

## What Does My Patient Need? Compliance with Guidelines Improves Care-Reduces Costs

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## Knowledge Translation (KT)

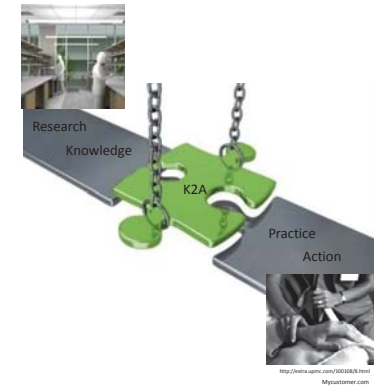
- Gaps between knowledge and care delivery
  - patients, health care providers and policy-makers
- KT- uses high quality knowledge in processes of decision making
- Moving knowledge into action involves applying research to patient care
  - Assists clinicians in best practice
  - Reduces unwanted variability
  - Improves outcomes for patients
  - Is efficient and cost effective



Straus. Defining Knowledge Translation CMAJ August 4, 2009 vol. 181 no. 3-4 pt 165-168

## The Gap between evidence and decision making

- 12-17 year gap from bench to bedside
- KT- Fills the gap between knowledge and practice
  - Also called Knowledge to Action (K2A)
  - Evidence Based Practice (EBP)



Green LW, Fam Pract 2008; 25 (Supp 1):i20-24

## Why Does the Gap Exist?

- Knowledge creation and dissemination are not enough to ensure use in the field.
- Interventions not described in ways that can be replicated
- Too much information, too little time
- Lack of skills and confidence in critical appraisal
- Inadequate understanding and resources aimed at eliminating barriers



Glasziou P, Meats E, Heneghan C, et al. What is missing from descriptions of treatments in trials and reviews?BMJ 2008;336:1472-4  
Evenson et al Implementation Science 2010

## Why Close the Gap?

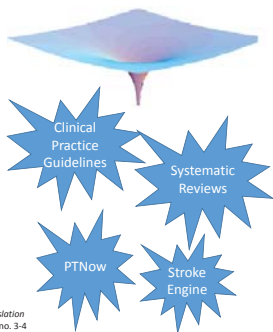
- Failures to use best evidence can..
  - Increase costs (waste)
  - Provide less effective care
  - Result in reduced patient outcomes
  - Cause potential harm
  - Create poor policy-making
- Closing the Gap improves our patients lives demonstrates our value and enhances professionalism



McGlynn *The quality of health care delivered to adults in the US*  
NEJM 2003;348:2635-45

## Knowledge Synthesis

- Have to begin with knowledge
- Primary literature consumption is not feasible on a large scale for impacting clinical behaviors
- An internist must read 34 primary literature articles daily to stay current in the field
- Synthesis Documents are excellent resources



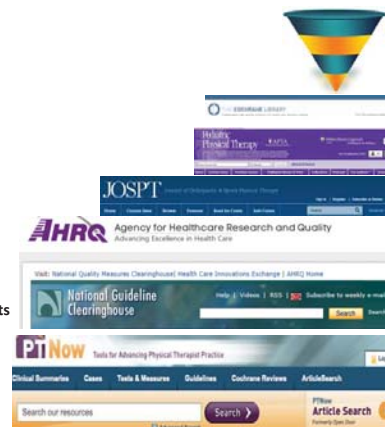
Straus *Defining Knowledge Translation*  
CMAJ August 4, 2009 vol. 181 no. 3-4

## Synthesis Documents

**Clinical Practice Guidelines (CPG)**- Statements that include recommendations intended to optimize patient care that are informed by systematic review of evidence and assessment of benefits and harms of alternative care options

**Cochrane Reviews**

**APTA and Section EDGE documents**



## Web Based Resources

**StrokeEngine**

**PEDro**  
PHYSIOTHERAPY EVIDENCE DATABASE



**Rehabilitation Measures Database**

**CEBP**  
Maastricht



**SCORE**  
Spinal Cord Injury Rehabilitation Evidence

## Clinical Practice Guidelines

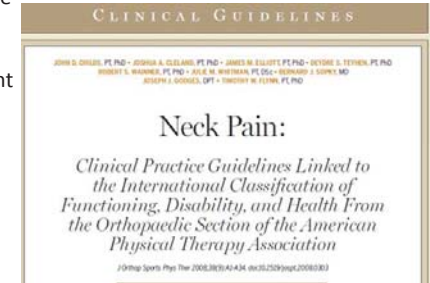
- Identify best evidence based summary statements
- List things to screen
- Tests and Measures to perform
- Sub classification of patients when indicated
- Matched Treatment Interventions
- Prognosis/Outcomes



## Need for Treatment Classification

(ICF Guidelines, 2008)

- Most neck pain lacks an identifiable pathoanatomical cause
  - "mechanical neck pain"
- Classification & matching treatment
- Better outcomes



## What to do with all this information

- Need Trigger that results in team wanting to "change" practice or implement something new
  - Question in practice arises
  - Evidence for something is created or found



## ICD-10 and ICF Codes Associated With Neck Pain

INTERNATIONAL STATISTICAL CLASSIFICATION OF DISEASES AND RELATED HEALTH PROBLEMS		
<b>Neck Pain With Mobility Deficits</b>		
Primary ICD-10	M54.2 M54.6	Cervicalgia Pain in thoracic spine
<b>Neck Pain With Headaches</b>		
Primary ICD-10	R51 M53.0	Headache Cervicocranial syndrome
<b>Neck Pain With Movement Coordination Impairments</b>		
Primary ICD-10	S13.4	Sprain and strain of cervical spine
<b>Neck Pain With Radiating Pain</b>		
Primary ICD-10	M47.2 M50.1	Spondylosis with radiculopathy Cervical disc disorder with radiculopathy

## Neck Pain with Radiating Pain

- Upper Extremity symptoms, radicular or referred pain produced or aggravated with provocative tests
  - Upper Limb Tension Test
  - Spurling's Test
- Symptoms relieved with
  - Distraction Test
- <60 degrees rotation to involved side
- Signs of nerve root compression
- Able to reduce upper extremity symptoms with exam and tx procedures on eval day



### Neck Pain with Radiating Pain

- Spondylosis with radiculopathy
- Cervical disc disorder with radiculopathy

- Neck pain with associated radiating (narrow band of lancinating) pain in the involved upper extremity
- Upper extremity paresthesias, numbness, and weakness may be present

- Neck and neck-related radiating pain reproduced with:
  1. Cervical extension, sidebending, and rotation toward the involved side (Spurling's test)
  2. Upper limb tension testing
- Neck and neck-related radiating pain relieved with cervical distraction
- May have upper extremity sensory, strength, or reflex deficits associated with the involved nerve(s)

- Upper quarter and nerve mobilization procedures
- Traction
- Thoracic mobilization / manipulation



Figure 3. Neck and neck-related radiating pain reproduced with: 1. Cervical extension, sidebending, and rotation toward the involved side (Spurling's test) 2. Upper limb tension testing. Neck and neck-related radiating pain relieved with cervical distraction. May have upper extremity sensory, strength, or reflex deficits associated with the involved nerve(s).

