

Patient-reported outcomes in clinical care— are we ready?

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OUTLINE

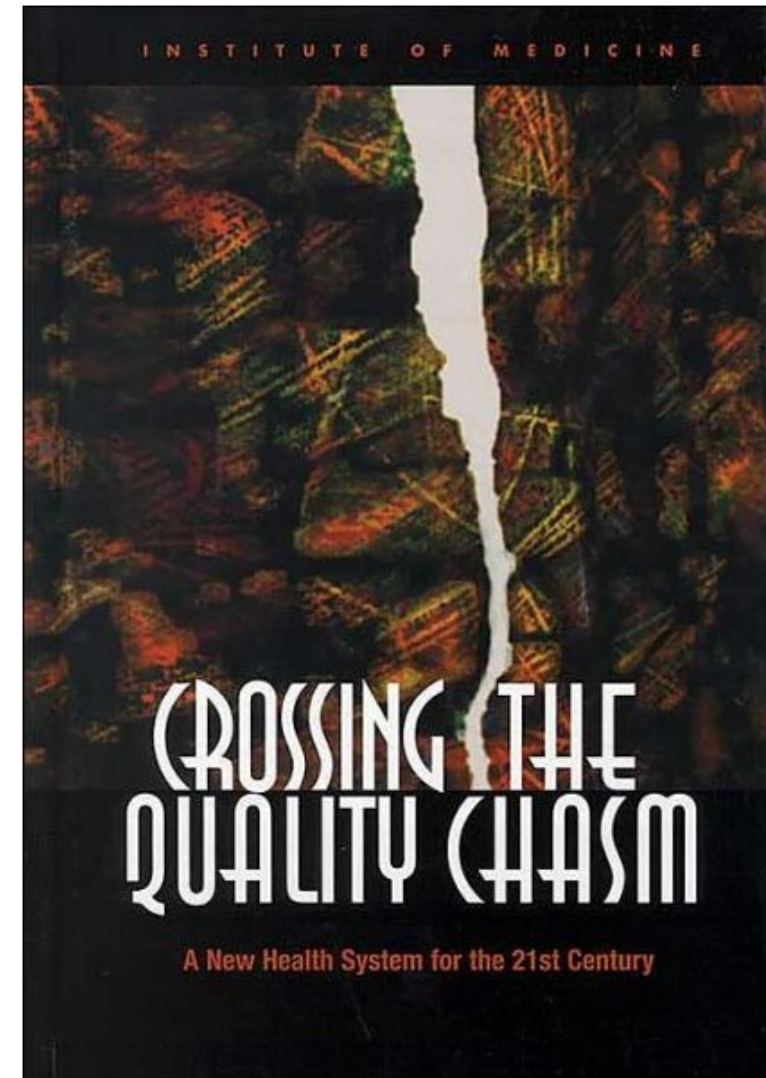
- Why patient-reported outcomes?
- How can patient-reported outcomes be leveraged in clinical care?
 - Resource use and cost
 - Identifying individuals for intervention
 - Assessing outcomes of care
- What impacts self-reported outcomes?

Why Patient-Reported Outcomes

$$\begin{array}{c} \mathbf{V} \\ \text{(VALUE)} \end{array} = \frac{\begin{array}{c} \mathbf{Q} \\ \text{(QUALITY)} \end{array}}{\begin{array}{c} \mathbf{\$} \\ \text{(COST)} \end{array}}$$

Q (QUALITY)

- Safe
- Effective
- Patient-centered
- Timely
- Efficient
- Equitable



PATIENT REPORTED OUTCOMES

...any report of the status of a patient's health condition that comes directly from the patient...

