

Patient Reported Outcomes: How They Are Changing the Care We Provide to Our Patients

Judy Baumhauer MD MPH
Professor and Associate Chair of Orthopaedics



Disclosure:

**VP PROMIS Health
Organization (PHO)**



Why Strategy Matters Now

Michael E. Porter, Ph.D., and Thomas H. Lee, M.D.

N Engl J Med 2015; 372:1681-1684

- **“Providers that organize themselves to improve outcomes and become more efficient in doing so will be rewarded with patients, professional satisfaction, and financial success. They will prosper even if fee-for-service reimbursement lingers for years, because better outcomes will attract more patients and greater efficiency will reduce copayments and improve financial margins.”**
- Data is Power





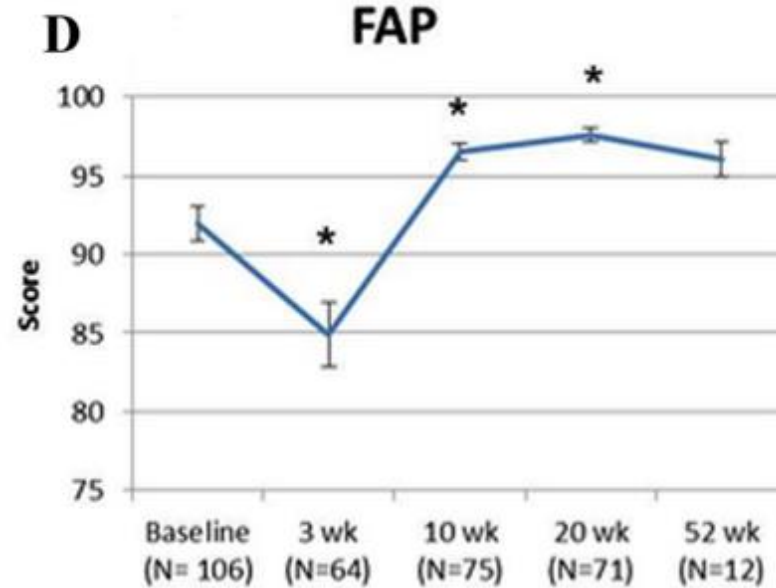
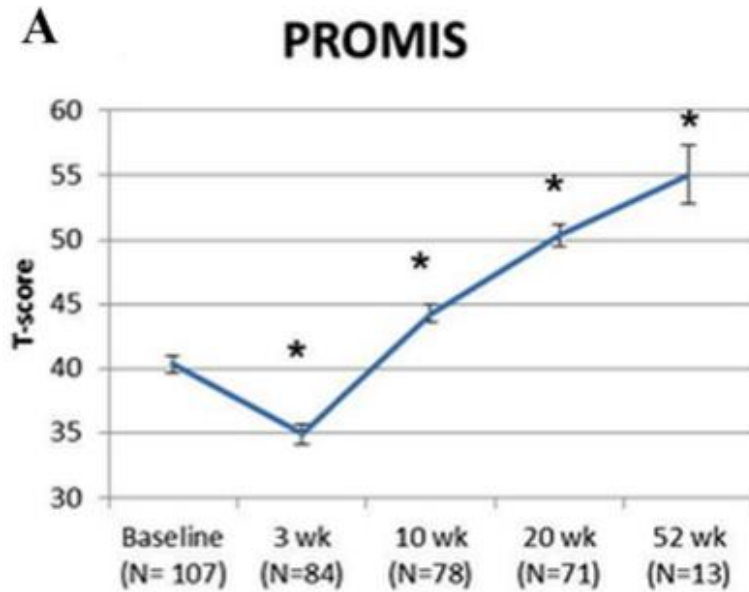
J Orthop Res. 2014 Jun;32(6):793-801. doi: 10.1002/jor.22591. Epub 2014 Feb 14.

Validation of GAITrite and PROMIS as high-throughput physical function outcome measures following ACL reconstruction.

Papuga MO¹, Beck CA, Kates SL, Schwarz EM, Maloney MD.

One minute in waiting room with iPad

5-10 min \$52,000 gait machine



**If you want to know
how your patients are doing.....
Just ask them**



Validated Outcomes In Clinical Experience

UR VOICE PLATFORM

Every Patient, Every Clinic, Every Visit

Patient Reported Outcomes

Must Have's

- Validated Instrument
- Quick
- “Not on the backs of the Clinician”
- Not costly
- Generalizable and Flexible
- Viewed in electronic record
- Searchable





Patient Reported Outcome Measurement Information System

- **11-year, \$100 million effort by NIH**
- **Domain specific not disease specific**
- **Standardized across domains**
 - **1-100 with 50=mean score for US population**
 - **t-score (10pts = 1 standard deviation)**
- **Follow patients throughout Health Care System**
- **Produces validated data quickly “Smart Testing”**
 - **Computer Adapted Technology**
 - **Item Response Theory**

Bio

Psycho

Social

PROMIS Profile
Domains

Physical Health

Physical Function

Pain Intensity

Pain Interference

Fatigue

Sleep Disturbance

Mental Health

Depression

Anxiety

PROMIS Additional
Domains

Pain Behavior

Pain Quality

Sleep-related

Impairment

Sexual Function

Gastro-Intestinal

Symptoms

Dyspnea

Anger

Cognitive Function

Alcohol Use,

Consequences, &

Expectancies

Psychosocial Illness

Impact

Self-efficacy

Social Health

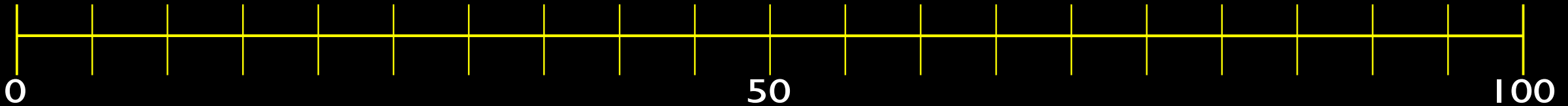
Ability to
Participate in Social
Roles & Activities

Satisfaction with
Social Roles &
Activities

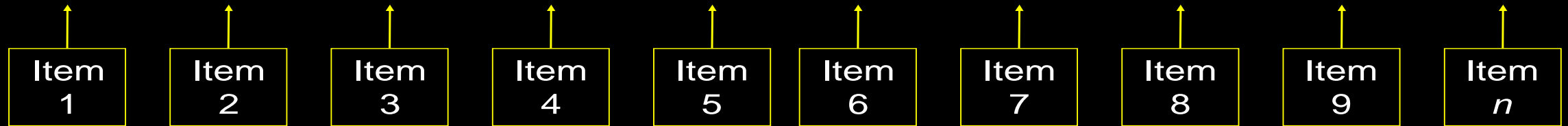
Social Support

Social Isolation

Companionship



Physical Functioning Item Bank



Are you able to get in and out of bed?

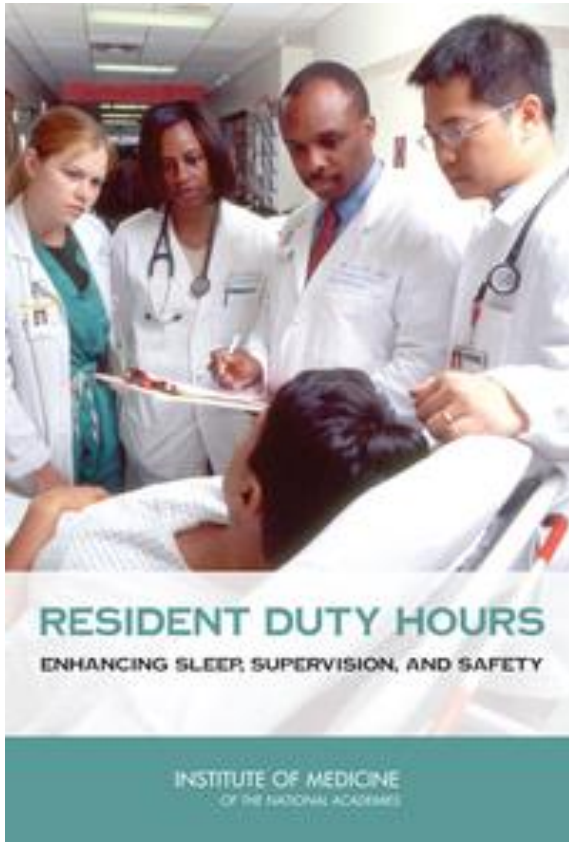
Are you able to stand without losing your balance for 1 minute?

Are you able to walk from one room to another?

Are you able to walk a block on flat ground?

Are you able to run or jog for two miles?

Are you able to run five miles?



