

Patient-Reported Outcomes: How They Influence the Care We Provide to Our Patients



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Disclosure – Judith Baumhauer MD MPH

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3. Baumhauer	e	Stryker
4. Baumhauer	a,e	Wright
5. Baumhauer	f	Foot & Ankle International
6. Baumhauer	f	JBJS(A)
7. Baumhauer	f	Techniques in Foot and Ankle Surg.
8. Baumhauer	f	CORR (Assoc. Editor)
9. Baumhauer	BOD Member	PHO (VP)

Dessert Before The Meal

1. Patient is King
2. Patient Reported Outcomes, Patient Generated data is CRITICAL
 1. Preventative Health Strategies
 2. Maximize Healthy Behavior
 3. Assess Treatment Response
 4. Appropriately Allocate Healthcare Resources
3. University of Rochester is leading the field

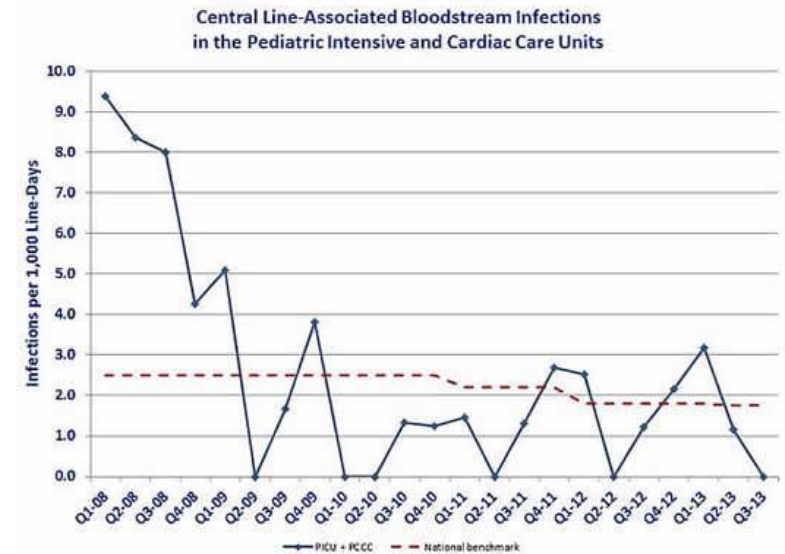
Leeds UK: Double Hand Transplant





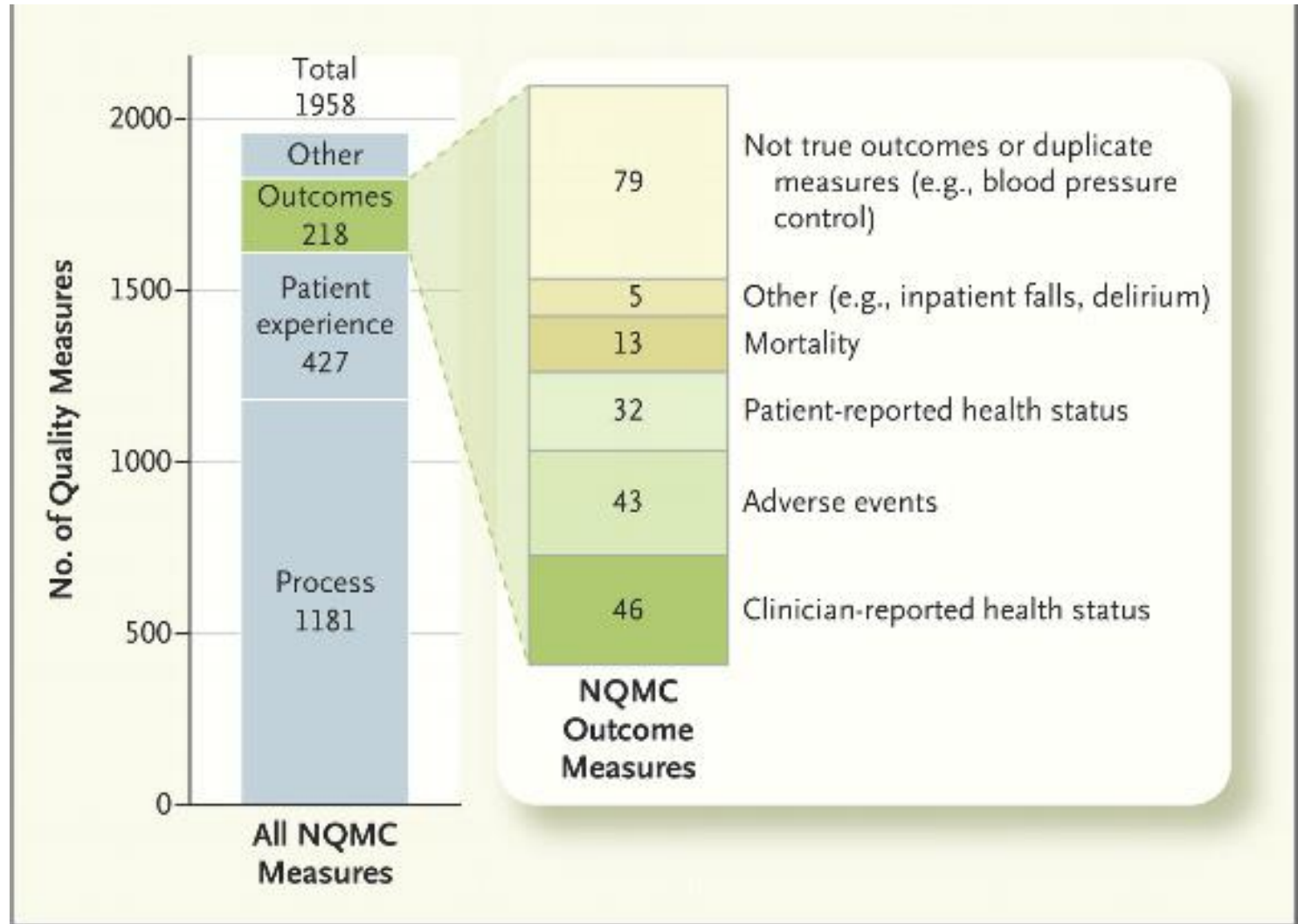
Health Care Quality

- Process Measures
 - Provider productivity; adherence to standards
- Patient Experience Measures
 - Focus on healthcare delivery (ie. Communication)
 - “Patient Engagement”
- Patient Reported Outcome Measures (PROs)
 - Services provided improve patient health and well-being



Porter et al, Standardizing Patient Outcome Measurement, NEJM, 2/11/16

“Of the 1958 quality indicators in the National Quality Measures Clearinghouse...only 139 (7%) are actual outcomes and only 32 (<2%) are patient-reported outcomes”



Michael E. Porter, Ph.D.-What is Value in Health Care?

"Achieving **good patient health outcomes is the fundamental purpose** of health care.

...thus, **outcome measurement is perhaps the single most powerful tool in revamping the health care system.** Yet systematic and rigorous outcome measurement remains rare or nonexistent in most settings. "



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2010



A Patient-Reported Outcome (PRO) is a health outcome **directly reported by the patient** who experienced it...
NOT the doctor, not the nurse, not the tech...THE PATIENT.

Patient-Reported Outcome – Wikipedia
[En.Wikipedia.org/wiki/Patient-reported_outcome](https://en.wikipedia.org/wiki/Patient-reported_outcome)