(i.e., without interpretation by a clinician or anyone else)

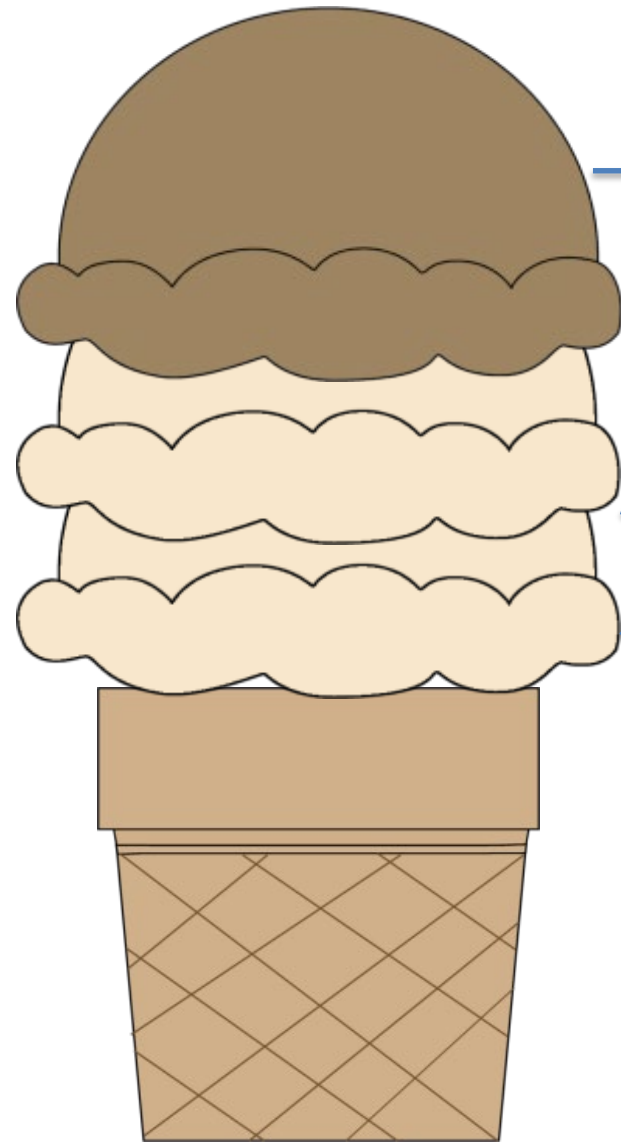
PATIENT REPORTED OUTCOMES ARE NOT NEW

- Dartmouth Cooperative Functional Assessment (COOP) Charts (1990s)
 - 7 domains, single question, illustrations
- RAND Medical Outcomes Study (1990s)
- Oncology use of PROs (2000s)

CHALLENGES MEASURING PATIENT REPORTED OUTCOMES

- Burden on the patient and the office – time, effort, and cost
- Collecting data can reduce clinical productivity
- Collecting unnecessary information
- Validation concerns