JAMA The Journal of the
American Medical Association

[Home](#) [Current Issue](#) [All Issues](#) [Online First](#) [Collections](#) [CME](#) [Multime](#)

January 26, 2016, Vol 315, No. 4 >

[< Previous Article](#) [Next Article >](#)

Special Communication | January 26, 2016

USPSTF RECOMMENDATION STATEMENT

Screening for Depression in Adults US Preventive Services Task Force Recommendation Statement **FREE**

Albert L. Siu, MD, MSPH^{1,2}; and the US Preventive Services Task Force (USPSTF)

Institute of Medicine Recommendations





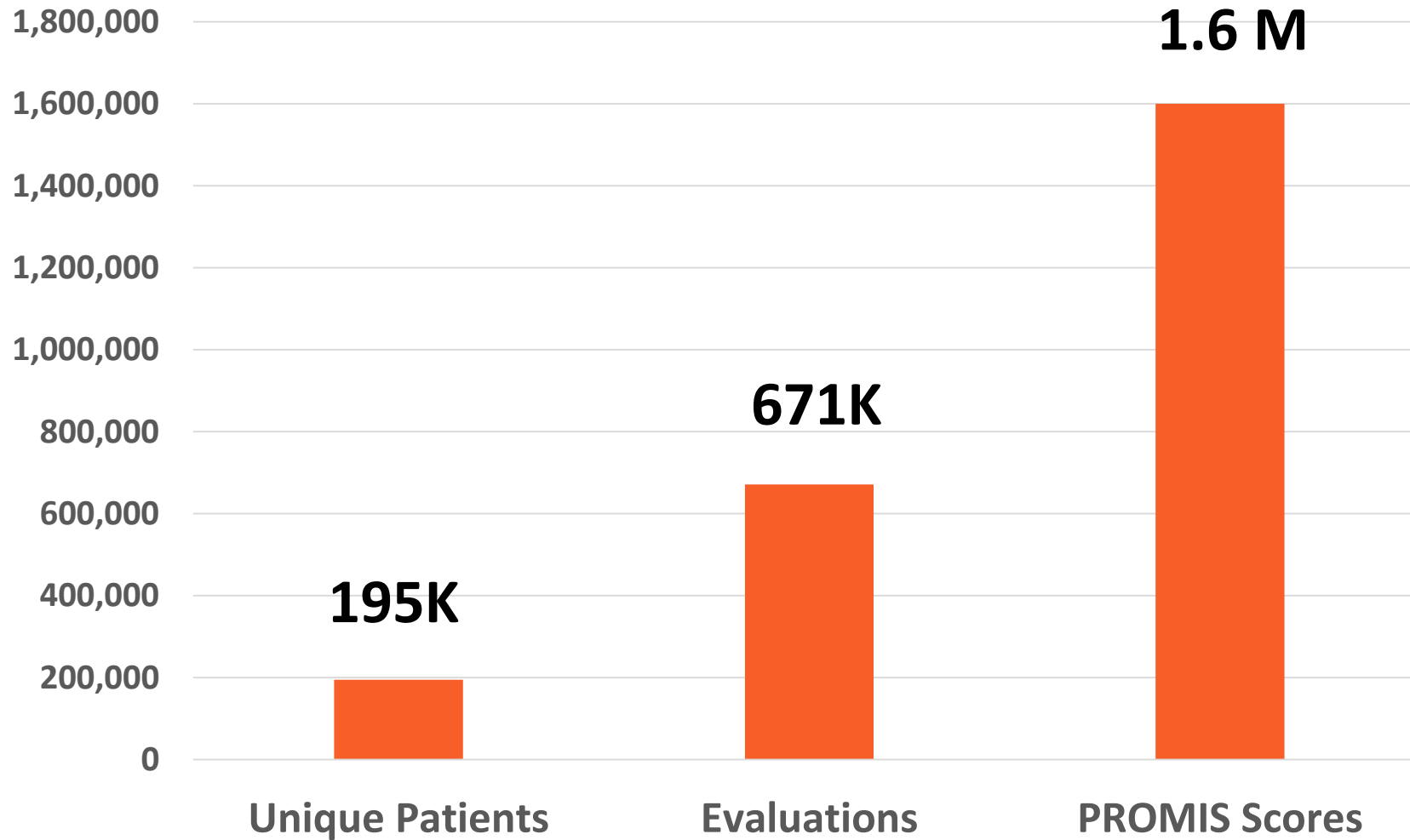
A commentary by Michael Khazzam, MD, is linked to the online version of this article at jbjs.org.

Mental Health Has a Stronger Association with Patient-Reported Shoulder Pain and Function Than Tear Size in Patients with Full-Thickness Rotator Cuff Tears

James D. Wylie, MD, MHS, Thomas Suter, MD, Michael Q. Potter, MD, Erin K. Granger, MPH, and Robert Z. Tashjian, MD

Investigation performed at the Department of Orthopaedics, University of Utah, Salt Lake City, Utah

URMC February 2015 - April 2018



Does Patient-Generated Data Help?

Creating, managing and reporting data has the potential to **empower patients, engage and activate them.**

Patients who read their notes, collect personal health data, and maintain a record become more aware of their conditions and behaviors => felt **more in control of their care and showed increased participation their treatment recommendations.**

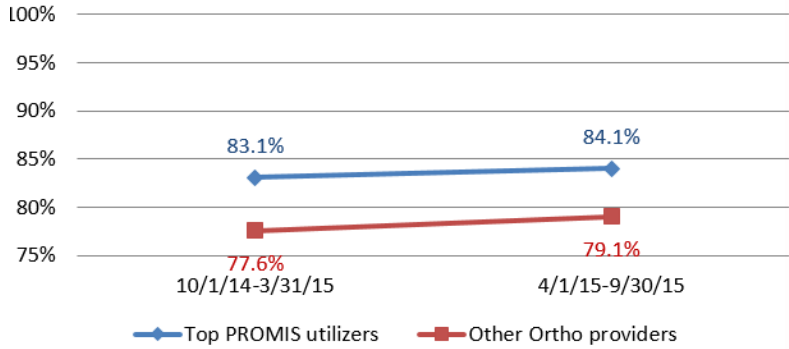
Leverage Patient experience in **shared decision making.**

Patient Engagement (CG-CAHPS)