Prov = Provider; Pat = Patient

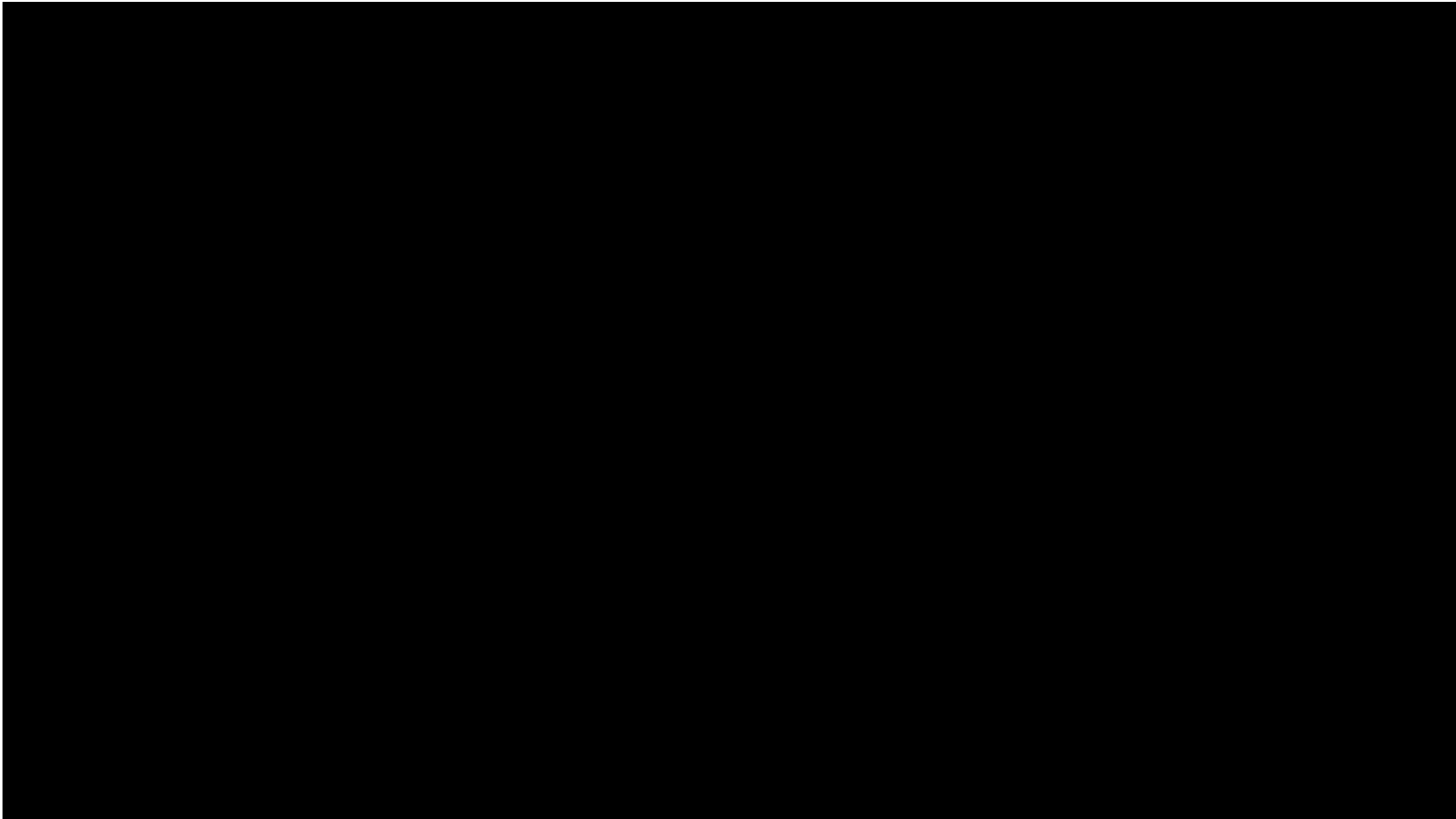
TOP THREE GOALS AND CONCERNS FOR BREAST CANCER DECISIONS

Condition: Goal	Pat	Prov	p
Keep your breast?	7%	71%	P<0.01
Live as long as possible?	59%	96%	P=0.01
Look natural without clothes	33%	80%	P=0.05
Avoid using prosthesis	33%	0%	P<0.01

Patient Is King!

FIGURE 3: Top Three Goals and Concerns for Breast Cancer Decisions

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



Must Have's

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



Validated Outcomes In Clinical Experience

UR VOICE



Every Patient, Every Clinic, Every Visit

NOW...Delivery Windows...Ask at the right time when it matters

PROMIS

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

Social Health

Ability to
Participate in Social
Roles & Activities

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

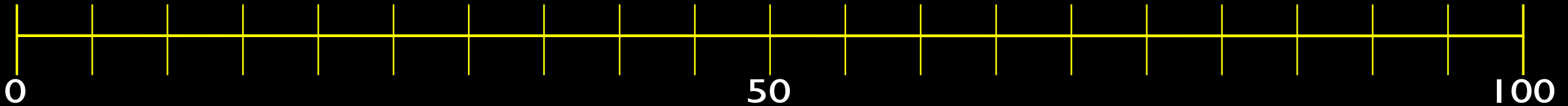
Self-efficacy

Satisfaction with
Social Roles &
Activities

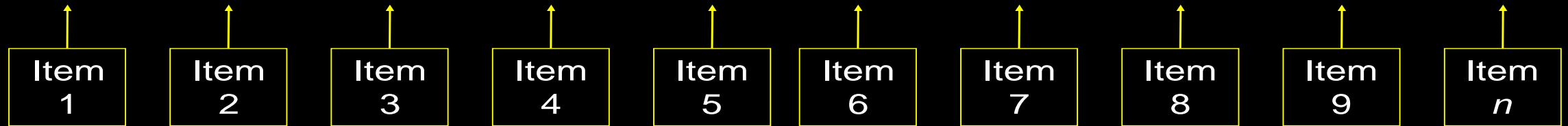
Social Support

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?

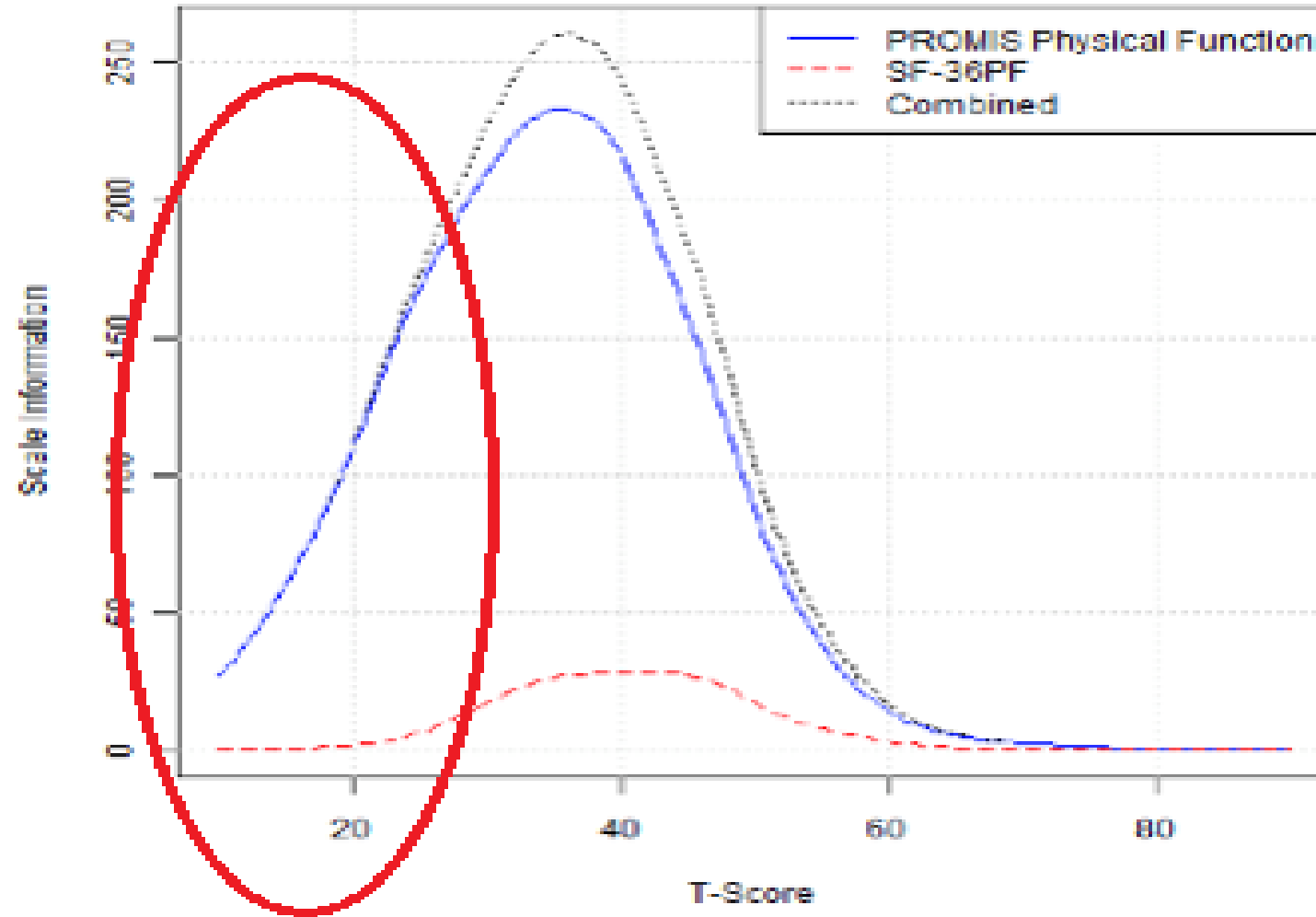
Are you able to run or jog for two miles?

Are you able to run five miles?



Link the Patient-Reported Outcomes Measurement Information System (PROMIS) with other related instruments

PROMIS vs SF-36PF

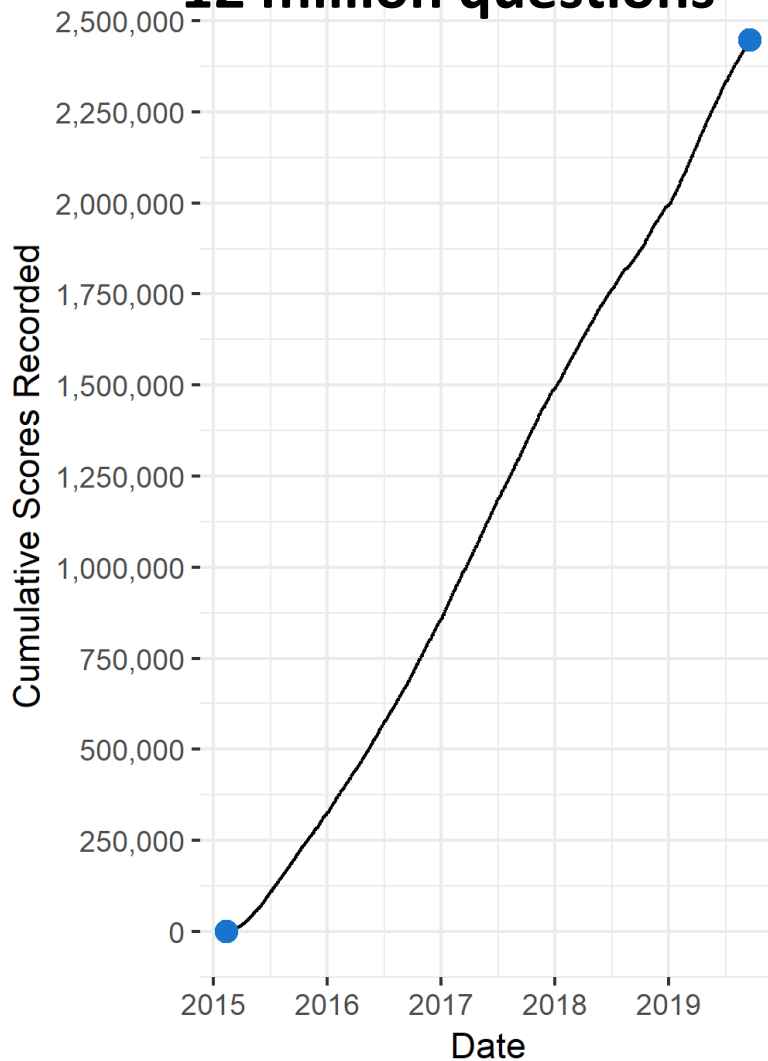


Total, Sept 2019

2.4 million scores

252K unique patients

12 million questions



2.4
minutes

Median time to complete assessment

12 questions

98.2%
completed






MIPS

Merit-based Incentive Payment System

2017 MIPS Performance



60% Quality	15% Improvement Activities	25% Advancing Care Information	 Cost
Replaces PQRS	New Category	Replaces MU	Replaces Value-Based Modifier



Most participants: Attest that you completed up to 4 improvement activities for a minimum of 90 days.