## Cervical Radiculopathy Cluster

(Wainner et al 2003)

- **ULTT A** [NOTE: if -, best test to rule-out]
  - sxs recreated
  - $\geq 10^\circ$  elbow ext. difference
  - contralateral cervical SB  $\uparrow$  sx, ipsilateral SB  $\downarrow$  sx



- **Involved Cervical Rotation < 60 degrees**
  - measured in sitting with goniometer

- **Distraction Test**
  - Supine
  - examiner distracts
  - sx  $\downarrow$



Neck Distraction Test

- **Spurling's A**
  - Sx reproduced with SB & compression



## Is there a gap between the new information and the current practice pattern ?

- Problem Identification
- Group meeting
- Focus Group
- Journal Club



Ivers N Cochrane 2012

## Chart reviews for Practice change

### • Criteria for Audit Success

- Baseline use of knowledge was low
- Feedback is provided by colleague or supervisor
- More than one audit loop (inspect what you expect)
- Multimodal feedback (verbal/written)
- Explicit action recommendations



### • Provide helpful reminders related to actual patients

- No change in weights on patient in 3 visits
  - Assess each exercise and change accordingly
- ROM has not increased and no change in treatment plan implemented
  - Assess home compliance
  - Assess for mobilization
  - Implement new stretching strategy
- Swelling was increased from trace to 2+
  - Rest 2 days back on crutches
  - Reduce in clinic and home program by 1 level

## How are your patients doing?

### • Chart Reviews

- Best Cases
- Worst Cases
- Reason for variation

### • Peer Review

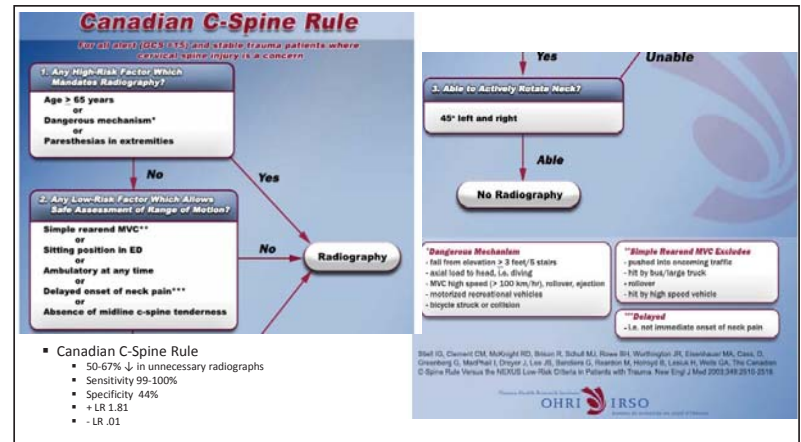
### • National Comparisons

- Identify Milestones
  - Self Report Forms
    - Body region specific
      - NDI, DASH, Oswestry
    - Disease specific
      - Toronto Extremity Salvage Score
    - Activity Related
      - PSFS
  - Impairments
    - Strength, ROM, etc.

## Practice Guidelines for Screening Does this patient need an x-ray?

- <https://youtu.be/fydguguSIWg>

- A 20 y/o college student you are treating for shoulder pain from collegiate swimming overuse.
- Reports yesterday they were in a car accident. Rear-ended by another car as they approached a stop sign. Neck pain began this morning.
- Do they need an xray? Can you safely assess cervical range?



## Take a Screening Example.....Measuring BP

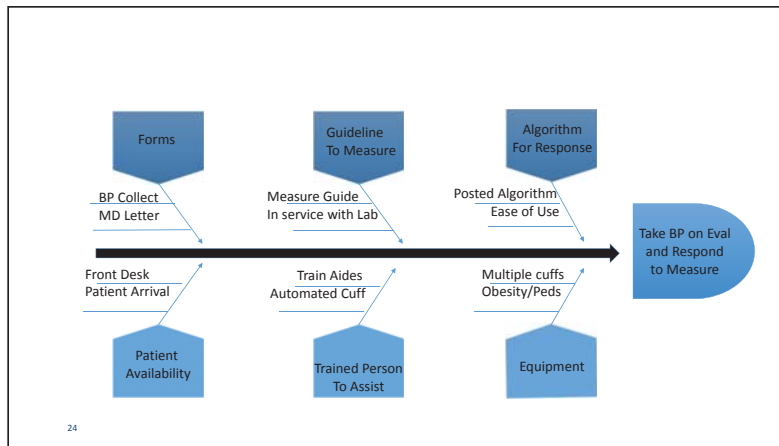
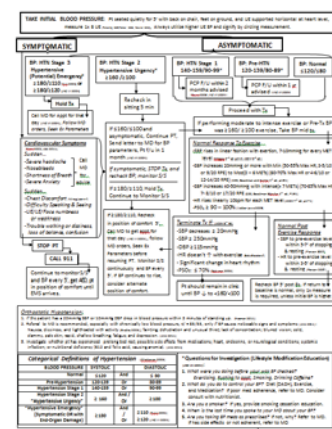
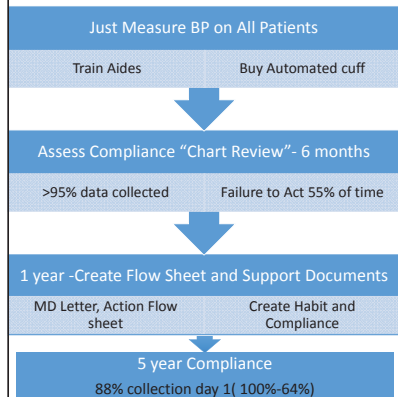
- In clinical trials, antihypertensive therapy has been associated with reductions in
  - Stroke incidence 35–40%
  - Myocardial infarction, 20-25%
  - Heart failure, >50%
- In patients with stage 1 hypertension (SBP 140–159 mmHg and/or DBP 90–99 mmHg) and additional cardiovascular risk factors a 12 mmHg reduction in SBP over 10 years prevents 1 death in every 9-11 patients