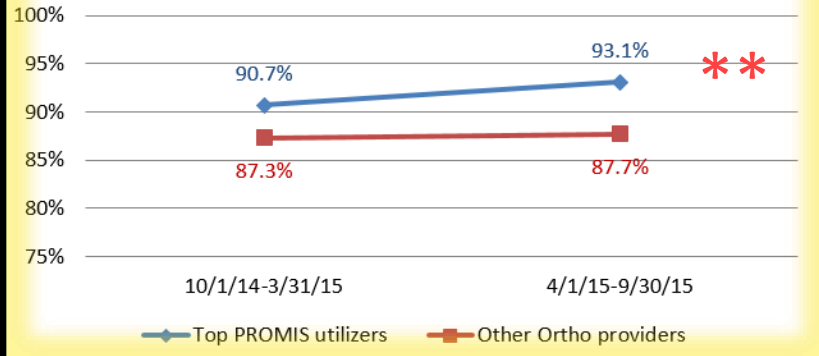
Know important info medical history



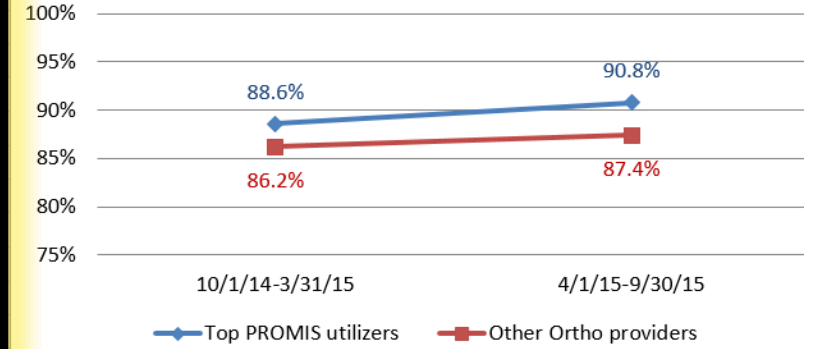
Overall Doctor Rating 9-10



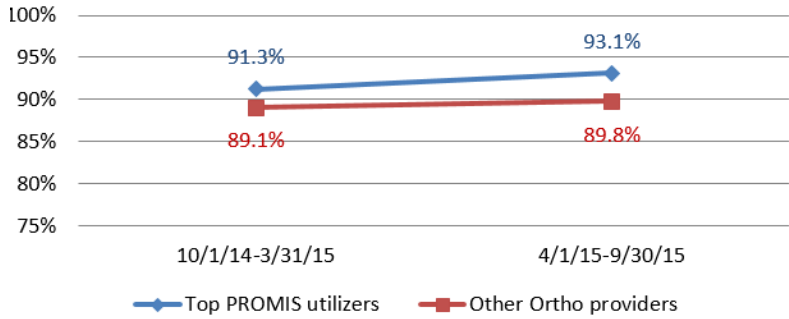
Recommend this provider office



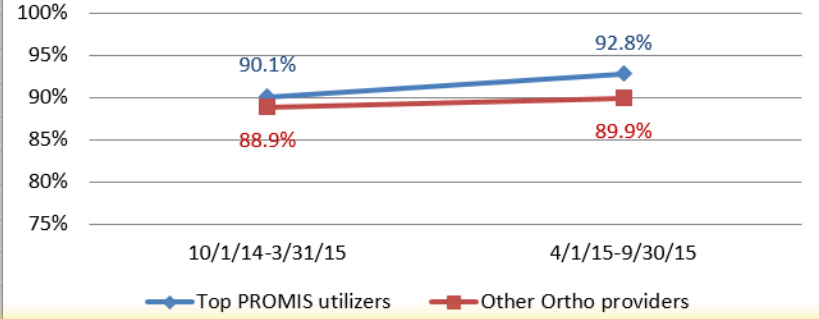
Physician Comm Quality



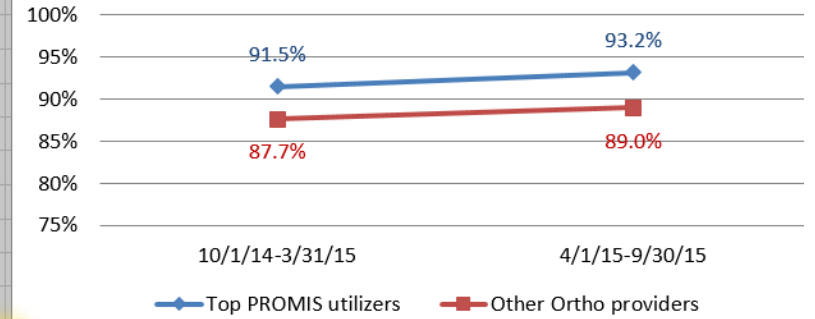
Provider expl in way you understand



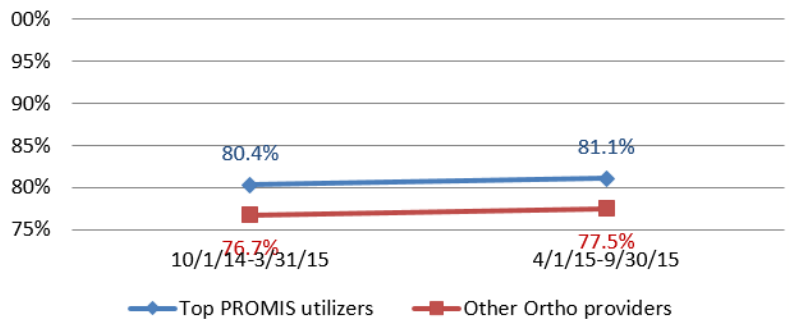
Provider listen carefully to you



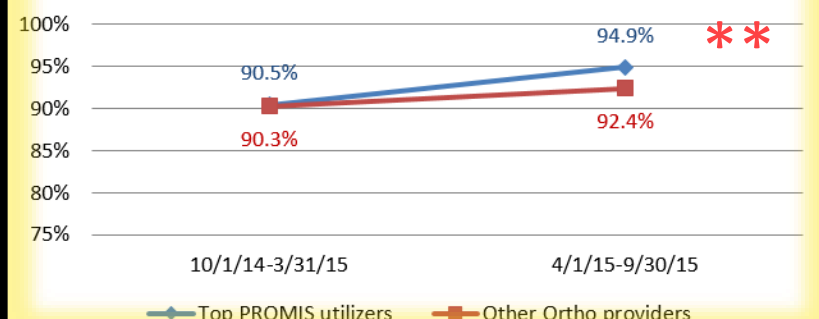
Give easy to understand instruction



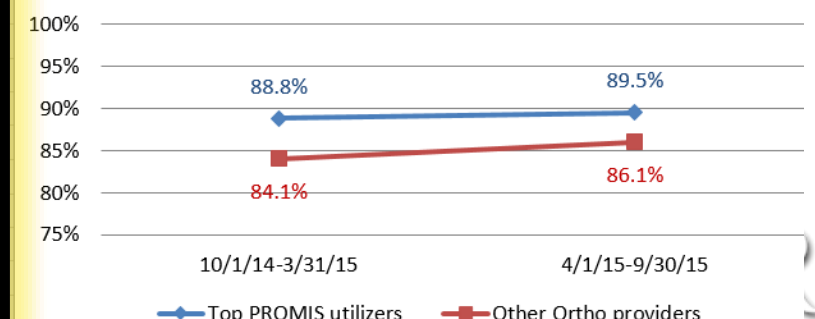
Know important info medical history



Show respect for what you say

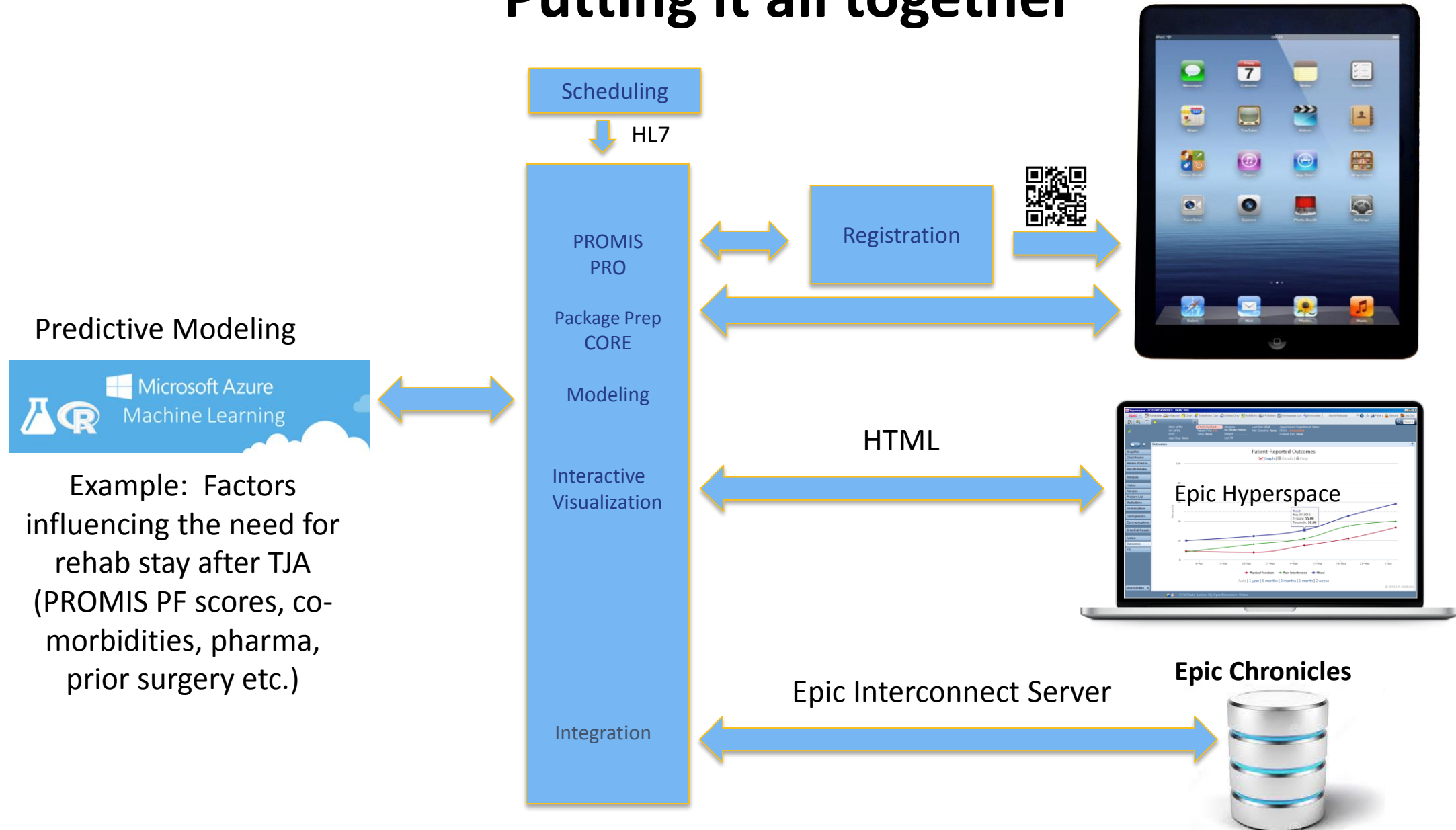


Spend enough time with you



UR VOICE: Validated Outcomes In Clinical Experience

Putting it all together





/ 0:48



How Do We Use The Data?



The NEW ENGLAND
JOURNAL of MEDICINE

Perspective

Patient-Reported Outcomes — Are They Living Up to
Their Potential?

Judith F. Baumhauer, M.D., M.P.H.