Participation in a QCDR, demonstrating performance of activities for promoting use of patient-reported outcome (PRO) tools and corresponding collection of PRO data (e.g., use of **PQH-2** or **PHQ-9** and **PROMIS** instruments).

Recommendations for PRO-PMs

- CMS Comprehensive Care for Joint Replacement
 - Bundled payment for total hip/knee arthroplasty
 - Voluntary collection of PROs results in reduced discount
 - Final Nov 2015 – **PROMIS Global** or VR-12, HOOS or KOOS





Drugs

Home > Drugs > Development & Approval Process (Drugs) > Development Resources

- Development Resources
- Antibacterial Drug Development Task Force
- Ingredients
- Medical Imaging and Drug Development
- Pediatric Product Development

Clinical Outcome Assessment Compendium

[f SHARE](#)
[t TWEET](#)
[in LINKEDIN](#)
[p PIN IT](#)
[e EMAIL](#)
[p PRINT](#)

Welcome to the Pilot Phase of the Clinical Outcome Assessment Compendium (COA Compendium) Web Site!

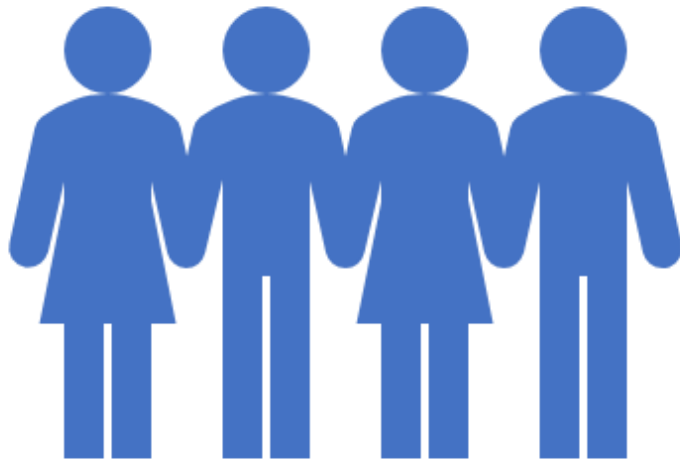
WHAT IS THE PURPOSE OF THE COA COMPENDIUM?

This pilot [COA Compendium](#) (PDF) is part of FDA's efforts to foster patient-focused drug development¹. The

Physical functioning in oncology	To be determined	Physical functioning	Patient Reported Outcome Measurement System (PROMIS) – Physical Function item bank (patient-reported outcome)	For use in clinical trials in oncology	Submitter: PROMIS Network Center Visit “Clinical Outcome Assessment Qualification Program Submissions” Web site for additional information
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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.**



HCAHPS

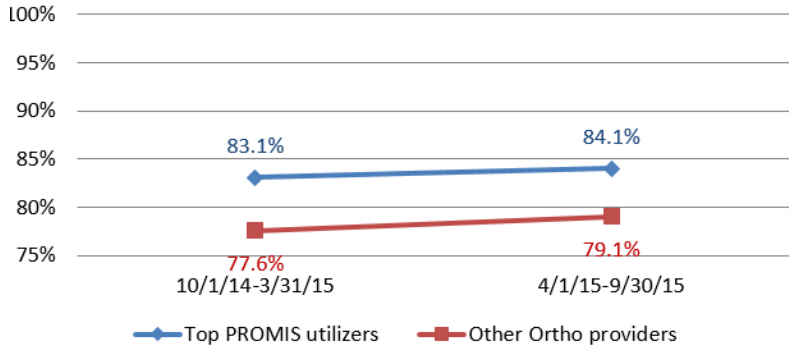
Improving scores on Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) surveys is an important priority for hospitals today. HCAHPS **patient satisfaction** scores are shared publically and can impact a hospital's reputation and standing in the community, as well as the bottom line; HCAHPS scores account for 35% of a hospital's value-based purchasing score and directly impact Medicare payments.

HCAHPS Scores will determine up to 2% of a hospital or health system's Medicare payments by 2017, up from 1.5% in 2015