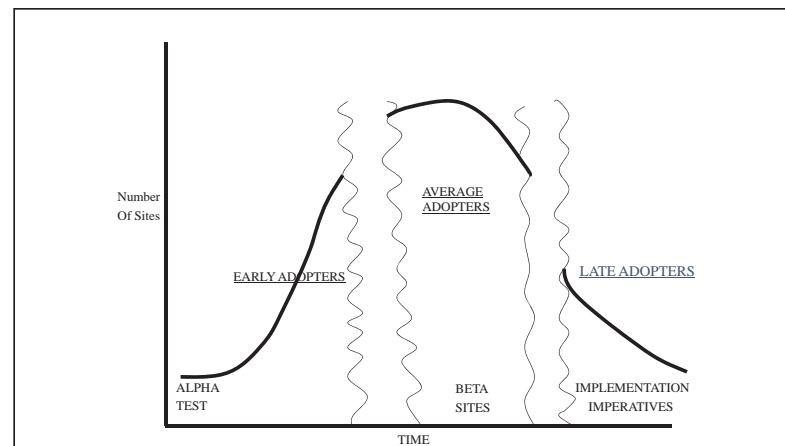
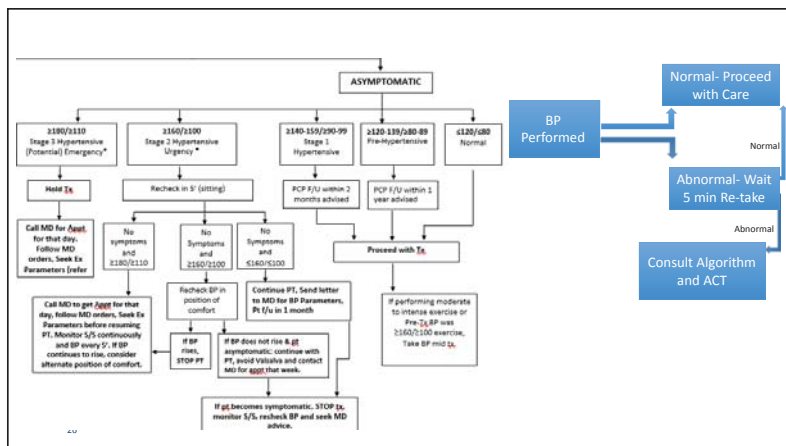
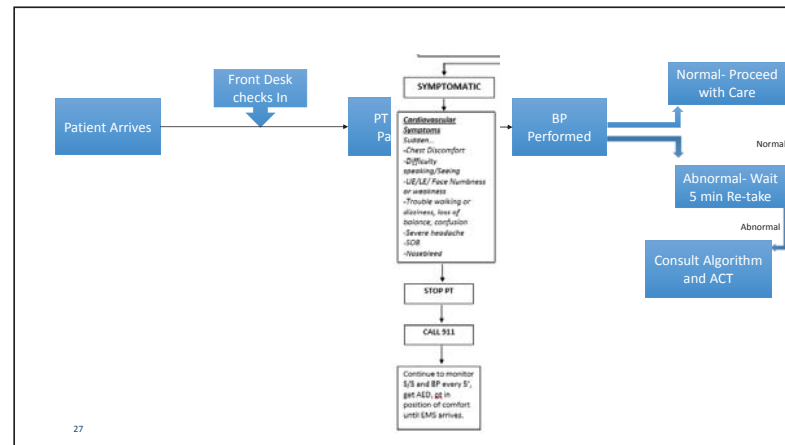
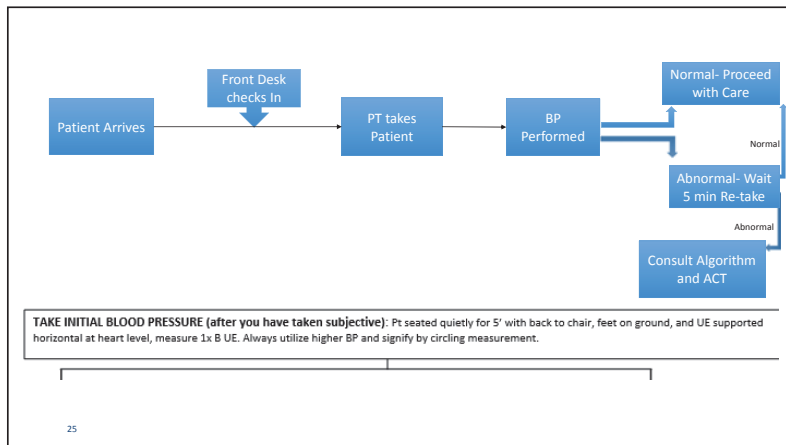
## Determine your change goals and change tolerance

- What is your ultimate goal?
  - Assess current baseline of practice-
    - By condition?
    - By frequency?
  - Identify unwanted variation in practice
  - Protocol development
  - Create process for ongoing change
    - i.e. Journal clubs linked to practice changes or KT team
- What is your teams tolerance for change?
  - Minimum criteria
    - Take BP on patients with cardiac/stroke history or BP meds
    - Take BP on all evals
  - Maximum criteria
    - Treat on protocol 85% time- 100% time

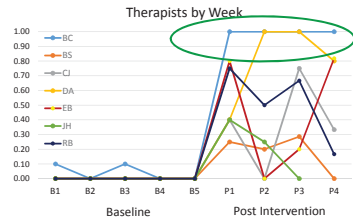


## High Change Tolerant Facility



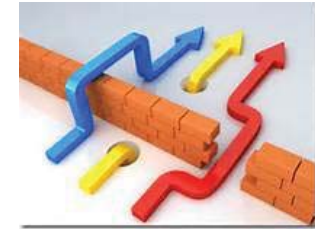




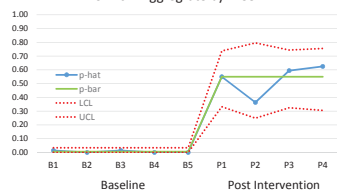


## Barrier and Facilitator Identification

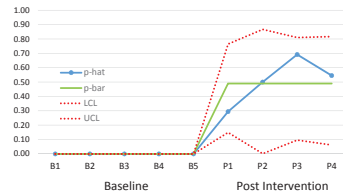
- System Level-
  - Financial incentives/disincentives
- Organization Level
  - Lack/Abundance Equipment
- Team Level
  - Group dynamics of consensus/demand fatigue
- Practitioner Level
  - Variations in knowledge, attitudes and skills appraising and using evidence
- Patient Level
  - Low to high adherence to recommendations



Clinic A Aggregate by Week



Clinic B Aggregate by Week



So far: 180pts with 96 BP's (49 require some response)....  
Need compliance for measurement before can have sufficient responses to assess adherence to algorithm

## Patient Level



### Challenge

- Patient demands for unnecessary service
- Lack of Compliance
- Failure to Progress
- Patient Barrier Assessment

### Strategy

- Education
  - Choosing Wisely campaign
  - Guidelines/Papers
- Motivational Interviewing
  - APTA resources
- Measures of confounding variables
  - Co-morbidities
  - Fear avoidance
- Need Matched Tools/Resources





Insert Gerard's Talk then Stephen's Talk

Putting it all together QI in  
your clinic

# What Does My Patient Need?

## Compliance with Guidelines Improves Care and Reduces Costs



### Gerard P. Brennan, PT, PhD

SENIOR CLINICAL RESEARCH SCIENTIST  
 DIRECTOR OF CLINICAL QUALITY AND  
 OUTCOMES RESEARCH  
 INTERMOUNTAIN HEALTHCARE,  
 REHABILITATION SERVICES



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### 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
  - 58 Schools in Step Express program
  - 57,000 Healthy Living participants

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

- selecthealth. INSURANCE**
- 750,000 Members

- OUR TEAM**
- 5,000 Affiliated Physicians
  - 1,400 Medical Group doctors & advanced practice clinicians
  - 35,000 Employees
  - 3,000 Volunteers
  - 470 Volunteer Trustees



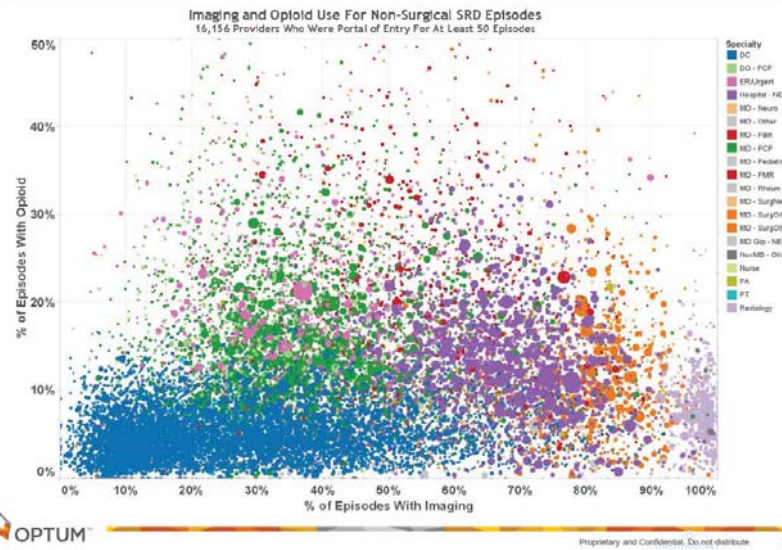
- **PATIENTS** are sharing a greater portion of the cost
- **PAYERS** will base reimbursement on episodes, bundles and population health
- **PROVIDERS** need data to determine their value
- **MOST REHAB PROVIDERS** do not have an outcomes tracking system