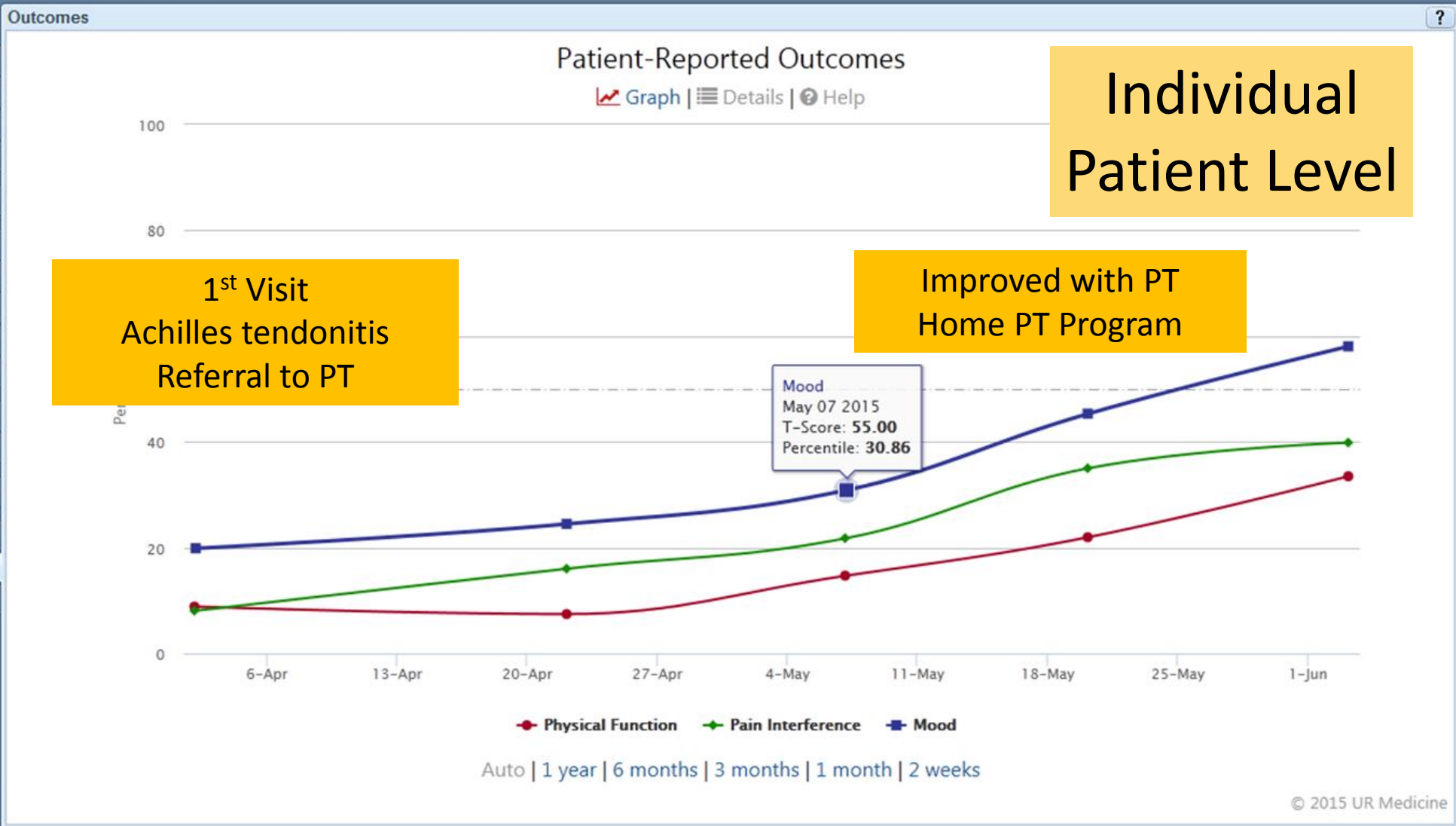
July 6, 2017

N Engl J Med 2017; 377:6-9

DOI: 10.1056/NEJMp1702978

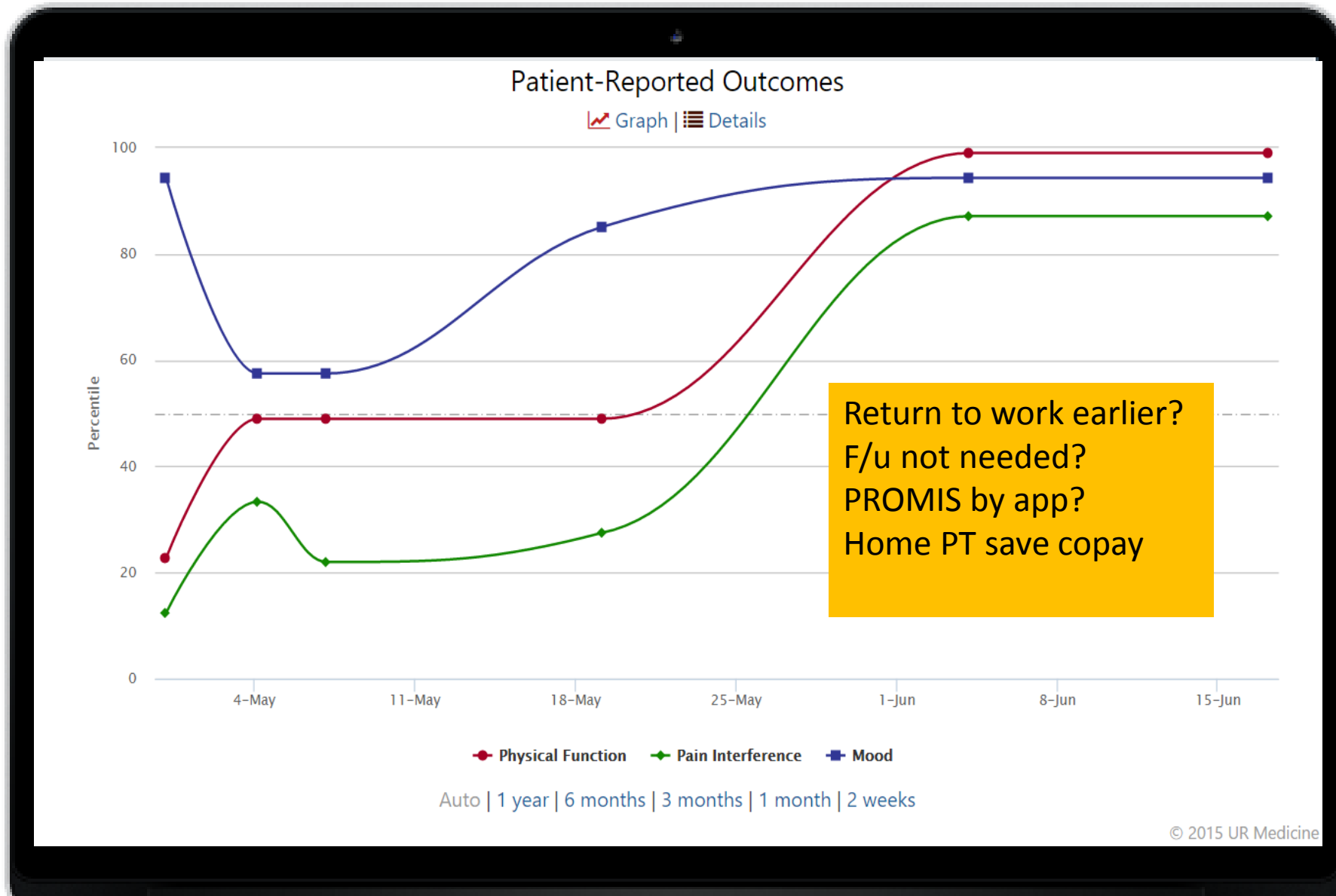
SMH MRN: URM MyChart... Allergies: No Known Allergi... Last BMI: 28.2 Appointment Department: None
HH MRN: Patient FYIs: FYI Adv Directive: None RHIO: Consented
PCP: I-Stop: None Weight: Last Ht: Outside Info: None
Appt Dep: None

- SnapShot
- Chart Review
- Review Flowshe...
- Results Review
- Synopsis
- History
- Allergies
- Problem List
- Medications
- Immunizations
- Demographics
- Communications
- Enter/Edit Results
- Archive
- Outcomes
- FYI



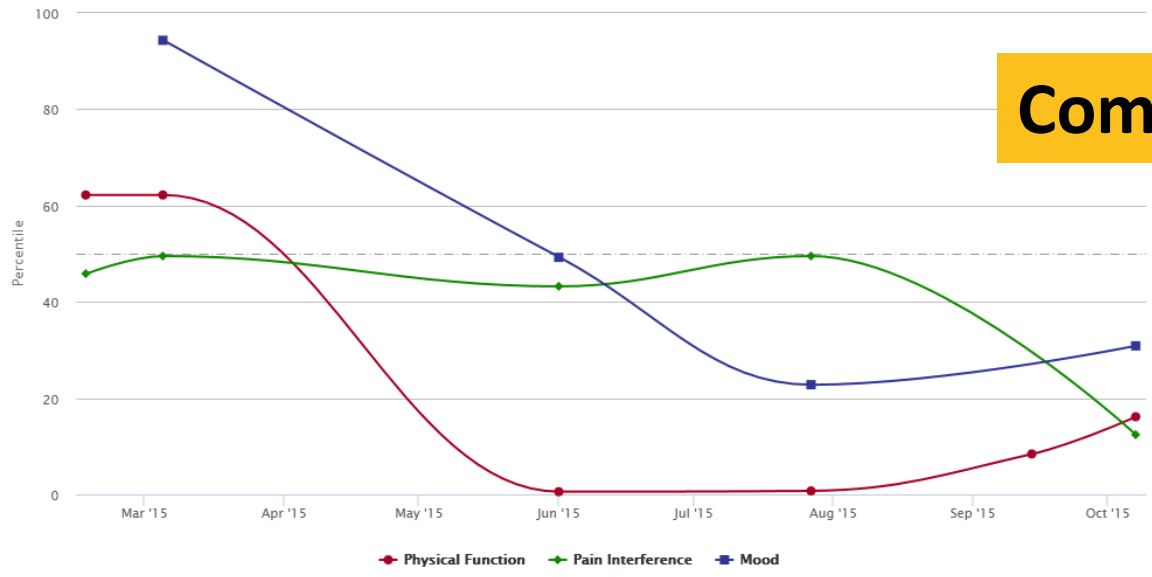
More Activities

PRO Index



Patient-Reported Outcomes

Graph | Details



Complication?