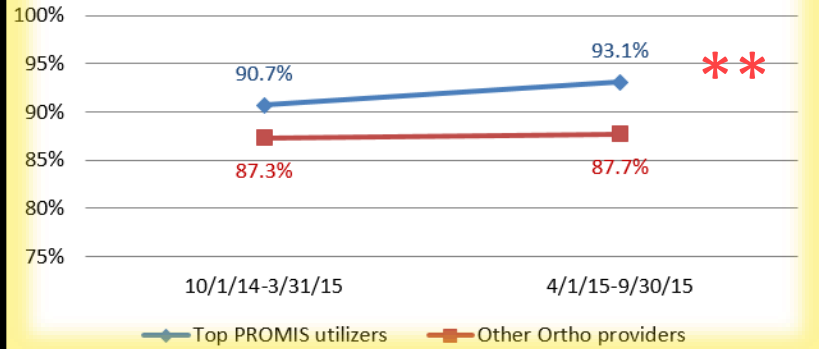
October 2015



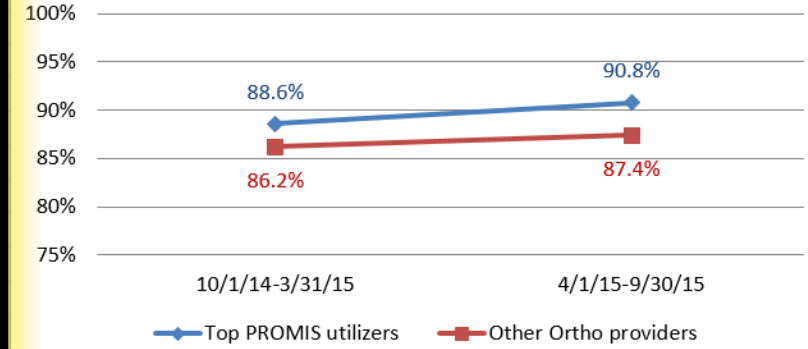
Overall Doctor Rating 9-10



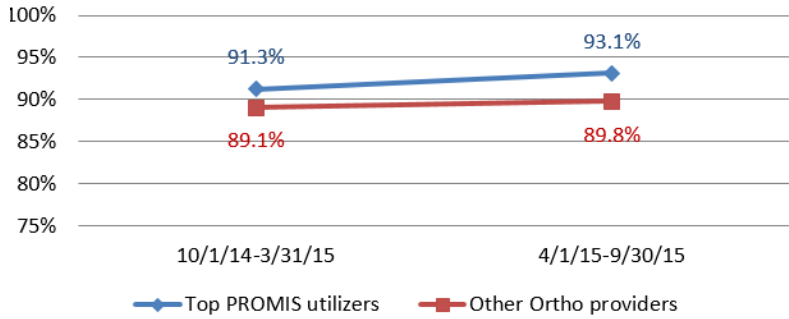
Recommend this provider office



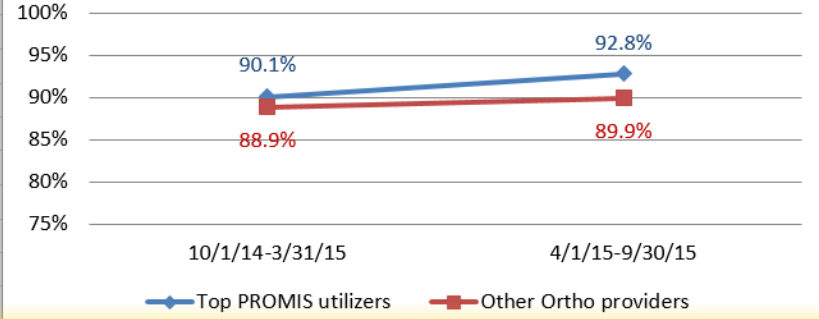
Physician Comm Quality



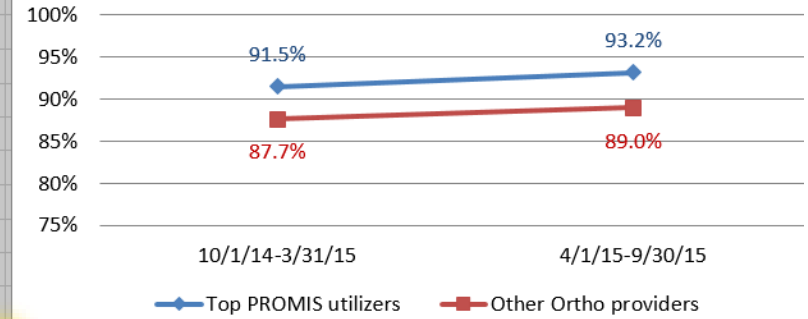
Provider expl in way you understand



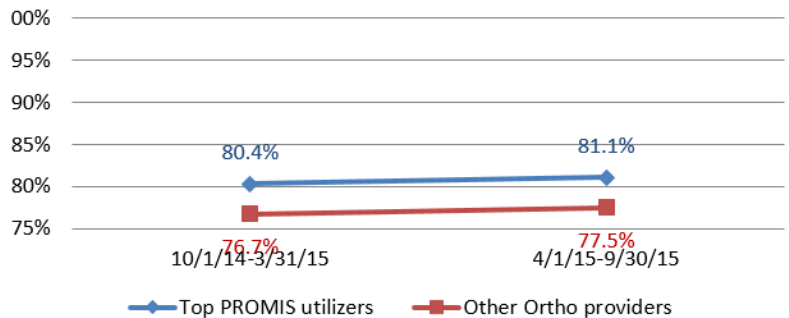
Provider listen carefully to you



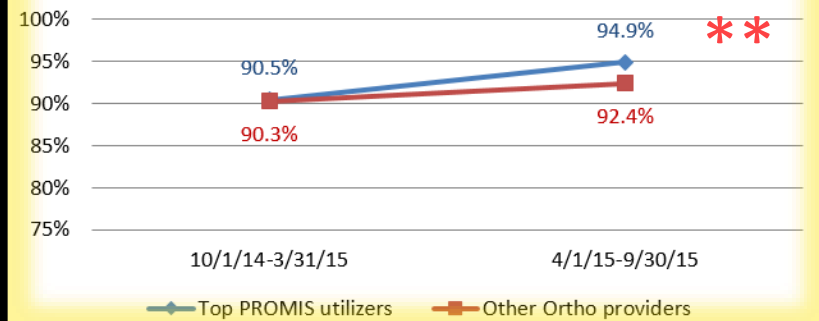
Give easy to understand instruction



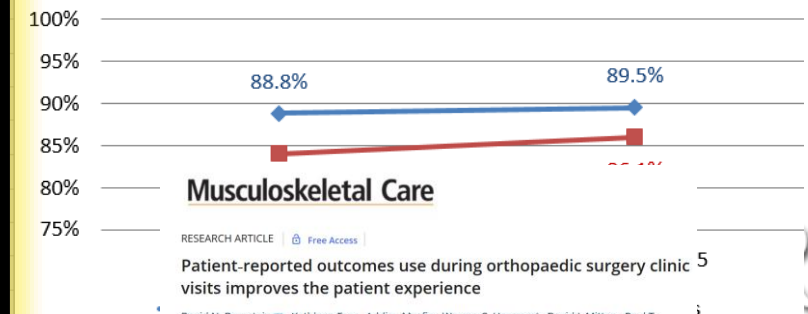
Know important info medical history



Show respect for what you say



Spend enough time with you



Musculoskeletal Care

RESEARCH ARTICLE | [Free Access](#)
 Patient-reported outcomes use during orthopaedic surgery clinic visits improves the patient experience ⁵

David N. Bernstein, Kathleen Fear, Addisu Mesfin, Warren C. Hammert, David J. Mitten, Paul T. Rubery, Judith F. Baumhauer

First published: 07 January 2019 | <https://doi.org/10.1002/msc.1379> | Citations: 1



/ 0:48



How Do We Use The Data?



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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](https://doi.org/10.1056/NEJMp1702978)

Hyperspace - CC D ORTHOPEDICS - URM PRD

Epic Schedule In Basket Chart Telephone Call Orders Only Refill Enc Pt Station Workqueue List Encounter Quick Release Print Secure Log Out

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

Outcomes Patient-Reported Outcomes Graph | Details | Help

Individual Patient

1st Visit to ME Achilles tendonitis Referral to PT

Improved with PT Consider Home PT Program

Family Doctor Posterior Heel Pain Referral

Mood May 07 2015 T-Score: 55.00 Percentile: 30.86

Unnecessary Visit(s)

Date	Physical Function	Pain Interference	Mood
6-Apr	10	10	20
13-Apr	10	15	22
20-Apr	10	18	25
27-Apr	10	20	28
4-May	15	22	35
11-May	20	30	45
18-May	25	40	55
25-May	30	45	60
1-Jun	35	48	65

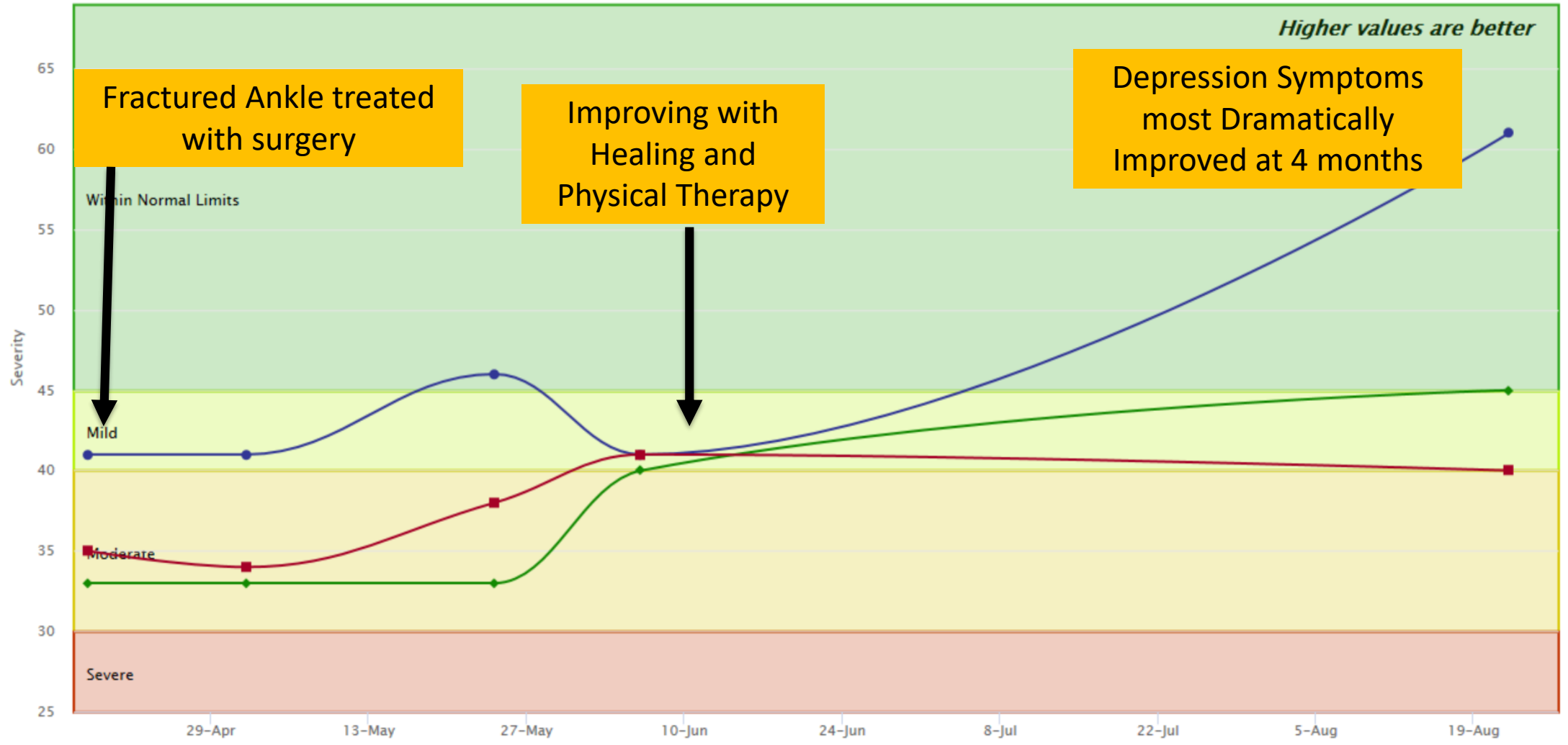
Auto | 1 year | 6 months | 3 months | 1 month | 2 weeks

© 2015 UR Medicine

- SnapShot
- Chart Review
- Care Everywh...
- Review Flows...
- Results Revi...
- Synopsis
- History
- Allergies
- Problem List
- Medications
- Immunizations
- Demographics
- Communicati...
- Archive
- Outcomes**
- FYI
- Customize
- More ▸

Patient-Reported Outcomes

[Dashboard](#) | [PROMIS](#) | [Details](#)



- SnapShot
- Chart Review
- Care Everywh...
- Review Flows...
- Results Revi...
- Synopsis
- History
- Allergies
- Problem List
- Medications
- Immunizations
- Demographics
- Communicati...
- Archive
- Outcomes**
- FYI
- Customize