*Data from ROMS is used to engage patients, payers and providers*



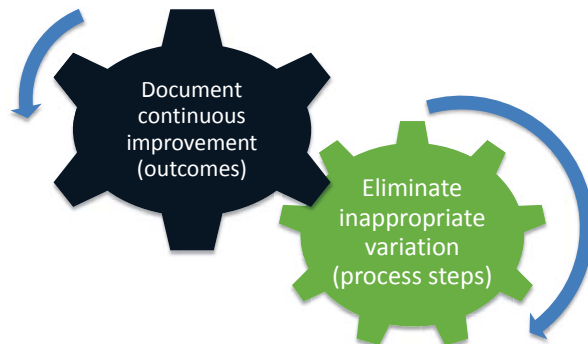
## Context - Provider Variability In Management of SRDs



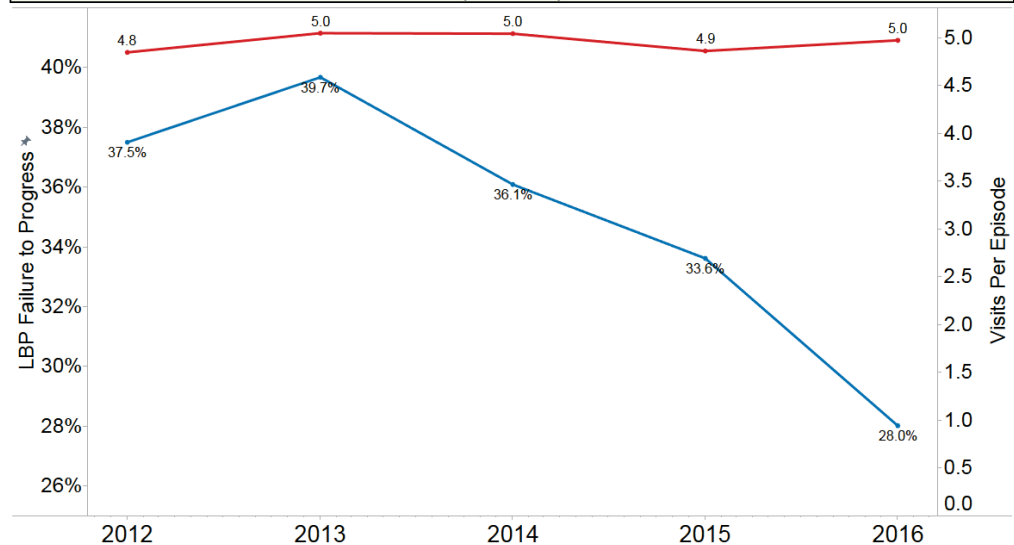
## The Opportunity (care falls short of its theoretic potential)

1. Massive variation in clinical practices (beyond even the remote possibility that all patients receive good care)
2. High rates of inappropriate care (where the risk of harm inherent in the treatment outweighs any potential benefit)
3. Striking inability to “do what we know works”
  - Not implementing guideline recommended care into practice
4. Unacceptable rates of “failure to progress” rates.
  - Overuse and misuse of care
5. Huge amounts of waste, leading to spiraling prices that limit access to care.

## To Improve Quality



### Patients with LBP Failure Rate VS Avg Visits per Episode Rehab Agency 2012-2016 (≥ 3 Visits)



## Treatment - Based Classification of Low Back Pain

Have signs of nerve root compression?

Does your patient...

[positive straight leg raise test OR weakness OR sensation loss OR hyporeflexia OR symptoms distal to the knee]

yes

no

Does your patient...

Centralize with lumbar extension / peripheralize with lumbar flexion?  
OR  
Have a decrease in pain intensity with lumbar extension?

yes

**SPECIFIC EXERCISE Extension**

Does your patient...

Centralize with lumbar extension?

yes

Centralize with lumbar flexion?

yes

**SPECIFIC EXERCISE Flexion**

Centralize with lumbar flexion / peripheralize with lumbar extension?  
OR  
Have a decrease in pain intensity with lumbar flexion?

yes

**MANIPULATION**

Does your patient...

Have symptom duration <16 days?  
AND  
Have no symptoms distal to the knee?

yes

no

Does your patient...

Peripheralize with extension?  
OR  
Have a positive crossed straight leg raise test?

yes

**TRACTION**

no

**STABILIZATION**

Does your patient...

Have at least 3 of the following:  
• Average SLR ROM > 90°?  
• Age less than 40 years?  
• Abberant movements present during lumbar ROM?  
• Positive prone instability test?

yes

no

Where does your low back pain patient best fit?

Intermountain Healthcare



## Physical Therapy for Acute Low Back Pain

Associations with Subsequent Healthcare Costs

Fritz JM et al. *Spine*. 2008.

- 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)

Intermountain Healthcare

## Physical Therapy for Acute Low Back Pain

Associations with Subsequent Healthcare Costs

Fritz JM et al. *Spine*. 2008.

- 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 fluoroscopic-guided injections

Intermountain Healthcare



## Physical Therapy for Acute Low Back Pain

Associations with Subsequent Healthcare Costs

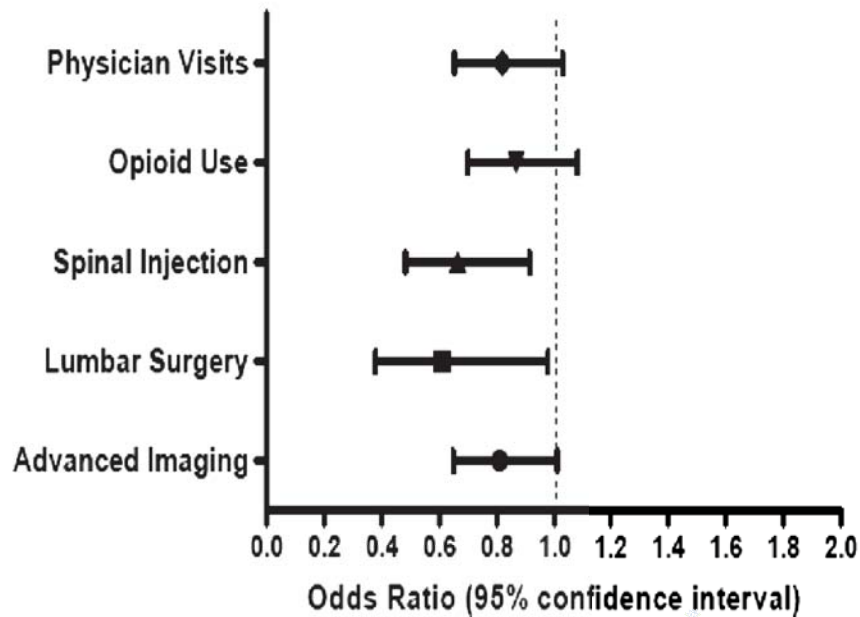
Fritz JM et al. *Spine*. 2008.

- IF... 500 patients were sent to PT and received adherent instead of non-adherent care...
  - The cost savings would be about \$700,000
  - BUT... the loss of revenue for Physical Therapy providers would be about \$85,000

Intermountain Healthcare



## Likelihood of Utilization for Adherent vs. Non-Adherent Physical Therapy



Fritz JM, Childs JD, Wainner RS, Flynn TW. *Spine*. 2012

## Initial Management Decisions Following a New Consultation for Low Back Pain: Implications of the Usage of Physical Therapy for Subsequent Health Care Costs and Utilization

Fritz, et al.



- 2,184 new consulters to primary care within Intermountain Healthcare
- Age 18-60 at the index visit date
- 2004-2008
- No claims related to LBP for 1 year preceding index date.
- Examined early utilization variables and subsequent costs over 1-year from index primary care visit.

