172 +/-39 (95 – 314)</td>
</tr>
<tr>
<td>BMI</td>
<td>27.1 +/- (5.7) (18 – 57)</td>
</tr>
</tbody>
</table>

Irrgang & Gil: OPTP 2014
# Neck Pain Pilot Project

## Results – Patient Characteristics:

<table>
<thead>
<tr>
<th>Patient Characteristics - Comorbidities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes (%)</td>
<td>32 (12.0%)</td>
</tr>
<tr>
<td>Hypertension (%)</td>
<td>73 (29.4%)</td>
</tr>
<tr>
<td>Heart Disease (%)</td>
<td>18 (7.3%)</td>
</tr>
<tr>
<td>Smoker</td>
<td>37 (14.9%)</td>
</tr>
</tbody>
</table>

Irrgang & Gil: OPTP 2014

## Results – Onset Mechanism:

<table>
<thead>
<tr>
<th>Onset</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradual (%)</td>
<td>109 (44.0%)</td>
</tr>
<tr>
<td>Sudden – No Trauma (%)</td>
<td>72 (29.0%)</td>
</tr>
<tr>
<td>Traumatic/Whiplash (%)</td>
<td>54 (21.8%)</td>
</tr>
<tr>
<td>Other (%)</td>
<td>6 (2.5%)</td>
</tr>
<tr>
<td>Not Reported (%)</td>
<td>9 (4.6%)</td>
</tr>
</tbody>
</table>

Irrgang & Gil: OPTP 2014
### Neck Pain Pilot Project

**Results – Process of Care:**

<table>
<thead>
<tr>
<th>Process Outcomes</th>
<th>Average</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of Care (Days)</td>
<td>29.4 +/- 19.6</td>
<td>1</td>
<td>111</td>
</tr>
<tr>
<td>Number Visits</td>
<td>6.4 +/- 4.7</td>
<td>1</td>
<td>30</td>
</tr>
</tbody>
</table>

Identify Outliers with Long Duration of Care or High Number of Visits

Irrgang & Gil: OPTP 2014

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### Neck Pain Pilot Project

**Results – Process of Care:**

<table>
<thead>
<tr>
<th>Process Outcomes – Interventions</th>
<th>Count (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education/Counseling</td>
<td>216 (87.1%)</td>
</tr>
<tr>
<td>Coordination/Strength/Endurance Exercise</td>
<td>220 (88.7%)</td>
</tr>
<tr>
<td>Cervical Mob/Manipulation</td>
<td>205 (82.7%)</td>
</tr>
<tr>
<td>Stretching Exercise</td>
<td>186 (75.0%)</td>
</tr>
<tr>
<td>Thoracic Mob/Manipulation</td>
<td>163 (65.7%)</td>
</tr>
<tr>
<td>Modalities</td>
<td>143 (57.7%)</td>
</tr>
<tr>
<td>Traction</td>
<td>93 (37.5%)</td>
</tr>
<tr>
<td>Nerve Mobilization</td>
<td>49 (19.8%)</td>
</tr>
</tbody>
</table>

Irrgang & Gil: OPTP 2014
Neck Pain Pilot Project

Results – Clinical Outcomes:

<table>
<thead>
<tr>
<th>Clinical Outcomes</th>
<th>Baseline</th>
<th>Final</th>
<th>Change</th>
<th>Chg/Visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDI (SD)</td>
<td>31.1 (16.2)</td>
<td>17.5 (15.6)</td>
<td>13.5 (14.8)</td>
<td>2.7 (3.7)</td>
</tr>
<tr>
<td>Pain (SD)</td>
<td>4.8 (2.4)</td>
<td>2.2 (2.3)</td>
<td>2.6 (2.7)</td>
<td>.5 (.7)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clinical Outcomes</th>
<th>NDI Change &gt; 9% (%)</th>
<th>Pain Change &gt; 2 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>125 (50.4%)</td>
<td>134 (54.0%)</td>
</tr>
</tbody>
</table>

Irrgang & Gil: OPTP 2014

Did An Individual Patient Experience a Clinically Meaningful Outcome???
Analysis of Data

Meaningful Outcome:

- Definition of meaningful outcome could be based on:
  - Change greater than measurement error (i.e. minimal detectable change [MDC])
  - Important change (i.e. minimum clinically important difference [MCID])
  - Achieving an acceptable symptom state (i.e. PASS)
  - Comparison to population norms

Analysis for Subgroups of Patients

Example – Neck Pain with Mobility Deficits
Analysis of Data

Neck Pain with Mobility Deficits:

Table 8 - Clinical Outcomes at Baseline and Discharge for Patients with Neck Pain with Mobility Deficits for Anonymous Physical Therapist and All Physical Therapists that Participated in the Project

<table>
<thead>
<tr>
<th>Neck Pain with Mobility Deficit</th>
<th>Individual PT</th>
<th>All PTs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>DC</td>
</tr>
<tr>
<td>NDI (SD)</td>
<td>261.12 (2.64)</td>
<td>3.04 (0.12)</td>
</tr>
<tr>
<td>NPRS (SD)</td>
<td>4.11 (1.77)</td>
<td>0.68 (0.72)</td>
</tr>
</tbody>
</table>

Table 9 - Change in Clinical Outcomes and Change per Visit for Patients with Neck Pain with Mobility Deficits for Anonymous Physical Therapist and All Physical Therapists that Participated in the Project

<table>
<thead>
<tr>
<th>Neck Pain with Mobility Deficit</th>
<th>Individual PT</th>
<th>All PTs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change</td>
<td>Change/Visit</td>
</tr>
<tr>
<td>NDI (SD)</td>
<td>23 (0.42)</td>
<td>8 (0.62)</td>
</tr>
<tr>
<td>NPRS (SD)</td>
<td>8.4 (1.77)</td>
<td>1.1 (0.62)</td>
</tr>
</tbody>
</table>

Analysis of Data

Clinically Meaningful Outcome:

Table 5: Clinical Outcomes - Number of patients achieving a clinically meaningful full change

<table>
<thead>
<tr>
<th></th>
<th>Individual (n=16)</th>
<th>Peers</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDI Change &gt; 9% (%)</td>
<td>11 (68.8)</td>
<td>125 (50.4)</td>
</tr>
<tr>
<td>NPRS Change &gt;2 pts. (%)</td>
<td>13 (81.3)</td>
<td>134 (54.0)</td>
</tr>
</tbody>
</table>
Why Did This PT Appear to Have Better Outcomes for This Subgroup of Patients??

Analysis of Differences Between PTs

Possible Explanations:
- Difference in patient characteristics??
- Differences in severity of involvement??
- Differences in treatment approaches??
Analysis of Data

Differences in Treatment:

<table>
<thead>
<tr>
<th></th>
<th>Individual PT</th>
<th>All PTs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neck Pain with Mobility Deficit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cervical Mob/Manip (%)</strong></td>
<td>7 (87.5)</td>
<td>84 (72.4)</td>
</tr>
<tr>
<td><strong>Thoracic Mob/Manip (%)</strong></td>
<td>8 (100)</td>
<td>63 (54.3)</td>
</tr>
<tr>
<td>- Traction (%)</td>
<td>0 (0)</td>
<td>22 (19.0)</td>
</tr>
<tr>
<td>- Coord/Strength/Endur Ex. (%)</td>
<td>5 (62.5)</td>
<td>83 (71.6)</td>
</tr>
<tr>
<td>- Stretching Exercises (%)</td>
<td>7 (87.5)</td>
<td>84 (72.4)</td>
</tr>
<tr>
<td>- Upper Qt. Nerve Mob (%)</td>
<td>0 (0)</td>
<td>5 (4.3)</td>
</tr>
<tr>
<td>- Patient Edu/Counseling (%)</td>
<td>7 (87.5)</td>
<td>96 (81.9)</td>
</tr>
<tr>
<td>- Physical Agents (%)</td>
<td>1 (12.5)</td>
<td>49 (42.2)</td>
</tr>
</tbody>
</table>

Is this PT a “Positive Deviant???

What Can Be Learned from this Individual???
Need Skills to Develop Solutions for Problems Uncovered by Data

Requires Process of Reflection & Problem Solving

Critical Appraisal of Performance

• Reflect on patients that did not achieve meaningful outcome
  – What is different between those that achieved a meaningful outcome and those that did not?
  – What could you do differently in future to provide better care for those that did not achieve a meaningful outcome?