Health Status - Most Recent Visit

Health Status - Since First Visit

PASS - Foot & Ankle Score

PROMIS Adult Depression

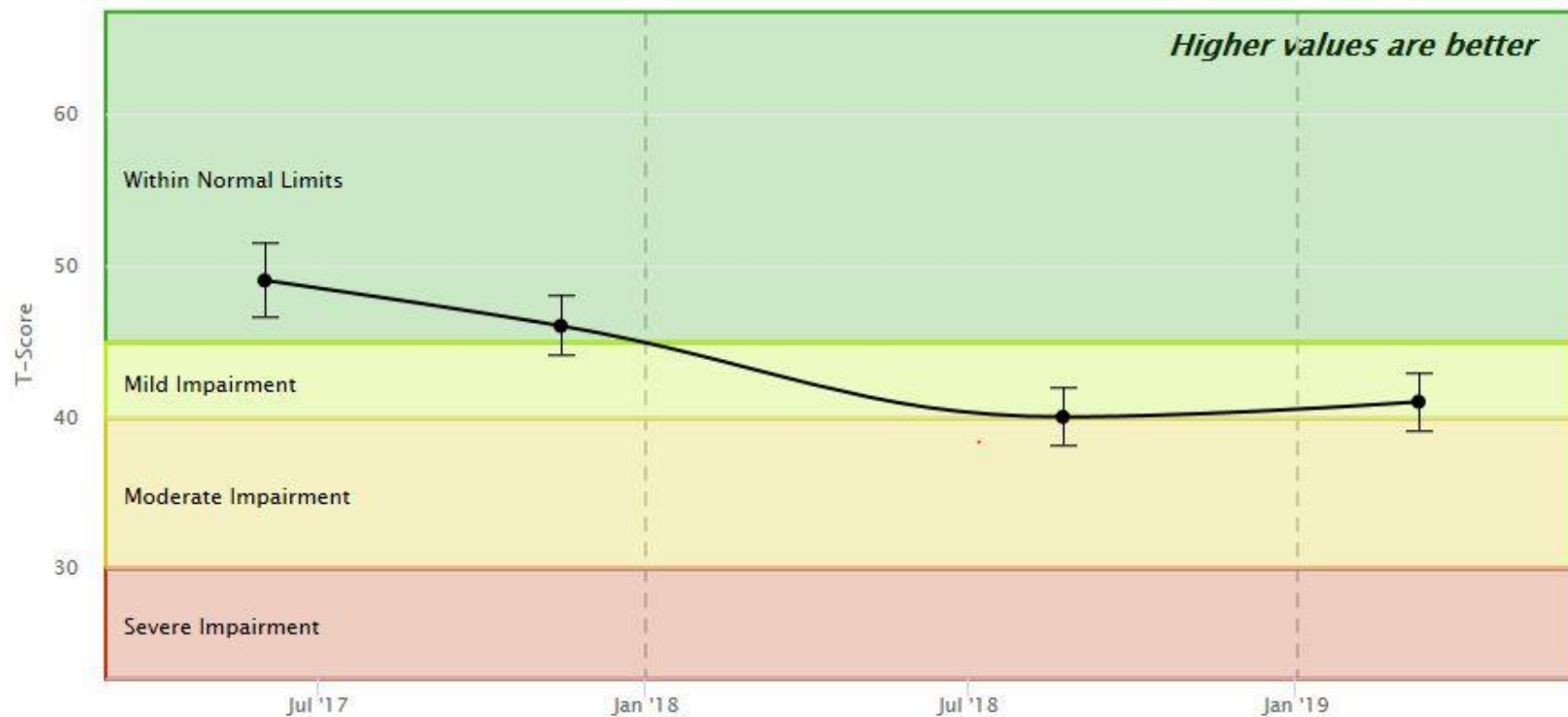
PROMIS Adult Pain Interference

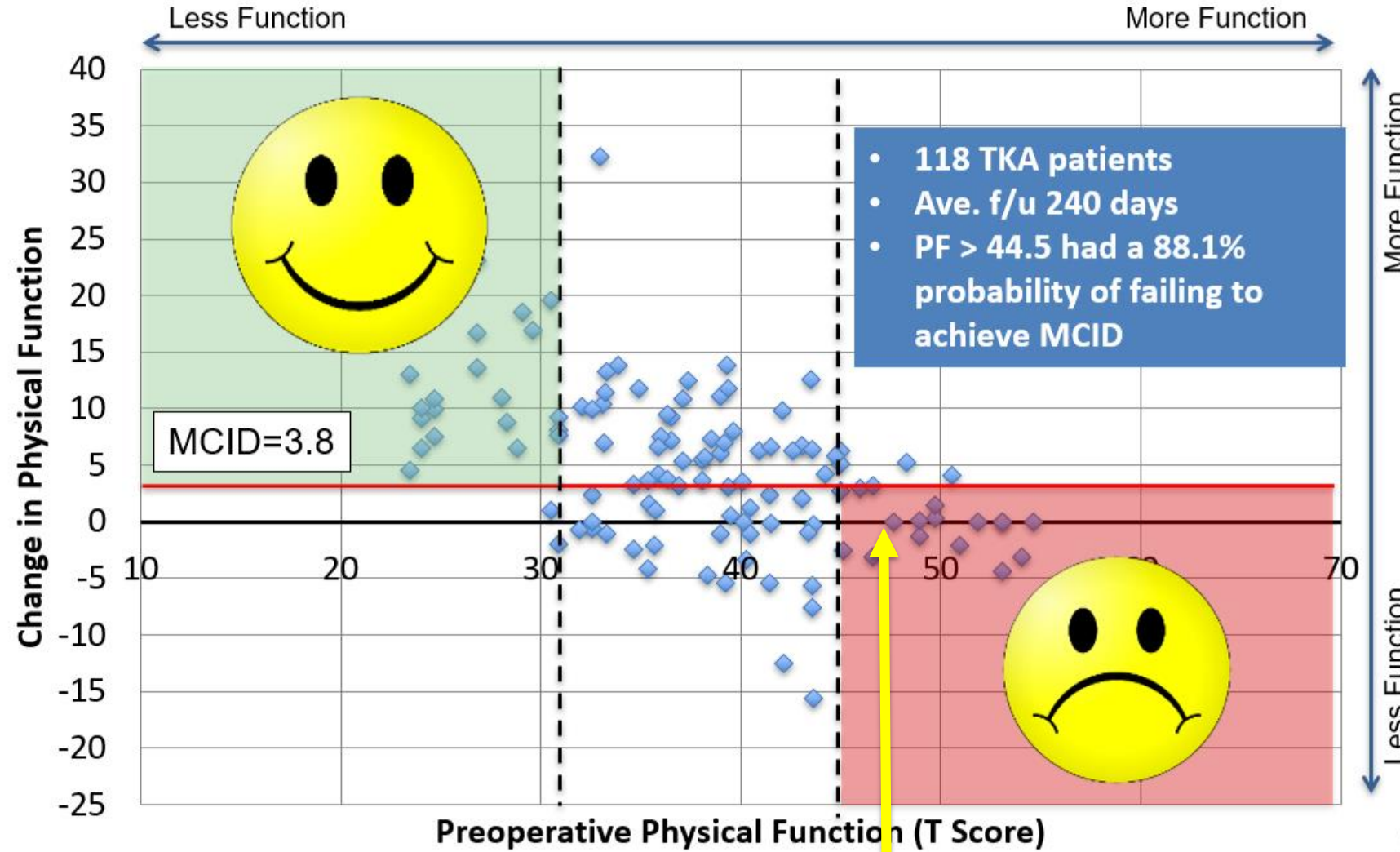
PROMIS Adult Physical Function

Patient-Reported Outcomes

[Dashboard](#) | [PROMIS](#) | [Details](#)

PROMIS Adult Physical Function ⓘ





"Will I Be More Physically Active With Surgery?" t-score 47

Annual cost savings by applying the PROMIS threshold values for each procedure

PROCEDURE	# PT impacted/total	% impacted	Annual Cost savings
Spinal Injection	1,069/3,814	28.0%	\$123K-718K
Discectomy	618/2,436	25.4%	\$319K-415K
TKR and THR	304/3,289	9.2%	122K-164K

PERSPECTIVE

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

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

N Engl J Med 2017; 377:6-9 | July 6, 2017 | DOI: 10.1056/NEJMp1702978



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“There are several different procedures to treat my problem, how do I choose the best one?”