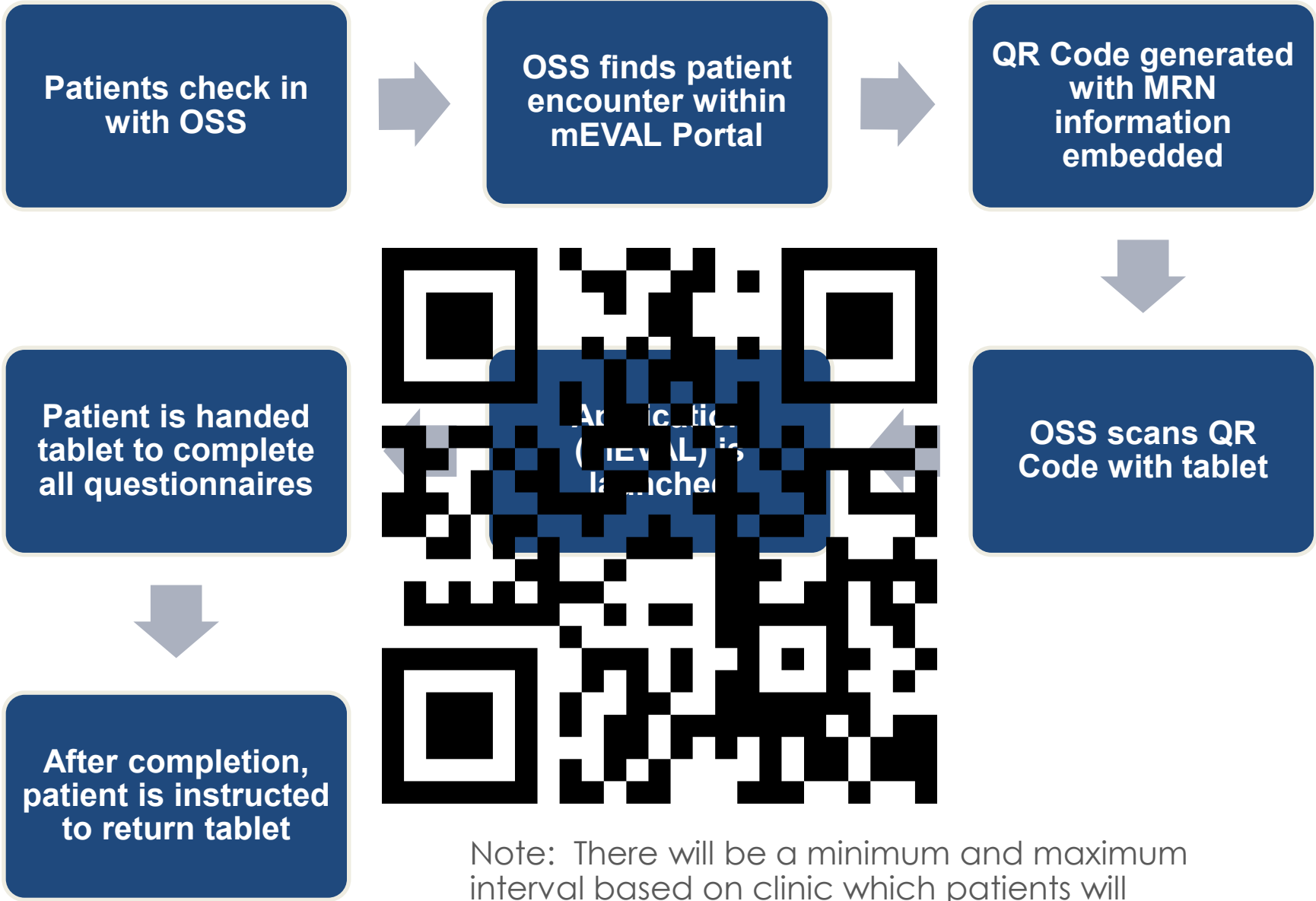
UTAH IMPLEMENTATION



Bring out the Ice Cream Truck!

- Allow for specialty
Every Clinic gets the same two specific instruments
"flavor"
 - Clinic intervals can be determined within guidelines
- Clinics are able to choose an additional depression PROMIS
- PROMIS Physical Function