Auto | 1 year | 6 months | 3 months | 1 month | 2 weeks

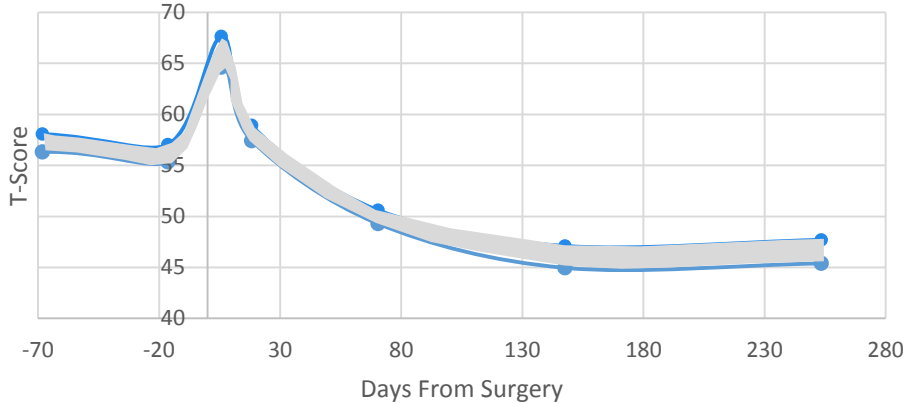
© 2015 UR Medicine

619 ACL Surgeries Performed by 6 Providers (cross sectional analysis)

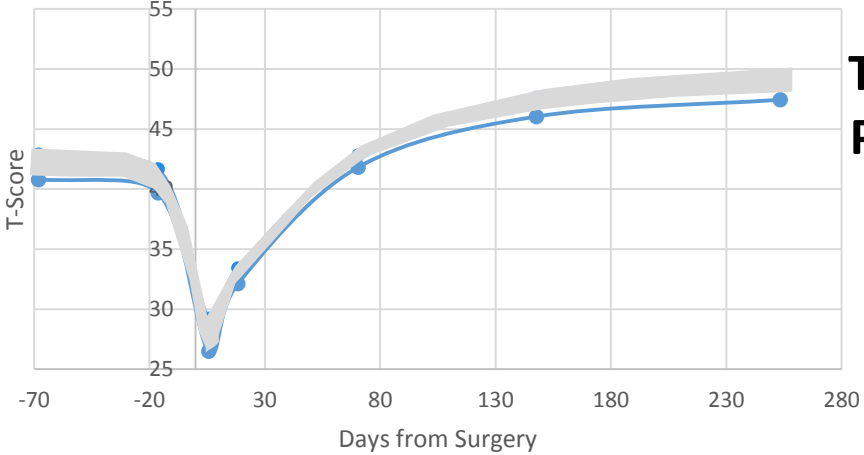
Group Data for common procedures

Thanks to Owen Papuga PhD and Sports Division

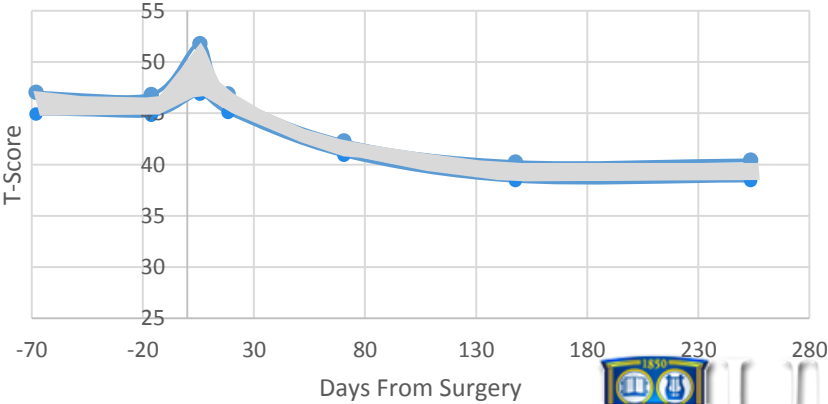
Pain 95 % CI



Function 95% CI



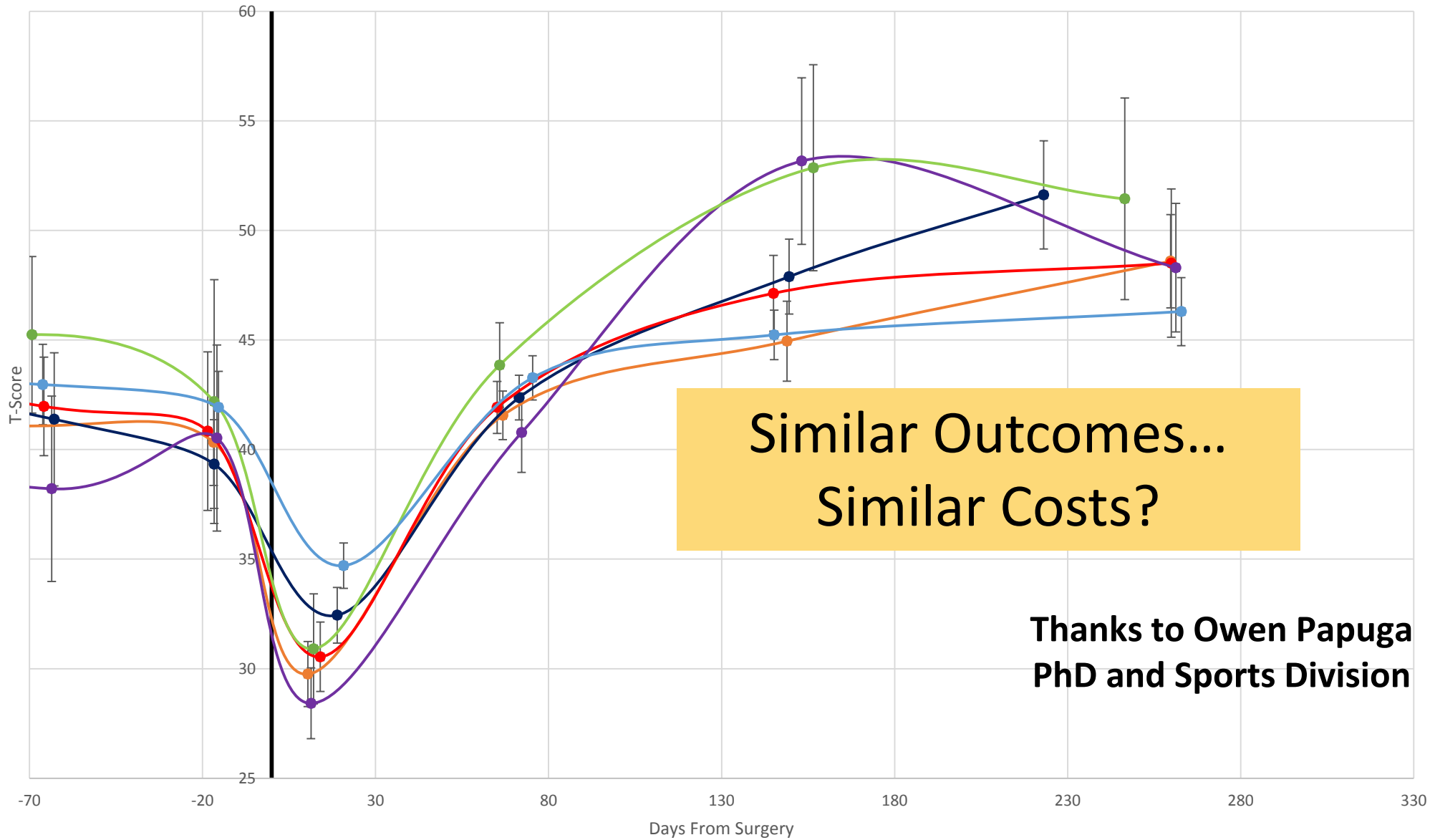
Depression 95 % CI



	Patients at Each Time Point						
	N1	N2	N3	N4	N5	N6	N7
Function	341	440	84	495	722	312	335
Pain	339	433	82	490	716	311	333
Depression	336	426	78	480	704	304	329