• Reflect on adherence to evidence-based treatment guidelines:
  – What is the evidence supporting treatment decisions?
  – What are barriers to adhering to practice guidelines?
  – What skill/experience needs to be developed?
  – What are the patient’s expectations?
Implementing Collection of Outcome Measures in Clinical Practice

Consider Input From:

- Patients
- Clinicians
- Front line supervisors
- Support staff
- Health system administrators
- Measurement experts

Implementing Collection of Outcome Measures in Clinical Practice

Patient Stakeholder Input:

- Obvious to patients that the information was not reviewed because the clinicians ask the same questions during the encounter with the patient
- Patients want to know what the score means, what the scores will be used for & how it impacts their care
- “If there is no further discussion of the outcome scores, it must not have been important”
- Process would be easier & less burdensome if the outcome measures could be completed at home prior to visit
Implementing Collection of Outcome Measures in Clinical Practice

- Clinician input:
  - Recognize PRO data could be useful to enhance patient-provider communication & improve shared decision making as a means to set expectations & determine need for treatment, however...
  - Results need to be immediately available during patient encounter
  - Clinicians need to understand meaning/interpretation of score
- Office staff input:
  - Technical issues with computers (timing out, battery life)
  - Lack of familiarity with measures interferes with ability to answer questions

Implications for Collecting PROs:
- Systems-based approach is necessary to ensure successful implantation – including:
  - Process mapping to understand clinic workflows
  - Audit & feedback of compliance with data collection & use
  - Quality improvement coaching to improve low-performing clinics
  - Rapid semi-structured interviews with clinicians & staff to determine barriers & facilitators to implementation
  - Patient focus groups/interviews to determine if & how PROs are collected & used
  - Training materials targeted to patients, clinicians & staff to address barriers to successful implementation of data collection
Systematic Collection of PCOs within Standard Clinical Practice

Benefits:

- Improved patient-centered care
- Facilitate quality improvement & value-based care initiatives
- Expanded opportunities for pragmatic comparative effectiveness & observational research
- Provide source of data to populate registries

Vision to Transform Practice, Profession & Patients
Physical Therapy Outcomes Registry (PTOR)

Organized Collection of Process of Care & Clinical Outcomes Data

Core Data Elements
Applicable to All Patients in Registry:

- Patient demographic characteristics
- Episode of care
  - Onset date & start of care
  - Referral source
  - Diagnosis/classification & medical history
  - Insurance
- Visit data
  - Care provider/facility
  - CPT codes
  - Pain
  - Functional status score
- Provider information (entered 1 time):
  - Graduation year
  - Residency/fellowship training
  - Specialization
Population-Specific Modules

Data Elements:

**Tier 1 Variables:**
- Patient classification/diagnosis system
- Population specific outcome measures
- Other variables necessary for risk adjustment

**Tier 2 Variables:**
- Specific interventions provided

**Tier 3 Variables:**
- Symptoms & physical examination findings

**Linked to Established Clinical Practice Guidelines**

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**Timeline**

2016
- Close Pilot

2016
- Soft Launch (PPS)

2017
- Public Launch

2017
- 1000 users
Successful Collection of PCOs within Standard Clinical Practice

Requires:
• Patient input to identify relevant outcomes that are important to the patient
• Use of modern measurement methods to deliver measures that are targeted & customized to the patient & their condition
• Systems-based approach to implementation that considers multiple stakeholders

The Future Is Now

Use of Patient-Reported Outcome Measures for Value-Based Purchasing

Comprehensive Care for Joint Replacement Model for Bundled Payment
To demonstrate quality & value of care provided by a clinician or institution, PRO data need to be aggregated into a **PRO-Based Performance Measure (PRO-PM)**

(NQF: PROs in Performance Measurement, 2013)

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**PRO-Based Performance Measure**

<table>
<thead>
<tr>
<th>Concept</th>
<th>Individual with Acute ACL Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient-Reported Outcome (PRO)</td>
<td>Symptoms, Function &amp; Sports Activity</td>
</tr>
<tr>
<td>PRO Measure (PROM)</td>
<td>IKDC Subjective Knee Form</td>
</tr>
<tr>
<td>PRO-Based Performance Measure (PRO-PM)</td>
<td>Percent of patients that achieved an IKDC-SF score at 2 years post-op that is within 1 standard deviation of the age- &amp; sex- matched population normal IKDC-SKF value</td>
</tr>
</tbody>
</table>

\[
PRO - PM = \frac{\text{Number of Patients that Achieved Target Score}}{\text{Total Number of Eligible Patients}}
\]
PRO-Based Performance Measures

Requires:

• Use of reliable, valid & responsive PRO measures that are important to the patient
• Systematic collection of PROs integrated into clinical practice
• Mechanism for collecting longitudinal follow-up
• Use of technology to streamline administration & minimize burden of data collection

Risk Adjustment Procedures also Need to be Developed and Validated to Permit Fair Comparisons Across Providers & Organizations
Department of Physical Therapy