B) Trends in PROMIS Physical Function by Reconstruction Technique

Different Surgeries for Recurrent Ankle Sprains

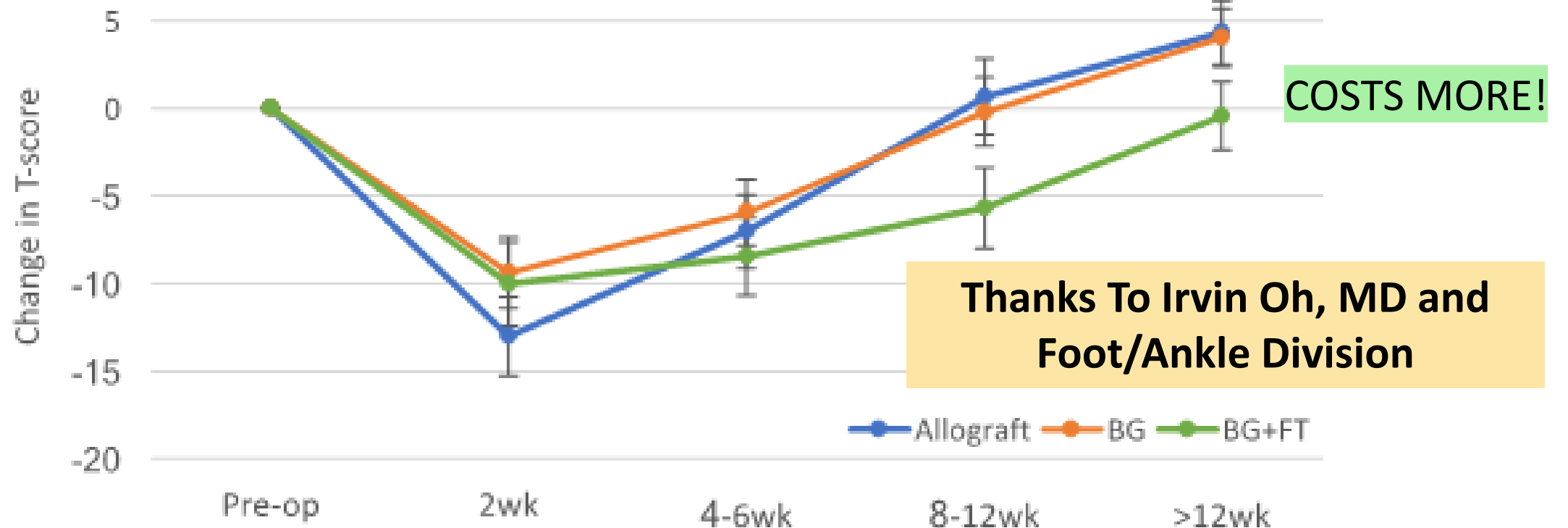


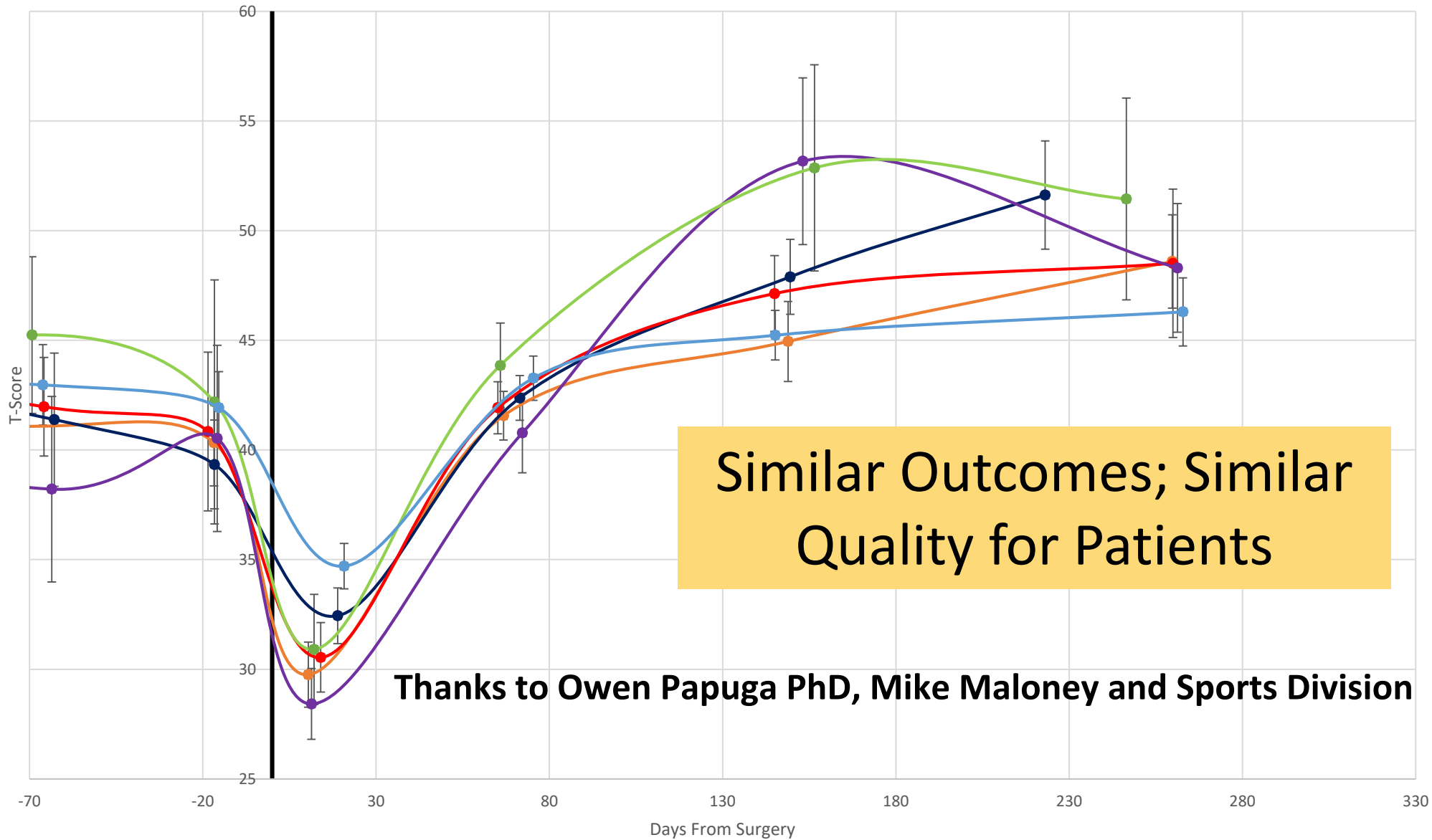
Figure 1: A) Overall trends in PF demonstrate a return to baseline at 8-12wk follow-up. Based on reconstruction type demonstrate nearly significant slower improvement at 2, 4-6, 8-12, and > 12 wk follow-up.

*p < 0.05



“There are several different Surgeons, who should I choose?”


Function



Thanks to Owen Papuga PhD, Mike Maloney and Sports Division

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

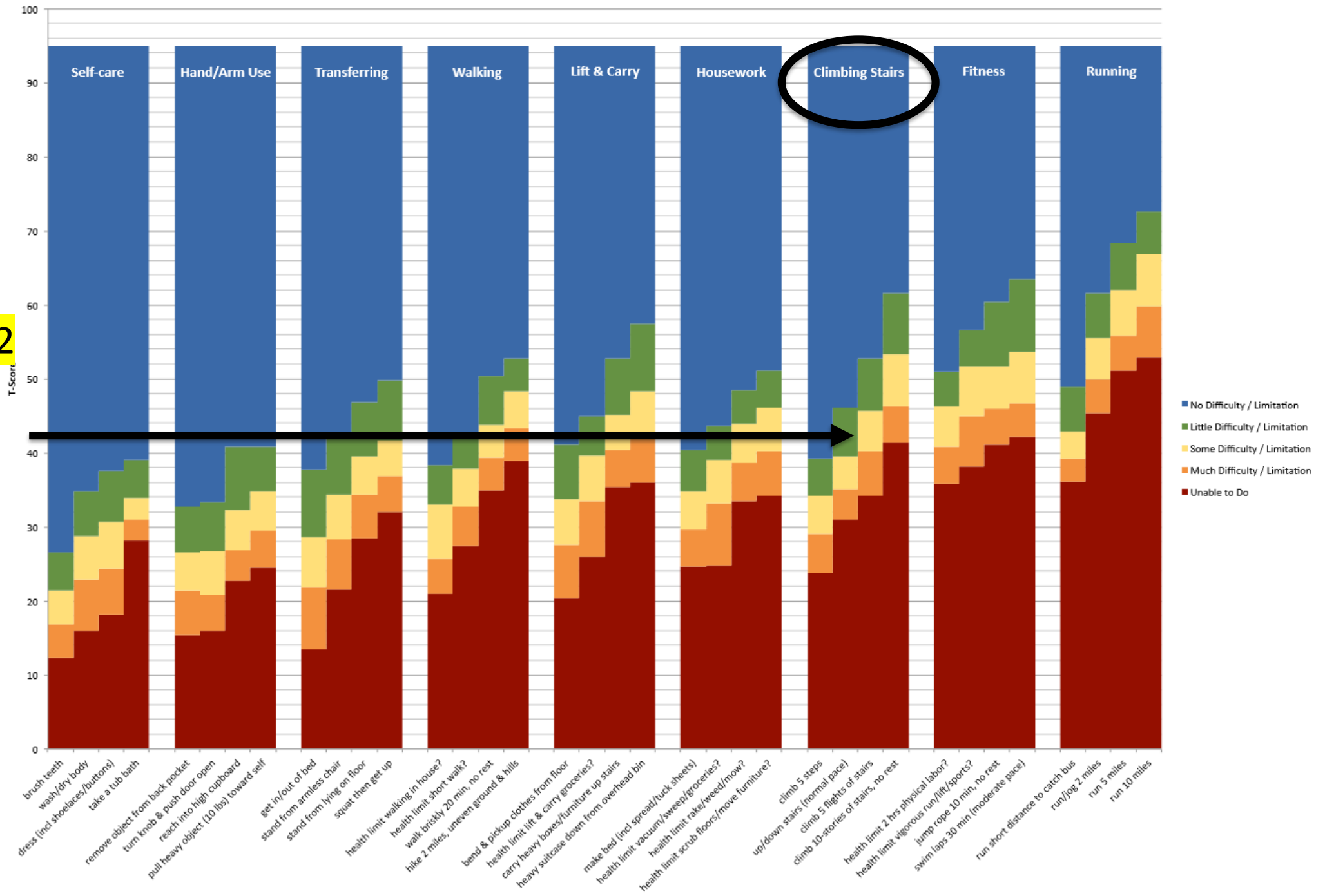




When will I be
able to go to
the basement
to do the
laundry?