Function



	PROVIDER
Orange	A
Dark Blue	B
Red	C
Purple	D
Light Green	E
Light Blue	F

Thanks to Owen Papuga
PhD and Sports Division



B) Trends in PROMIS Physical Function by Reconstruction Technique

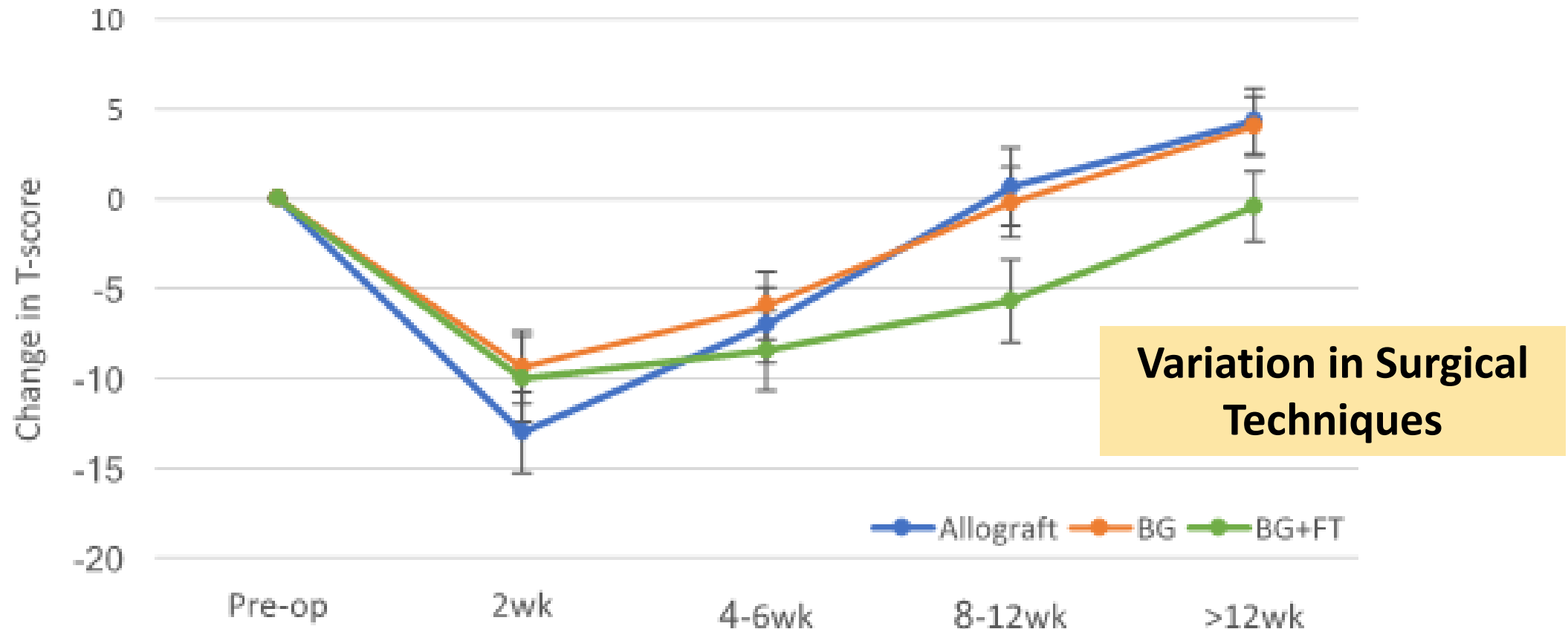


Figure 1: A) Overall trends in PF demonstrate a return to baseline at 8-12wk follow-up. B) Trends in PF based on reconstruction type demonstrate nearly significant slower improvement at 2, 4-6, 8-12, and > 12 wk follow-up.

* $p < 0.05$

PROMIS PF Foot and Ankle

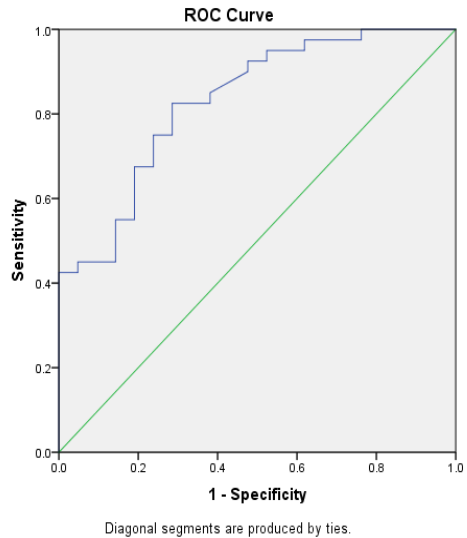
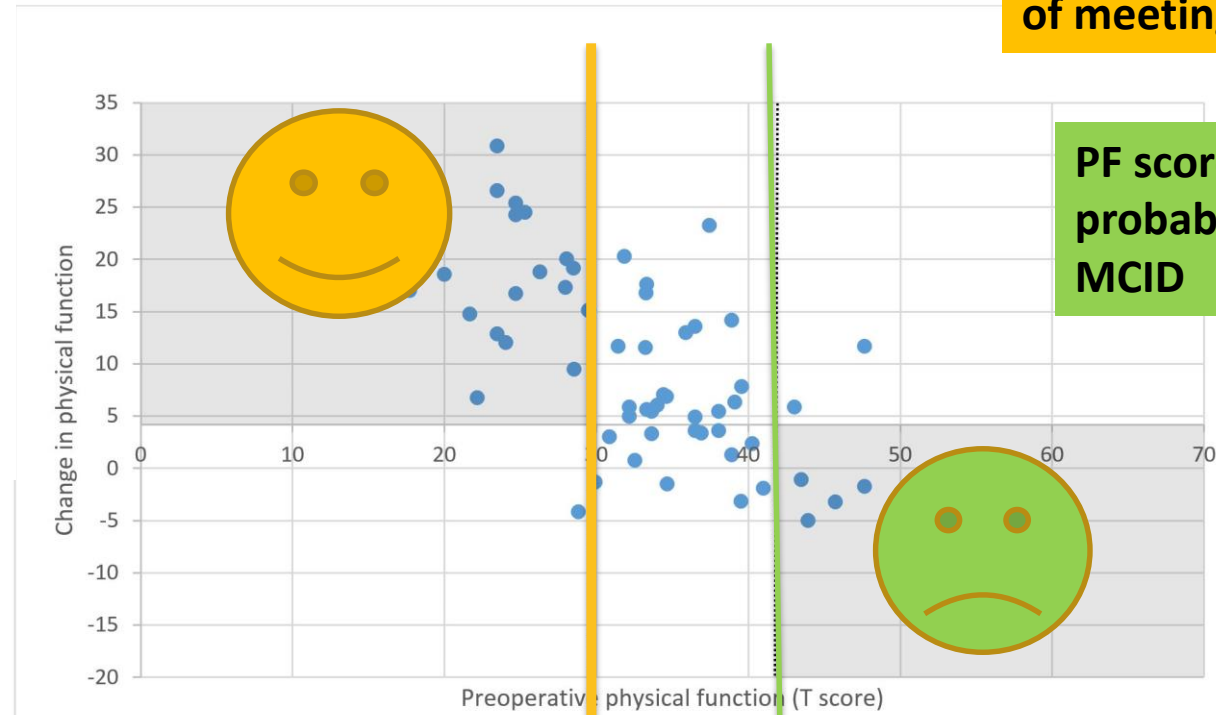


Figure 2: Scatter plot of preoperative PROMIS physical function versus change in physical function



PF score < 29.7 had an 83% probability of meeting MCID;

PF score >42 had a 94% probability of failing to meet MCID

- ROC curves
 - Preop PF predictive of MCID
 - Used 95% Specificity

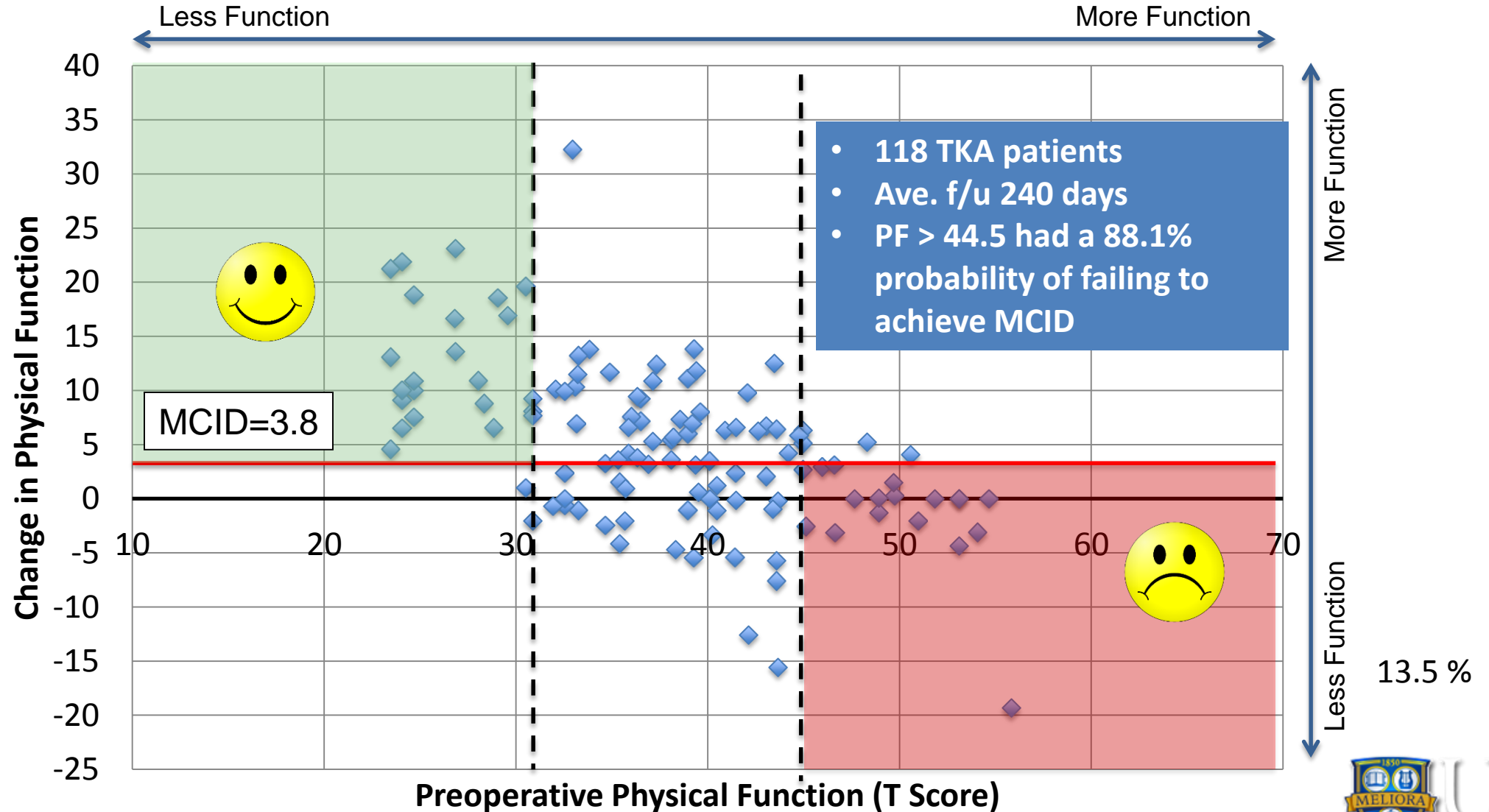
Foot Ankle Int. 2016 Sep;37(9):911-8. doi: 10.1177/1071100716665113. Epub 2016 Aug 16.