Archives of Physical Medicine and Rehabilitation 2013;94:808-16

## Initial Management Strategies

(within 14 days)

- Physical Therapy 13.0%
- Advanced Imaging 12.3%
- Radiographs 23.0%
- Opioid Meds 39.8%
- Muscle Relaxants 37%



Archives of Physical Medicine and Rehabilitation 2013;94:808-16

## Determinants of higher health care costs were:

- Older age
- Previous spine surgery
- Specific LBP diagnoses
- Initial management with **OPIOIDS**



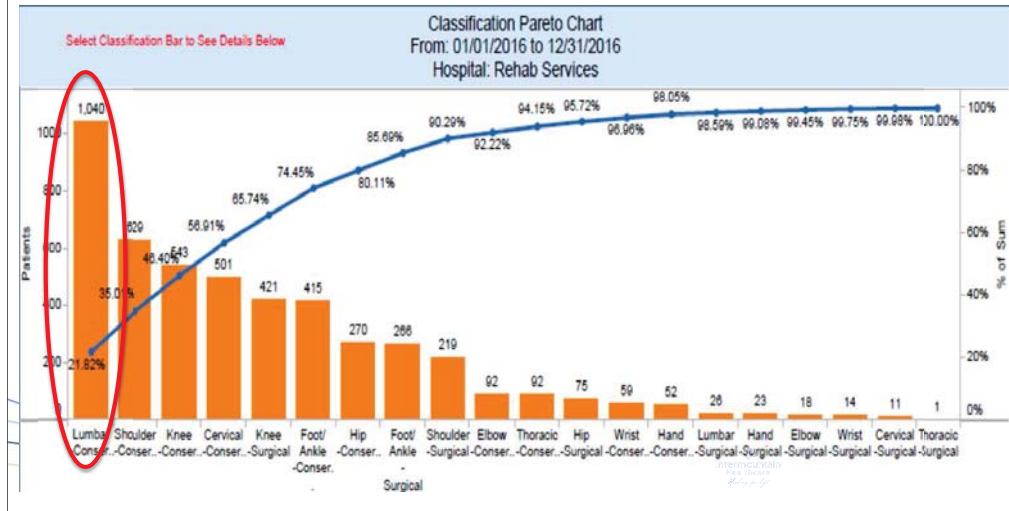
Intermountain  
Healthcare



## Pay for Quality Program to Improve Value-Based Care for Patients with Low Back Pain

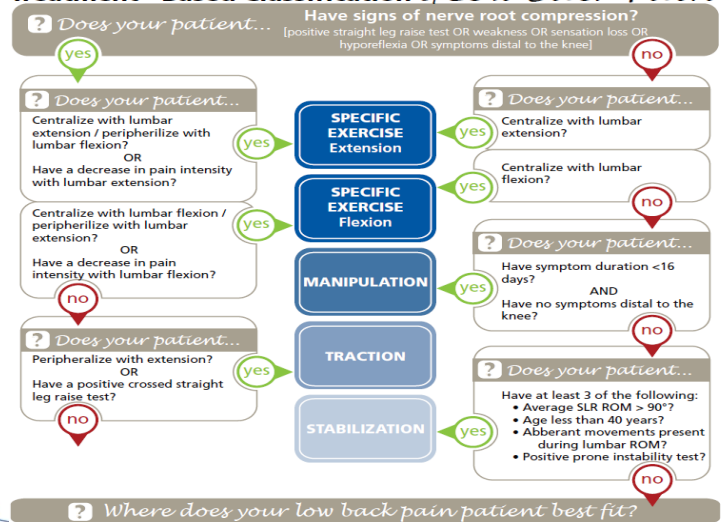
INCENTIVIZES PHYSICAL THERAPISTS FINANCIALLY TO IMPROVE CARE TO ACHIEVE BETTER OUTCOMES IN PATIENTS WITH LBP.

## Identify high priority clinical process



## Build an Evidence-Based Practice Protocol

### Treatment - Based Classification of Low Back Pain



Implement use of StartBack screening tool to assess patient risk and PIPT to improve patient engagement

Align best clinical practice with a financial incentive directing physical therapists to deliver best-care for low back pain.

Achieve a meaningful reduction in the rate of patients with LBP who "fail to progress" with physical therapy

# Core idea behind Variation Research Pay for Quality Program

Apply rigorous measurement tools  
Developed for *clinical research*

to

*Routine care delivery performance*



## What is Needed?

Create a  
Measurement  
Infrastructure

Make it possible to  
assess the effect of  
local efforts to  
improve quality.