Physical Function Snapshot

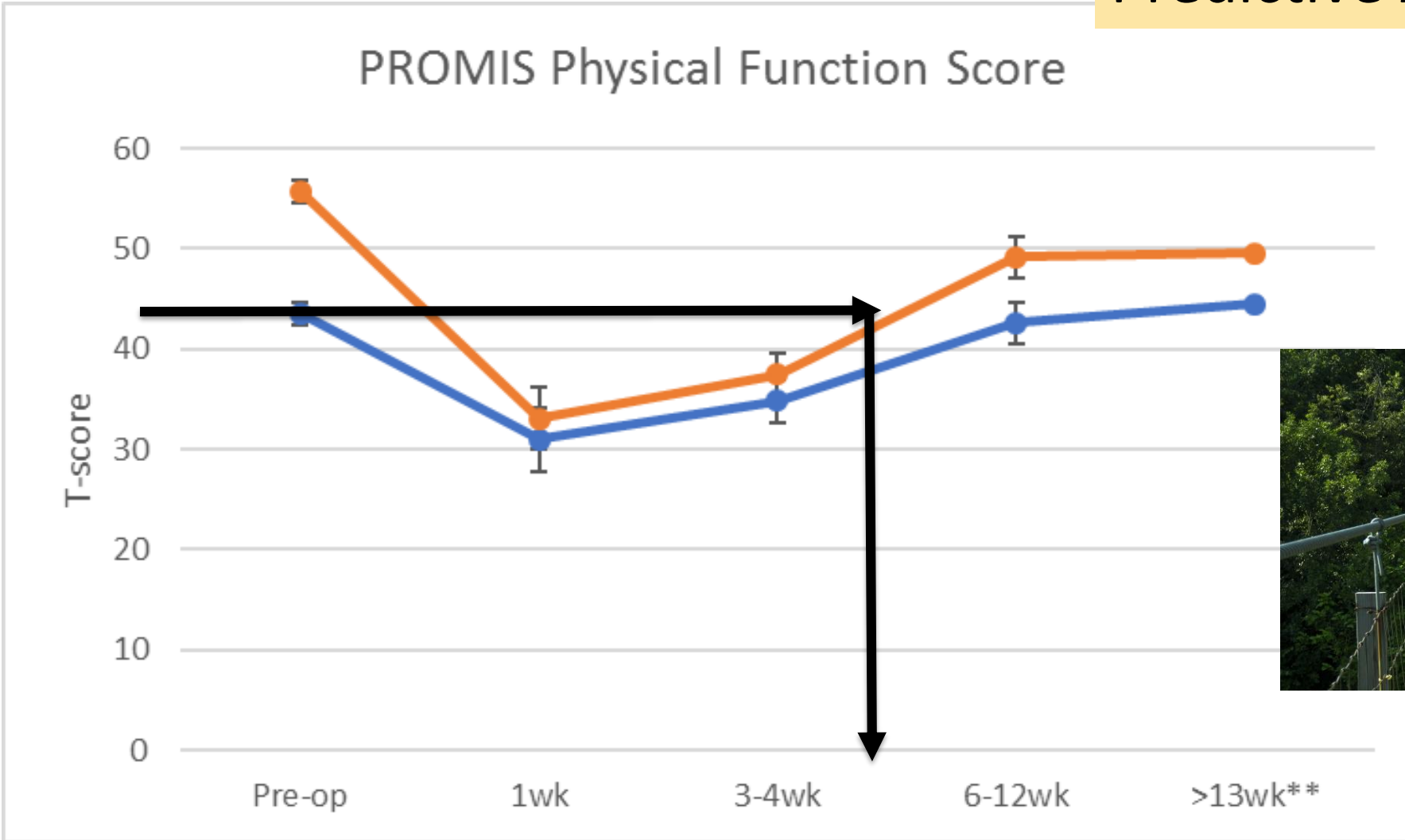
T-Score 42



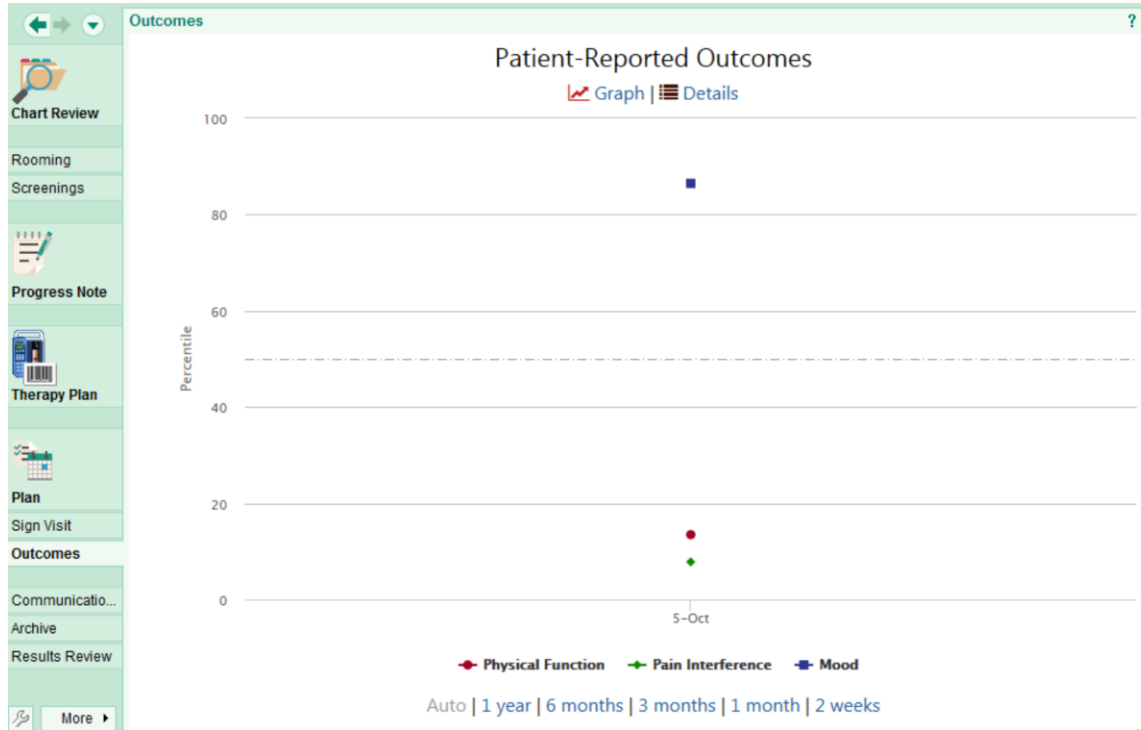


Bunion Surgery Recovery Curve

Predictive Analytics

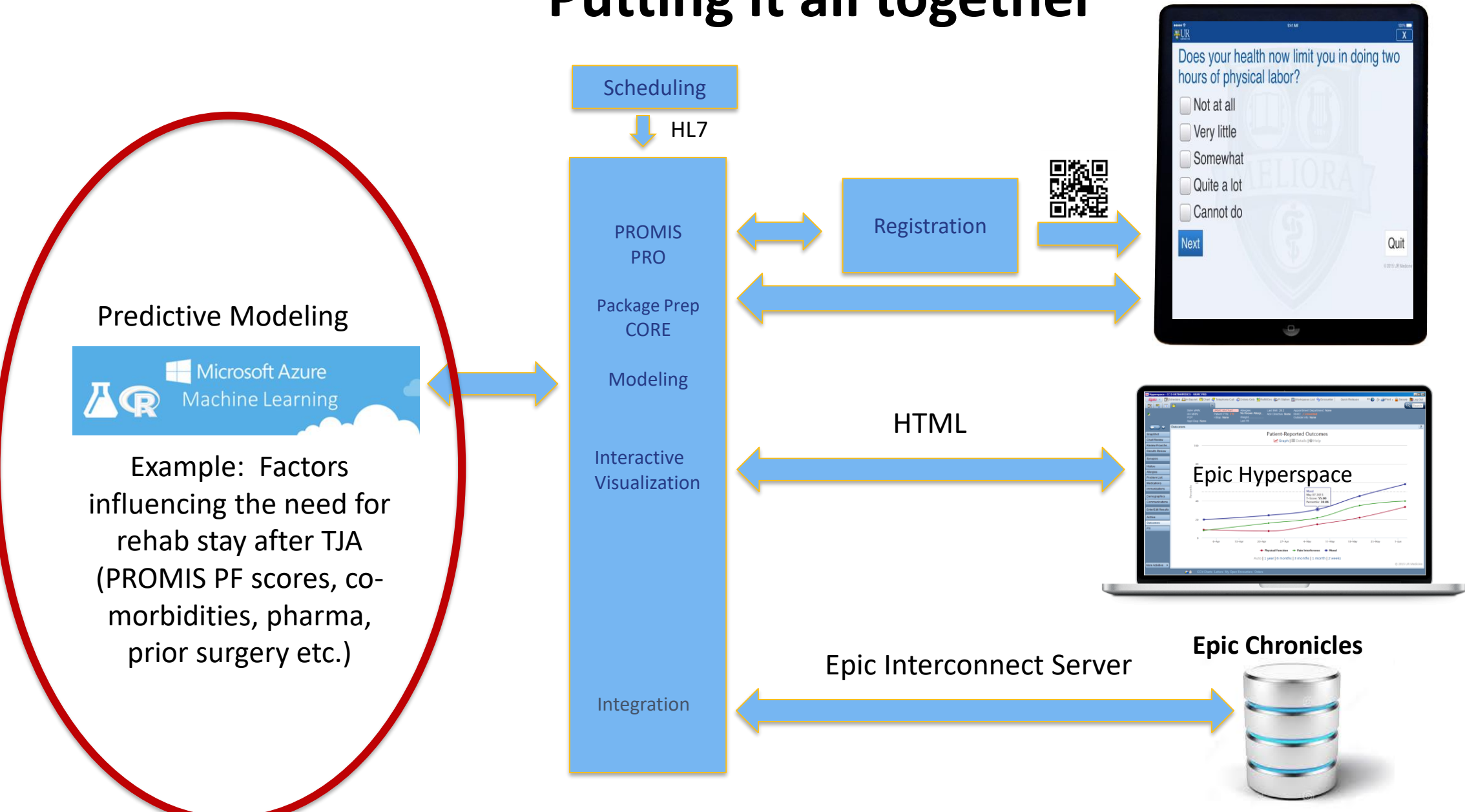


Patient's Like You....