Preoperative PROMIS Scores Predict Postoperative Success in Foot and Ankle Patients.

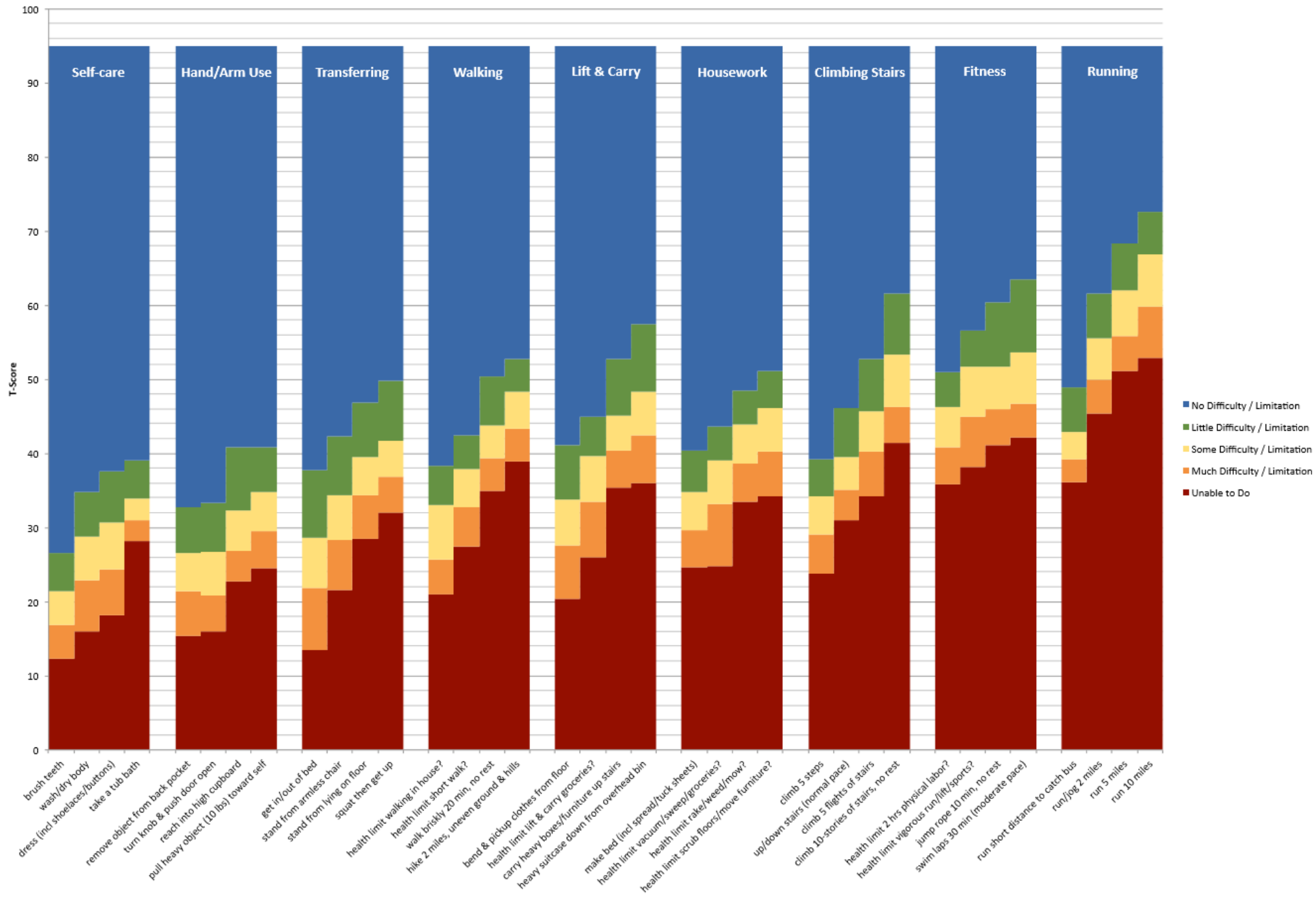
Ho B¹, Houck JR², Flemister AS¹, Ketz J¹, Oh I¹, DiGiovanni BF¹, Baumhauer JF³.

Physical Function – TKA

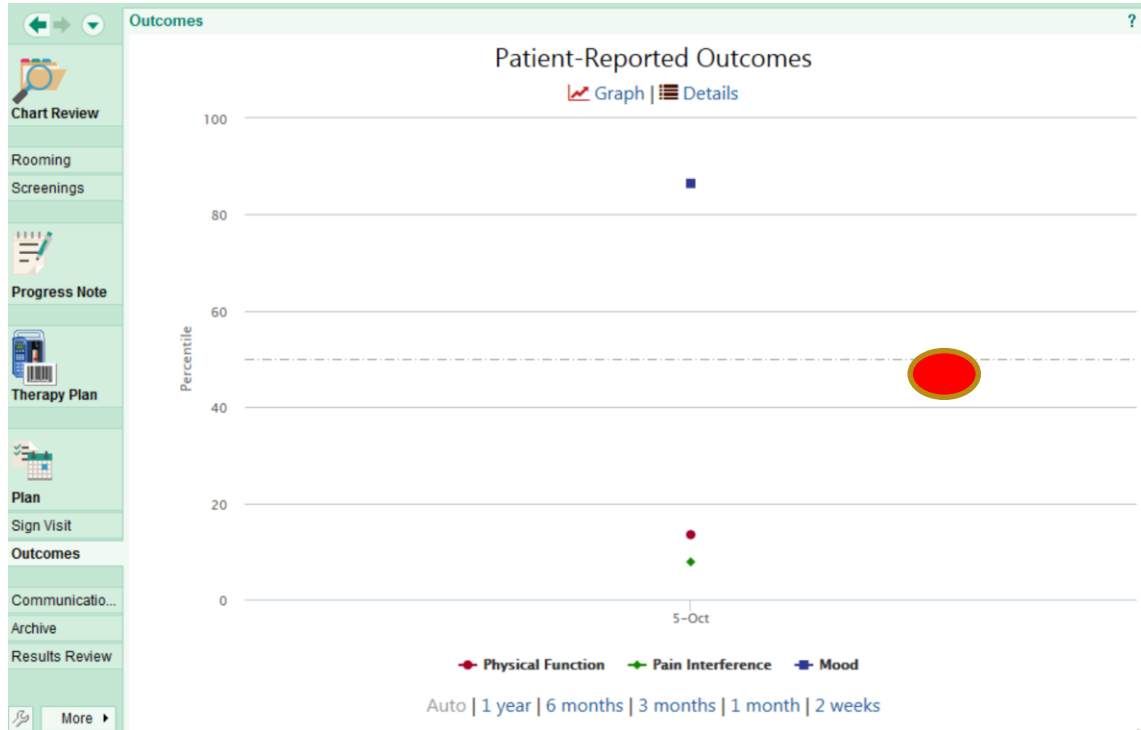
and THR and Spinal Fusion and Disc Excision and Spinal Injections and