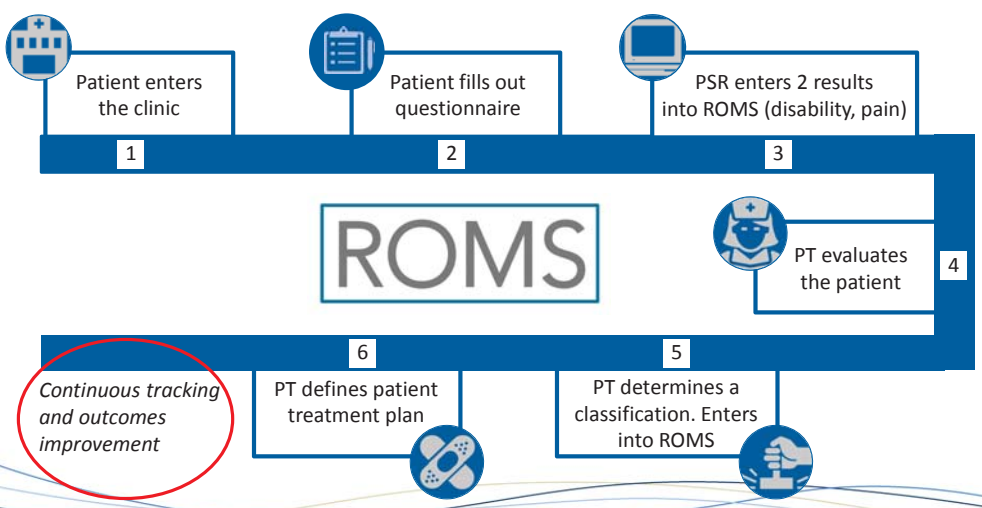


Track the  
process of  
care and the  
outcome

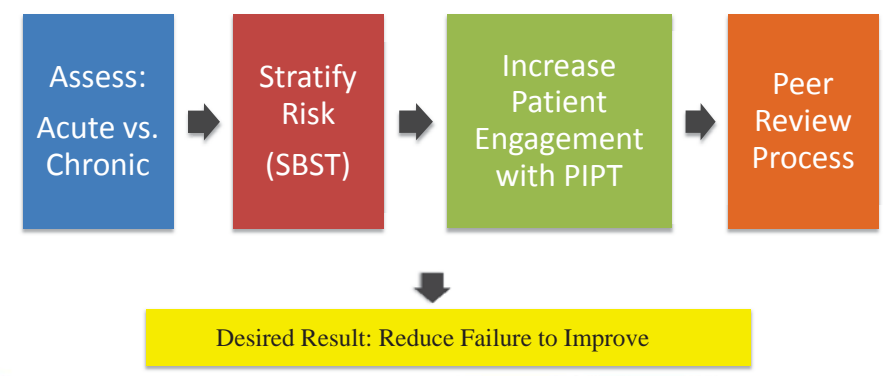
©2015 All Rights Reserved



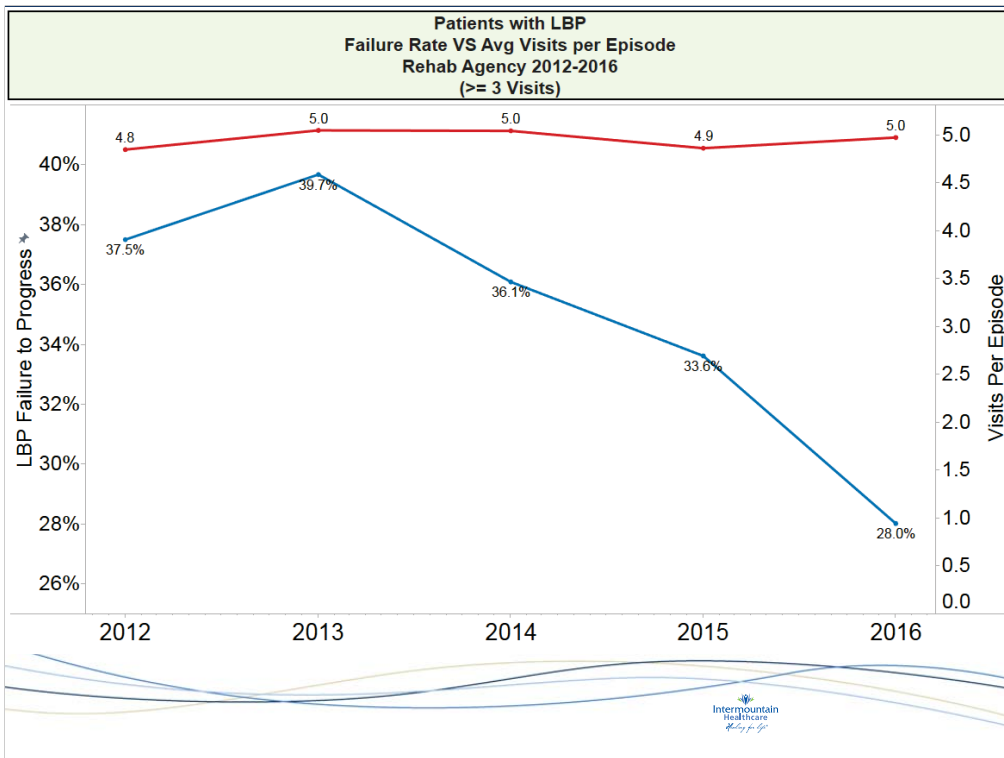
## ROMS Is Used in the PT Workflow to Classify and Guide Treatment Plans



## What is the Process Improvement?







### LBP Failure to Progress < 6 Point Improvement on the Oswestry Outcome Scale (ODI) Select Health LBP Patients - Selected Dates 2016 Goal < 27.1% of Patients

	< 3 Visits						≥ 3 Visits					
	Patients	Admit Score	DC Score	Dif Score	MCID Not Met	MCID Fail %	Patients	Admit Score	DC Score	Dif Score	MCID Not Met	MCID Fail %
<b>Grand Total</b>	<b>90</b>	<b>32</b>	<b>23</b>	<b>9</b>	<b>29</b>	<b>32.2%</b>	<b>226</b>	<b>33</b>	<b>21</b>	<b>12</b>	<b>65</b>	<b>28.8%</b>
<b>Rehab Services</b>	<b>90</b>	<b>32</b>	<b>23</b>	<b>9</b>	<b>29</b>	<b>32.2%</b>	<b>226</b>	<b>33</b>	<b>21</b>	<b>12</b>	<b>65</b>	<b>28.8%</b>
<b>Total</b>												
SL Clinic PT	16	26	23	3	9	56.3%	28	27	14	12	6	21.4%
Bountiful Clinic PT	9	24	20	4	5	55.6%	35	32	25	7	19	45.7%
Avenues Clinic PT	2	31	27	4	1	50.0%	5	25	11	14	1	20.0%
Draper PT Clinic	8	39	34	6	4	50.0%	23	35	21	14	4	17.4%
Memorial PT	13	27	20	7	4	30.8%	31	32	22	10	9	29.0%
West Jordan PT - Rehab Svcs	16	34	23	12	3	18.8%	41	37	25	12	12	29.3%
Taylorville PT	13	36	28	8	2	15.4%	26	30	18	12	11	42.3%
Rose Canyon PT	9	35	13	22	1	11.1%	12	37	13	24	1	8.3%
Holladay PT	4	41	26	16	0	0.0%	14	38	21	17	2	14.3%
Salt Lake WorkMed PT		4	45	31	14	1	25.0%					
South Jordan WorkMed PT		6	25	13	12	1	16.7%					
West Valley PT		1	34	42	-8	1	100.0%					

\* Explanation: Admit and Discharge scores are measured on a scale from 0 to 100. A 0 indicates no pain. A 100 indicates extreme pain. Therefore, a failure to improve/decrease by 6 points or more is considered as a "failure." That is, an improvement score difference of 5 or less is a failure. To account for patients that already start with a relatively low score, we have done the following calculation: If the admit score is <= 20 then they must improve my more than 30% of their admit score. That is, if a patient has an admit score of 20, then they must achieve a discharge score of 14 (30% of 20) or less to be considered a success.

## Shared Baseline "Lean" protocols (*bundles*)

- 1. Identify a high-priority clinical process** (*key process analysis*)
  - 2. Build an evidence-based best practice protocol** (*always imperfect: poor evidence, unreliable consensus*)
  - 3. Blend it into clinical workflow** (= *clinical decision support; don't rely on human memory; make "best care" the lowest energy state, default choice that happens automatically unless someone must modify*)
  - 4. Embed data systems to track (1) protocol variations and (2) short and long term patient results** (*intermediate and final clinical, cost, and satisfaction outcomes*)
  - 5. Demand that clinicians vary based on patient need**
  - 6. Feed those data back** (*variations, outcomes*) **in a Lean Learning Loop** - *constantly update and improve the protocol*
- 

Better has no limit ...



An Old Yiddish Proverb



### TKA

CSM San Antonio Texas  
February 17, 2017

Tara Jo Manal PhD, PT  
Gerard Brennan PhD, PT  
Stephen Hunter PT, DPT, OCS



## ZERO HARM

*“At Intermountain, we are known for our commitment to evidence-based care and safety. But it is important to understand that as long as there is a single patient who didn’t receive optimal care, we haven’t finished improving”*

Charles Sorensen MD, Past CEO Intermountain Healthcare

## ZERO HARM



The Bottom Line...reducing  
harm to Physical Therapy  
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”

## Provider Engagement

In 2013-2014, all physical therapists in one of Intermountain's regions were trained in a Care Process Model (CPM) for treating post operative TKA. In 2015-2016 this training was rolled out to all Intermountain physical therapists.