CLINIC WORKFLOW



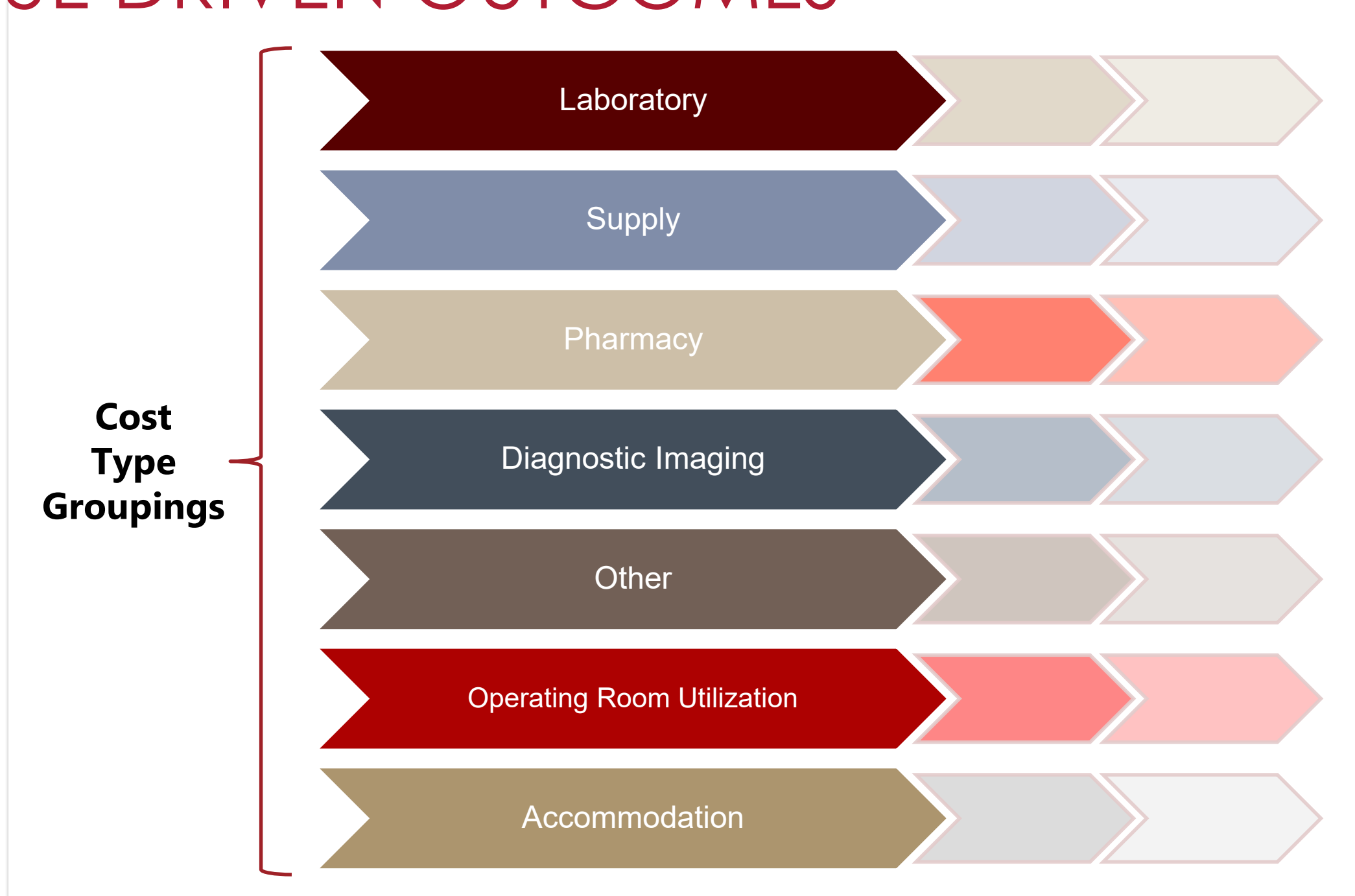
Note: There will be a minimum and maximum interval based on clinic which patients will complete the baseline health assessments

How can patient-reported outcomes be leveraged in clinical care?

THREE EXAMPLES...

- Resources use and cost
- Identifying individuals for intervention
- Assessing the outcomes of care