UR VOICE: Validated Outcomes In Clinical Experience

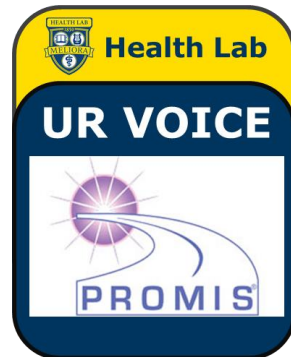
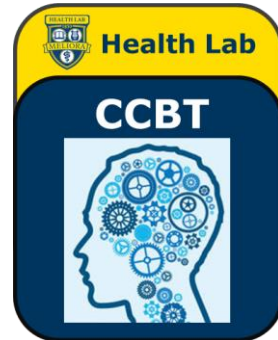
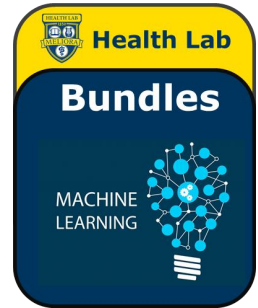
Putting it all together



Patient Generated Health Data, EHR and Innovation



WHO
Social Determinants of
Health



A MUCH More Diversified Market Than Investors Realize



SNF Placement Prediction

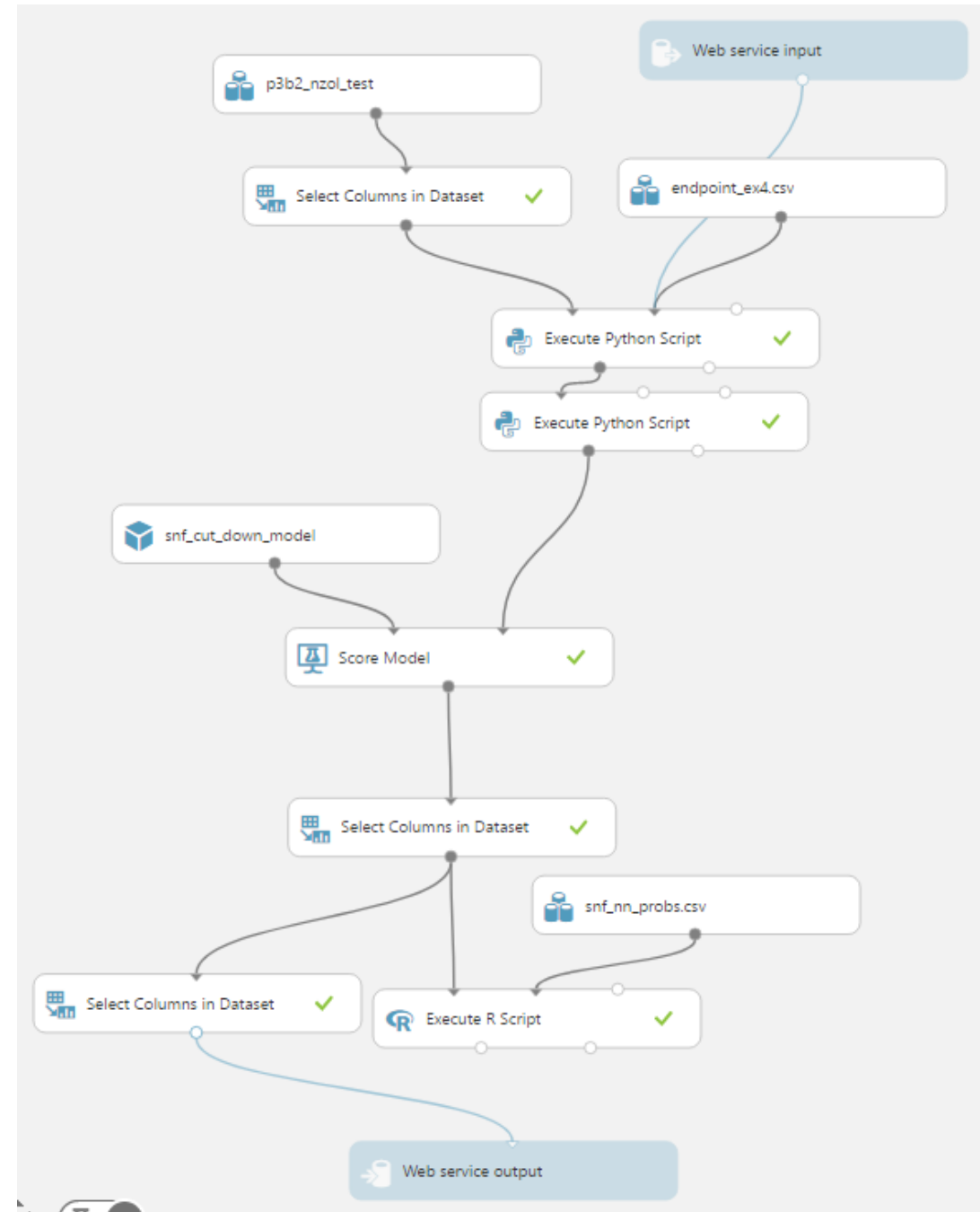
- **Goals:** Pre-operatively predict which TJR patients will end up going to a SNF
- **Benefits:**
 - Prehab interventions
 - Break preconceived notions
 - Allow SNFs and the hospital to allocate resources with more advanced notice



Application Workflow

- Pull data automatically from EHR
- Use python scripts to transform data for machine learning....
- Blahh, Blahh, Blahh
- Run model
- Output.....

Microsoft Azure ML Studio



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			5/1/...		Scheduled	Mitten, David, MD	2/22/17 - Sch	CC D ORTHOPEDICS	Mitten, David, MD
Scheduled	+	2:00 PM	Rodgers, Steven (M)	Inactive			9/1/...		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

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
Simultaneous Tarsalco (1/10/2017)

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 Info

Chief Complaint: None

Visit Information

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")	USA	BSA	2.56 m ²
		Cholesterol (mmol/L)	Tobacco	Never reviewed
		Triglycerides (mmol/L)	Smoking Status	Never assessed
		Hemoglobin A1c (%)	Insurance Status	Unknown

Epic Analytics

Chance of SNF Admission

Current Simulation

80

With patient lost to board

77

If the patient had accompanied home

54

Function: 38, Pain: 33, Mood: 33

Inputs:

Health Lab Bundles

MACHINE LEARNING

- Home
- My Home
- My Recent
- My Alerts
- My Orders
- My Documents
- My Messages
- My Tasks
- My Lists
- My Profiles
- My Settings
- My Preferences
- My Notifications
- My Security
- My Account
- My Billing
- My Insurance
- My Referrals
- My Appointments
- My Test Results
- My Imaging
- My Lab
- My Radiology
- My Pathology
- My Microbiology
- My Immunology
- My Hematology
- My Oncology
- My Cardiology
- My Pulmonology
- My Nephrology
- My Endocrinology
- My Rheumatology
- My Infectious Disease
- My Dermatology
- My Ophthalmology
- My Otorhinolaryngology
- My Orthopedics
- My Neurology
- My Psychiatry
- My Geriatrics
- My Palliative Care
- My Hospice
- My Rehabilitation
- My Physical Therapy
- My Occupational Therapy
- My Speech Therapy
- My Nutrition
- My Social Work
- My Case Management
- My Patient Education
- My Patient Support
- My Patient Advocacy
- My Patient Engagement
- My Patient Experience
- My Patient Satisfaction
- My Patient Feedback
- My Patient Surveys
- My Patient Interviews
- My Patient Focus Groups
- My Patient Advisory Boards
- My Patient Committees
- My Patient Councils
- My Patient Networks
- My Patient Communities
- My Patient Groups
- My Patient Forums
- My Patient Blogs
- My Patient Podcasts
- My Patient Videos
- My Patient Webinars
- My Patient Conferences
- My Patient Seminars
- My Patient Workshops
- My Patient Roundtables
- My Patient Panels
- My Patient Keynotes
- My Patient Guest Lectures
- My Patient Panel Discussions
- My Patient Q&A Sessions
- My Patient Press Conferences
- My Patient News Conferences
- My Patient Media Briefings
- My Patient Media Tours
- My Patient Media Interviews
- My Patient Media Appearances
- My Patient Media Releases
- My Patient Media Statements
- My Patient Media Comments
- My Patient Media Reactions
- My Patient Media Coverage
- My Patient Media Mentions
- My Patient Media Inquiries
- My Patient Media Requests
- My Patient Media Approvals
- My Patient Media Agreements
- My Patient Media Contracts
- My Patient Media Releases
- My Patient Media Statements
- My Patient Media Comments
- My Patient Media Reactions
- My Patient Media Coverage
- My Patient Media Mentions
- My Patient Media Inquiries
- My Patient Media Requests
- My Patient Media Approvals
- My Patient Media Agreements
- My Patient Media Contracts

David, MD for OFFICE APPT

Preview and Print/MS Prep for Surgery Active Referred Co-Managed R23 Normal I-STOP ACR Sited Daily Med List LDAS Open Orders Joint Access RT Decided by S

Try the Widescreen View

There is a new, stable way for you to finish your visit documentation with fewer clicks and less scrolling. Learn More → Try It

My Recent

No data found

My Orders

No data found

Vital Information

Chief Complaint: Acute/Chronic Pain in Right Hip

History: None

Other History: Orthopedic Surgery: None

Care Everywhere Outside Records (View Only)

This patient has no Care Everywhere information.

My Recent Outside Record

Vital Signs

New Set of Vitals

Vitals	2/21/17 10:23AM	One Vitals	
Weight	158.8 kg (350 lb)	BMI	47.47 kg/m ²
Height	1.829 m (6ft)	USA	2.84 m ²
		Tobacco	
		Smoking Status	Never Assessed
		Smoking Status	Unknown
		Smoking	Never reviewed

Epic Analytics

Chance of SNF Admission

Dynamic Simulation

46

If the patient lost 15 pound

44

If the patient find accommodation home

31

Function: 22, Pain: 59, Mood: 15

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 the need to complete the PRO
- Importance of Data not understood by all Providers
- Lack of Behavioral Health Specialist Support

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!

Summary

1. Patient is King
2. Patient Reported Outcomes, Patient Generated and EHR data are CRITICAL
 1. Preventative Health Strategies
 2. Maximize Healthy Behavior
 3. Assess Treatment Response
 4. Appropriately Allocate Healthcare Resources
3. UR is leading the field



Thank You!!