## Components of the TKA Care Process Model

- Time Line\Range of visits
- Evidence based treatment recommendations
- Milestones
- Compliance measures

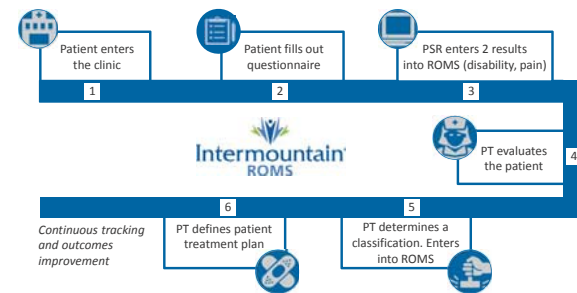
Time	Treatment <sup>1</sup>	Milestones	Compliance Measures: Obtain, perform, and document
Phase 1 APPROXIMATELY 0-4 Weeks Postoperative Visits 1-4	<p><b>ROM<sup>2</sup></b></p> <ul style="list-style-type: none"> <li>• Exercise bike for ROM 5-10 minutes, forward and/or backward pedaling with no resistance until able to perform full revolution at the lowest seat height.</li> <li>• Supine active-assistive wall slides for knee flexion ROM</li> <li>• Passive knee extension stretch with manual pressure</li> <li>• Seated bag hang or prone bag hang providing low load long duration stretch (weight and time may vary to achieve goal)</li> <li>• Patellar mobilizations all directions as necessary<sup>3</sup></li> </ul>	<p>Able to complete 3x8 reps without fatigue<sup>3B</sup></p> <p>Pain at rest &lt;4/10<sup>3B</sup></p> <p>AROM/PROM &lt;10-90<sup>3B</sup></p> <p>Independence with mobility in and out of home<sup>3B</sup></p>	<p>Measures of pain and disability.</p> <p>Measure AROM/PROM each visit</p> <p>Interventions in each category:</p> <ol style="list-style-type: none"> <li>1. ROM</li> <li>2. Volitional strength</li> <li>3. Balance/Agility</li> </ol>

## Examples of evidence based treatment recommendations

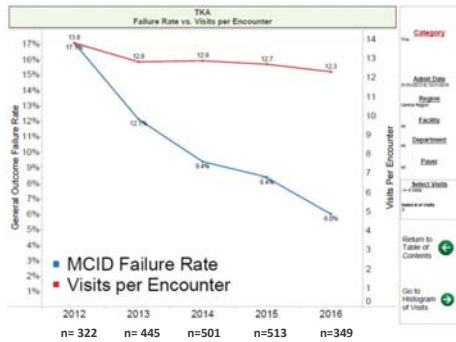
- Exercise bike for ROM 5-10 minutes, forward and/or backward pedaling with no resistance until able to perform full revolutions at the lowest seat level
- Supine active-assistive wall slides for knee flexion ROM
- Seated bag hang or prone bag hand providing low load long duration stretch if extension is less than 0
- NMES per Protocol Guidelines, especially if an extensor lag exists
- Progress strength in knee, hip, calf, step overs, sit to stand...
- Educate in safe kneeling and perform kneeling based on surgeons orders

## ROMS: Rehabilitation Outcomes Management System

Patient Reported Outcomes (PROS) measured each visit to determine best care



### Central Region Physical Therapists, All Payers



### Case review of one of the failure to improve patients

55 year old female begins PT 26 days after unilateral Right TKA. Pain 4/10, AROM: Left -3-125, Right 0-90, Right extensor lag 5 deg. Quads: Right 4-/5, Left 5/5 Hams: Right 5/5, Left 4/5, Hip flexion: Right 5/5, Left 4+/5 Hip Ext: Left 4+/5, Right 4/5. Hypo-mobile patella in all planes. Single crutch ambulation.

Co-morbidities: Hx Breast CA, BMI: 37.1, Hypothyroidism

Patient seen 9 visits and self-discharges before her care was completed.

	Patients	< 8 Visits					≥ 8 Visits				
		Admit Score	DC Score	DF Score	MCID Not Met	MCID Fail %	Patients	Admit Score	DC Score	DF Score	MCID Not Met
<b>Alta View</b>	<b>Total</b>	1	47	76	29	0 0.0%	4	41	78	37	0 0.0%
	Physical Therapy - Inpatient	1	47	76	29	0 0.0%	4	41	78	37	0 0.0%
<b>Intermountain Medical Center</b>	<b>Total</b>	1	41	97	56	0 0.0%	1	41	97	56	0 0.0%
	Physical Therapy Ortho - Outpatient	1	41	97	56	0 0.0%	1	41	97	56	0 0.0%
<b>Rehab Services</b>	<b>Total</b>	51	48	67	19	16 31.4%	68	41	75	34	4 5.9%
	Avenues Clinic PT	2	41	66	27	1 50.0%	6	33	67	34	0 0.0%
	Bountiful Clinic PT	5	43	63	20	2 40.0%	7	42	72	30	1 14.3%
	Draper PT Clinic	10	54	69	14	4 40.0%	4	34	78	44	0 0.0%
	Holladay PT	1	71	83	12	0 0.0%	8	44	83	40	0 0.0%
	Memorial PT	2	38	67	29	0 0.0%	3	45	76	31	0 0.0%
	Rose Canyon PT	5	51	69	18	2 40.0%	3	45	93	47	0 0.0%
	Salt Lake WorkMed PT						2	64	91	17	1 50.0%
	SL Clinic PT	3	50	78	28	0 0.0%	10	45	83	43	0 0.0%
	South Jordan WorkMed PT						1	51	74	23	0 0.0%
	Taylorville PT	12	41	62	21	3 25.0%	18	42	69	26	2 11.1%
	West Jordan PT - Rehab Svcs	9	50	70	20	2 22.2%	5	39	65	26	0 0.0%
	West Valley PT	2	49	54	5	2 100.0%	1	17	71	54	0 0.0%
<b>Riverton</b>	<b>Total</b>	6	42	41	-1	3 50.0%	15	38	77	39	1 6.7%
	Physical Therapy	6	42	41	-1	3 50.0%	15	38	77	39	1 6.7%
<b>TOSH</b>	<b>Total</b>	48	40	71	31	8 16.7%	68	35	72	37	2 2.9%
	Athletic Training - Outreach						1	23	44	21	0 0.0%
	Occupational Therapy - Outpatient						1	50	91	41	0 0.0%
	Physical Therapy Complex - Outpatient	3	50	57	7	1 33.3%					

### Treatment summary/progression

Visit 2

Bike 5 min  
LAQ 3X10  
Quad Sets 10X10  
Gait, single crutch  
4" Step Overs  
6" Step Overs  
Total Gym 1v1 15 2X3'  
Passive stretch to flex & ext  
Patellar mobs grade IV  
ROM 0-90

Skilled Time: 47 min.

Visit 5

Bike 5 min  
HS Curls 20# 2X1'  
6" Step Overs  
6" Lateral Step Overs  
Total Gym 1v1, 2X3'  
Seated Knee flex 5X10 Sec  
Passive stretch to flex & ext  
Wobble board  
ROM 0-105

Skilled Time: 40 min.

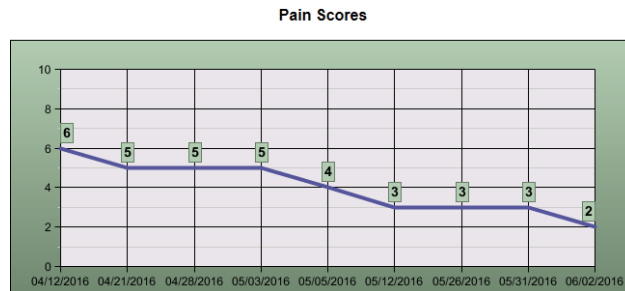
Visit 9

Bike 5 min  
Double Leg Press 80# 2X10  
Single Leg Press 30# 2X10  
Single Leg Stance 3X30"  
Single Ham Curls 20# 2X2'  
PROM R Knee Flex & Ext  
ROM 0-110

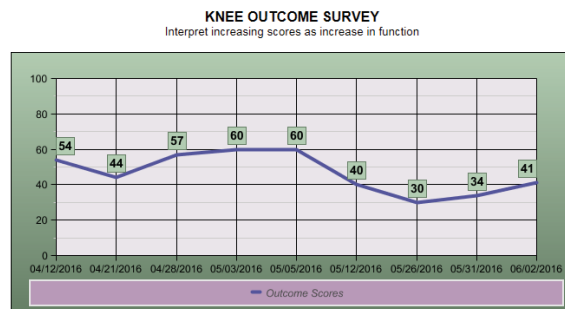
Skilled time: 38 min.