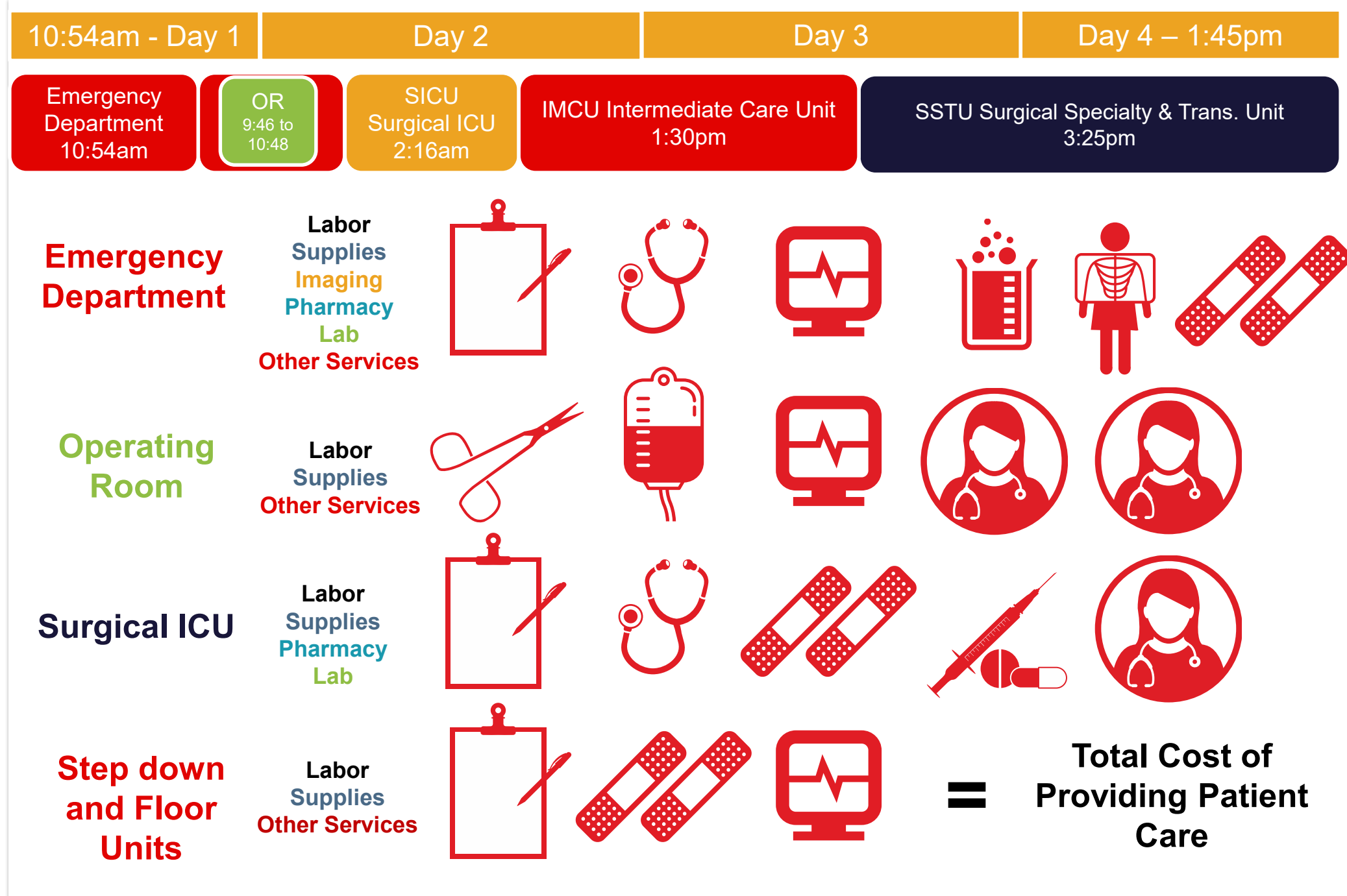
VALUE DRIVEN OUTCOMES



WE FIGURED OUT OUR COSTS



APPENDECTOMY



CAN PROs HELP US UNDERSTAND COST VARIATION?



Demographics

	Total (N=93,687)	High Physical Function (N=76,350)	Low Physical Function (N=16,033)	High Depression (N=4,241)	Low Depression (N=59,179)
Age [Mean (median)]	48 (48)	46.5 (46)	54.6 (56)	45.1 (44)	48.4 (48)
Sex (Female)	53755 (57%)	43548 (57%)	9505 (59%)	2771 (65%)	34962 (59%)
Race					
White or Caucasian	81225 (87%)	66219 (87%)	13898 (87%)	3559 (84%)	51373 (87%)
Asian	1927 (2%)	1700 (2%)	202 (1%)	64 (2%)	1356 (2%)
Black/African American	1249 (1%)	1000 (1%)	225 (1%)	80 (2%)	688 (1%)
Other	9268 (10%)	7431 (10%)	1708 (11%)	534 (12%)	5690 (10%)
Ethnicity: Hispanic/Latino	6582 (7%)	5262 (7%)	1216 (8%)	422 (10%)	4132 (7%)
Marital status					
Married	55948 (60%)	45415 (61%)	8777 (55%)	1975 (47%)	36800 (62%)
Single	26562 (28%)	22298 (29%)	3904 (24%)	1499 (35%)	15631 (26%)
Divorced/Other	11177 (12%)	7637 (10%)	3352 (21%)	763 (19%)	6676 (12%)
Employed	92406 (99%)	75272 (99%)	15843 (99%)	4164 (98%)	58271 (99%)
Anxiety diagnosis	26430 (28%)	19923 (26%)	6086 (38%)	2672 (63%)	16513 (28%)
Substance diagnosis	16117 (17%)	11520 (15%)	4325 (27%)	1393 (33%)	9693 (16%)
Mood diagnosis	29577 (32%)	21601 (28%)	7437 (46%)	3063 (72%)	17967 (30%)
Elixhauser Score Mean	0.4	0.4	0.6	0.1	0.6
# of clinic visits Median (IQR)	2 (0,5)	2 (0, 4)	2 (0, 6)	3 (0, 7)	2 (0, 5)
Inpatient admissions	12049 (13%)	8096 (11%)	3813 (24%)	694 (16%)	6846 (12%)