Physical Function Snapshot

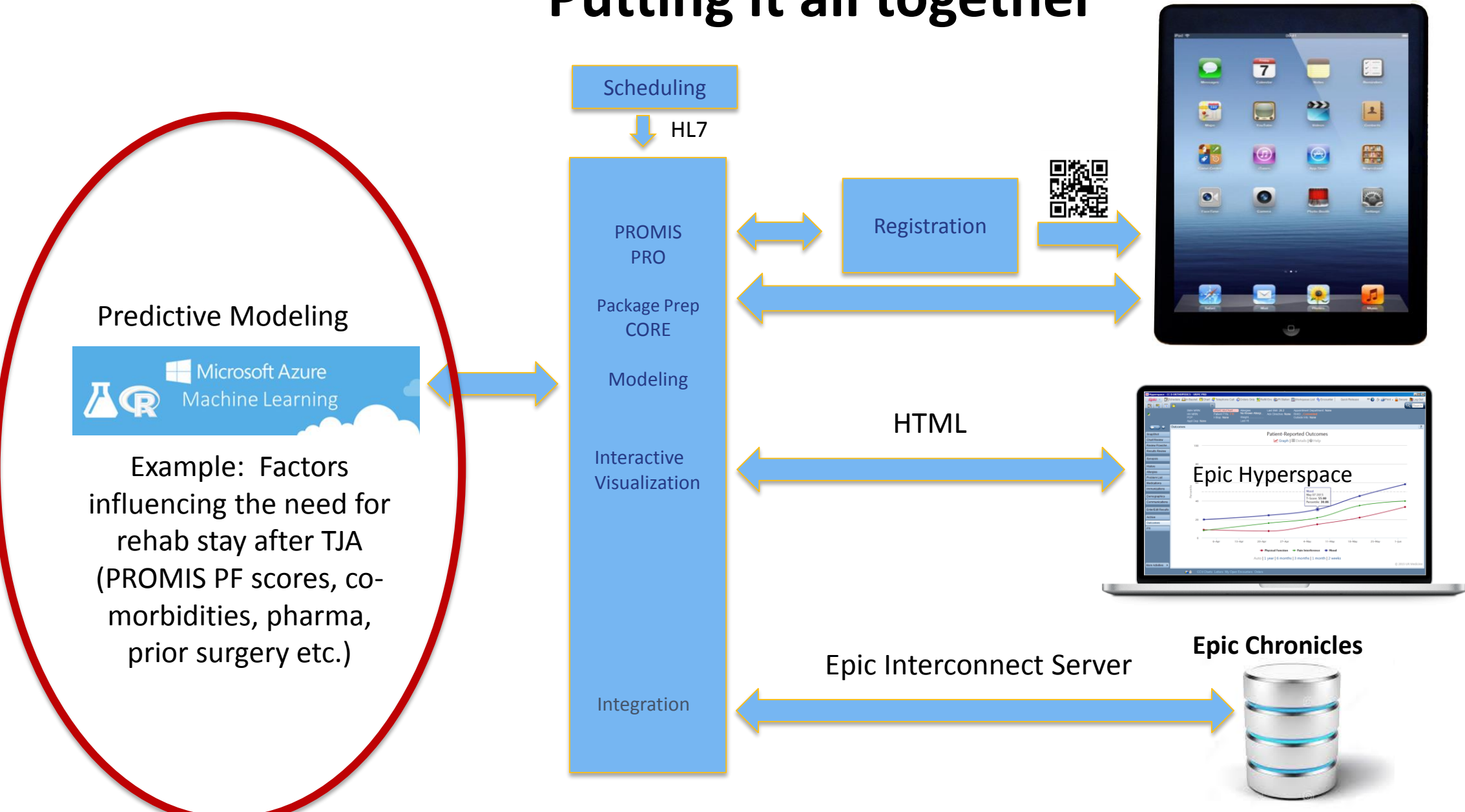


Patient's Like You....



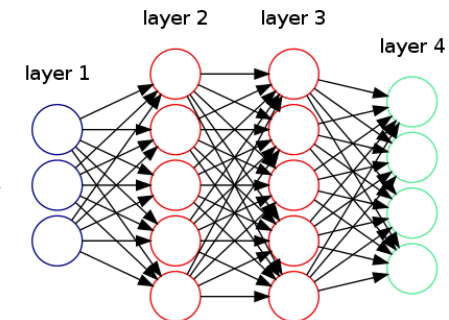
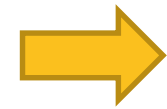
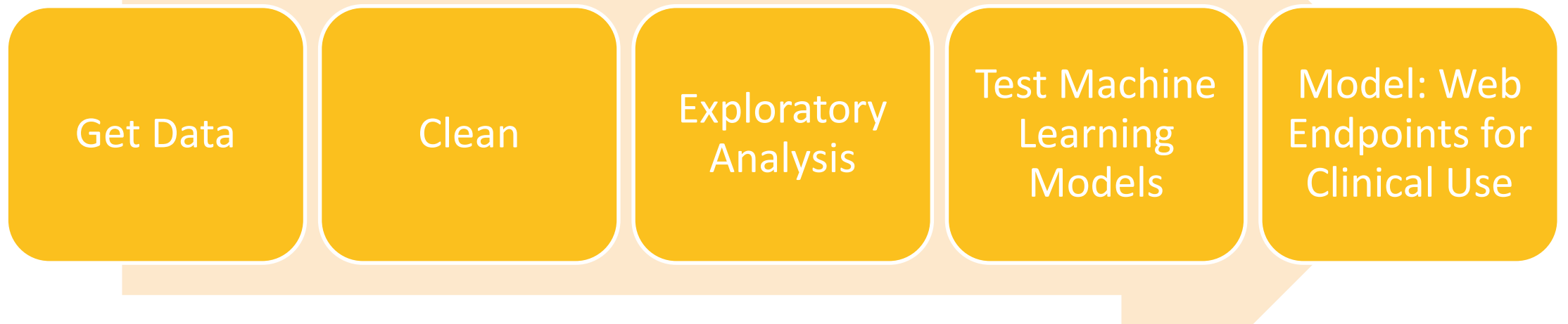
UR VOICE: Validated Outcomes In Clinical Experience

Putting it all together



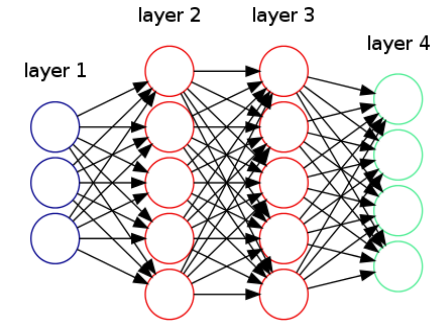


Roadmap to Predictive Modeling: Skilled Nursing Facility Admission Model The URMC Total Joint Bundle





SNF Placement Predictive Modeling



- GOAL: Use big data techniques to develop a machine learning model to pre-operatively predict which total joint patients will end up going to a SNF
- Benefits
 - Reduce number of patients that need to go to a SNF by pre-operatively identifying effective interventions
 - Better prepare mentally and physically patients for post-surgical outcomes
 - Allow SNFs and the hospital to allocate resources with more advanced notice

Health Lab

Bundles

MACHINE LEARNING

CC D ORTHOPEDICS Department (All Providers)

Visit Events	1-Step Complete	My Time	Unit Patient Name	Pl Portal Status	HH MRN	SHH MRN	DOB	Notes	Status	Provider	Next Appt Date	Next Appt Dept	Next Appt Provider
Dine Rooming (11:13 AM)	+	10:45 AM	Wilson, Wade (M)	Inactive			2/1/75		Scheduled	Mitten, David, MD	2/22/17 - Sch	CC D ORTHOPEDICS	Mitten, David, MD
Scheduled	+	11:38 AM	Summers, Scott (M)	Inactive			8/1/77		Scheduled	Mitten, David, MD	2/22/17 - Sch	CC D ORTHOPEDICS	Mitten, David, MD
Scheduled	+	12:00 PM	Gray, Jean (F)	Inactive			10/1		Scheduled	Mitten, David, MD	2/22/17 - Sch	CC D ORTHOPEDICS	Mitten, David, MD
Dine Rooming (3:29 PM)	+	12:30 PM	Carvers, Carol (F)	Inactive			5/10		Scheduled	Mitten, David, MD	2/22/17 - Sch	CC D ORTHOPEDICS	Mitten, David, MD
Scheduled	+	2:00 PM	Rodgers, Steven (M)	Inactive			9/10		Scheduled	Mitten, David, MD	2/22/17 - Sch	CC D ORTHOPEDICS	Mitten, David, MD

- Dept: CC D ORTHOPEDICS
- Create
- My Schedule
 - CURTIS, MICHAEL
 - CC D ORTHOPEDICS

Orthopedics

Report: Orthopedics

Demographics

Wade Wilson
42 year old male
2/1/1975

Comes From:
None

Surgical History

100 procedures

Problem List

None

Significant History/Details

Strong Nerve Assisted
Simonius Tarsalco (1/10/09)

Specialty Comments

No comment regarding your specialty.

Medications

Only current medications:
None

All Rx Reviewed **Never Reviewed**

Health Lab Bundles

MACHINE LEARNING

UICM DEV

David, MD for OFFICE APPT

Try the Widescreen View

Visit Information

Chief Complaint: None

Reason for visit: System Error, MD

Other diagnosis: Orthopedic Surgery

Care Everywhere Outside Records (View Only)

Initial Signs

Weight	136.1 kg (300 lb)	Other Vitals	BMI	45.61 kg/m ²
Height	1.727 m (5'8")	OSA	OSA	2.56 m ²
		Orthopedic (Reviewed)	Orthopedic (Reviewed)	Never reviewed
		Tobacco	Smoking Status	Never Assessed
		Alcohol Status	Alcohol Status	Unknown

Epic Analytics

Chance of SNF Admission

Current Simulation

80

With patient lost to board

77

With patient found at hospital home

54

Function: 38, Pain: 33, Mood: 33

Inputs:

Barriers

- Other “Quality Measures” more important for compliance and reimbursement than PRO
- IT limitations at other institutions
- PRO available but might not be viewed or shared by provider with patient
 - Patients question need to fill out
- Importance of Data not understood by Provider
- Low Depression scores of concern to providers

PROMIS in Clinical Practice

- Advance Patient Care
- Engage the Patients
- Educate patients
- Share Decision Making with Patients
- Access cost related to outcomes
- Allocate patient care resources appropriately (P4P)
- Common Research outcomes across medicine
- Assess Population Health
- UNITE a Health Care System!