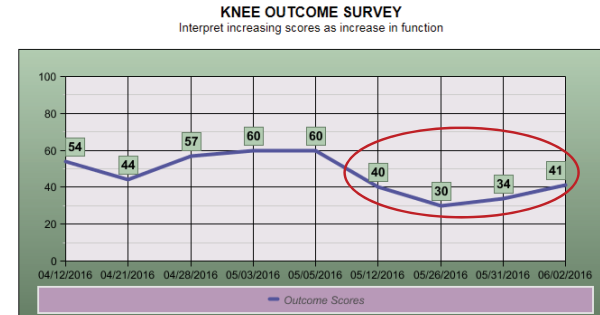
## Self-reported pain (0-10)



## Self-reported Knee Outcome Scale (KOS) Scores (0-100)



## Self-reported Knee Outcome Scale (KOS) Scores (0-100)



## Observations:

- Pain reduction over time followed a typical course
- Self-reported function worsened
- Why?
  - Treatment was not pain limited-could the progression be more aggressive?
  - Care Process Model followed in some areas not in others
    - NMES never performed
    - Lowering bike seat now followed
    - Long duration knee flexion stretch not documented
    - Strength progression weak
    - No strengthening to hip
    - Balance and Agility training limited and not progressed
    - Patient was not educated in nor practiced safe kneeling

### Treatment - Based Classification of Low Back Pain

Have signs of nerve root compression?  
[positive straight leg raise test OR weakness OR sensation loss OR hyporeflexia OR symptoms distal to the knee]

**Exam components:** Repeated movements, aberrant movements, neuro exam, hip screen, hip strength and mobility with prone internal rotation, prone PA's, prone extension, prone instability test

Manipulation	Specific Exercise (select direction)	Stabilization	Traction
<input type="checkbox"/> symptoms < 16 days	<input type="checkbox"/> noxious	<input type="checkbox"/> age < 40 years	<input type="checkbox"/> peripheralizes with multiple movements
<input type="checkbox"/> no symptoms distal to the knee	<input type="checkbox"/> extension	<input type="checkbox"/> aberrant movements with AROM	<input type="checkbox"/> signs of nerve root compression
<input type="checkbox"/> lumbar hypomobility	<input type="checkbox"/> centralizes with movements	<input type="checkbox"/> positive prone instability test	<input type="checkbox"/> no centralization or directional preference
<input type="checkbox"/> FABQ < 19	<input type="checkbox"/> directional preference (decreased pain/improved symptoms with movement or position)	<input type="checkbox"/> average SLR ROM > 90°	
<input type="checkbox"/> hip int. rotation > 35°	<input type="checkbox"/> lumbar hypermobility		
<b>Comments:</b>			

**History:** 49 year old female nurse auditor for a commercial insurance company presents with a worsening 3-year history of low back and right radicular pain to the foot. Discectomy in April of 2014. Did well until mid 2015 when similar symptoms returned. Aggravated with standing, sitting 1+ hours, driving, bending to put on shoes, vacuuming. Relieved by lying down.

**Physical Exam:** Flexion increases leg pain, extension and repeated extension causes back pain only. Strength & reflexes WNL. Hip not screened. SLR + on right at 70 degrees, - on left to 90 degrees. Prone PA testing hypo-mobile with local pain at L3-L5, no pain T12-L2. Prone on elbows LBP only. Positive Prone Instability Test.

**Comorbidities:** High BP, BMI 32.1, StarTBack Moderate Risk

**Therapist Classification:** Stabilization

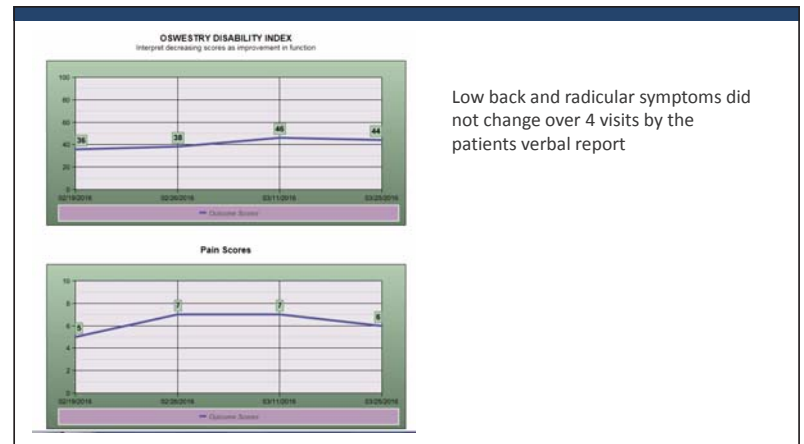
**Goals:** Vacuum 2 hours, Sit 2 hours, lift 10#

**Therapist Plan:** Core strengthening, patient education, Aerobic exercise

Patient had 4 PT visits and self-discharged

### Treatment - Based Classification of Low Back Pain

Have signs of nerve root compression?  
[positive straight leg raise test OR weakness OR sensation loss OR hyporeflexia OR symptoms distal to the knee]





### Treatment summary/progression

**Visit 2**

**Stabilization Exercises:**  
 Supine hip flexion 10X  
 Birddog 10X  
 Clams 2X10  
 Educated in HEP

Skilled Time: 50 min.

**Visit 3**

Total Gym 10 min  
 PA Mobilization III L/S  
 Rotation Mobilization III 2X10  
 Lumbar Traction 70#, static 10 min.

Skilled Time: 45 min.

**Visit 4**

Educated in flexion postures and stretches to relieve pain-flexion over a counter, knee to chest, knee flexion in sitting  
 Bridges with marching

Skilled time: 36 min.



### Peer Review Presentation by Therapist

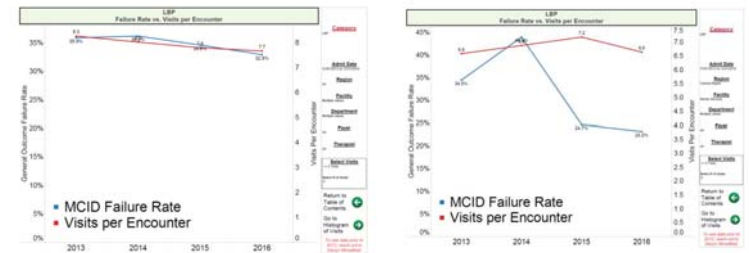
Prepare the case presentation:

- A brief and relevant history of the patient and problem, relevant exam findings, identified goals.
- Assessment of the problem—how do the impairments relate to the functional limitation? Identify the treatment-based classification.
- Describe the initial treatment plan and justification for decision-making.
- Review the relevant f/u treatment interventions: What did you do, why did you do it, what was the response to the treatment?
- How did the patient's response to intervention relate to your expectation? Was it congruent with your estimate of their "Rehab Potential"?

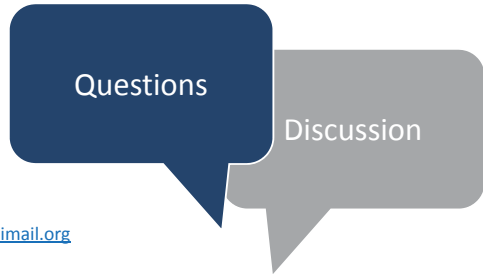
### Observations:

- Evaluation mostly complete
  - Repeated motions not done, especially to rule out specific exercise extension as a classification
    - Appears to be a directional preference for extension
    - Extension exercises never attempted
- Classification not consistent with evaluation findings
  - Treatment did not follow logical clinical decision making
  - No evidence from medical record of patient engagement

Do chart reviews to provide treating therapists feedback on the treatment they deliver improve outcomes?







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