Hospital Admissions and PROMS Physical Function and Depression

	Hazard Ratio	95% CI	P-value
Physical Function (Continuous)	1.05	1.042 – 1.047	<0.01
Physical Function (1.5 SD below population average)	2.03	1.93 – 2.15	<0.01
Depression (Continuous)	1.005	1.002 – 1.008	<0.01
Depression (1.5 SD over population average)	1.12	1.034 – 1.218	<0.01

Median Hospital Costs and PROMIS Physical Function and Depression

	Estimate	Standard Error	P-value
Physical Function (Continuous)	\$98.63	\$7.64	<0.001
Physical Function (1.5 SD below population average)	\$2787.54	\$381.54	<0.001
Depression (Continuous)	\$31.27	\$10.20	0.002
Depression (1.5 SD over population average)	\$636.58	\$455.64	0.16

IDI



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SCREENING FOR DEPRESSION

- Depression screening has traditionally been ad hoc
- So what does standardized screening add?

SOME DEFINITIONS

- **Above threshold for depression:**
 - PROMIS Depression ≥ 65
 - PHQ-9 ≥ 15
- **Diagnosed with depression:** ICD-10 for depression in problem list, billing diagnosis, or encounter diagnosis
- **Treated for depression:** Anti-depressant medications on active medication list

235,716 unique ambulatory patients (Sept. 2016 – July 2017)

PHQ-9 RESULTS

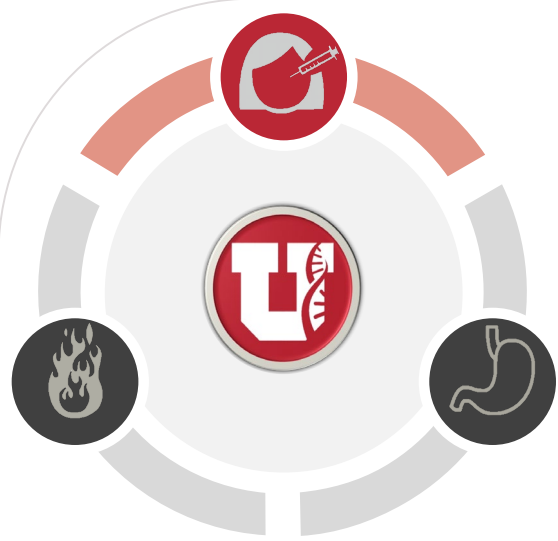
Unique Patients	<u>Primary Care</u>	<u>Psychiatry</u>	<u>Specialty</u>
# Completed	3,846	501	2,889
# Above Threshold	1,635	191	877
% Above threshold	42.51%	38.12%	30.36%

mEVAL RESULTS (PROMIS)

Unique Patients	<u>Primary Care</u>	<u>Psychiatry</u>	<u>Specialty</u>
# Completed	7,833	1,127	33,355
# Above Threshold	530	371	2,013
% Above threshold	6.77%	32.92%	6.04%

Category	Category Total	mEVAL (%)	PHQ-9 (%)
Above threshold but not diagnosed	1,641	1,244 (75.81%)	397 (24.19%)
Above threshold but not being treated with medications	1,848	1,322 (71.54%)	526 (28.46%)
Identified above threshold, not on meds, not diagnosed	962	820 (85.24%)	142 (14.76%)

*All data is from September 2016 through July 2017



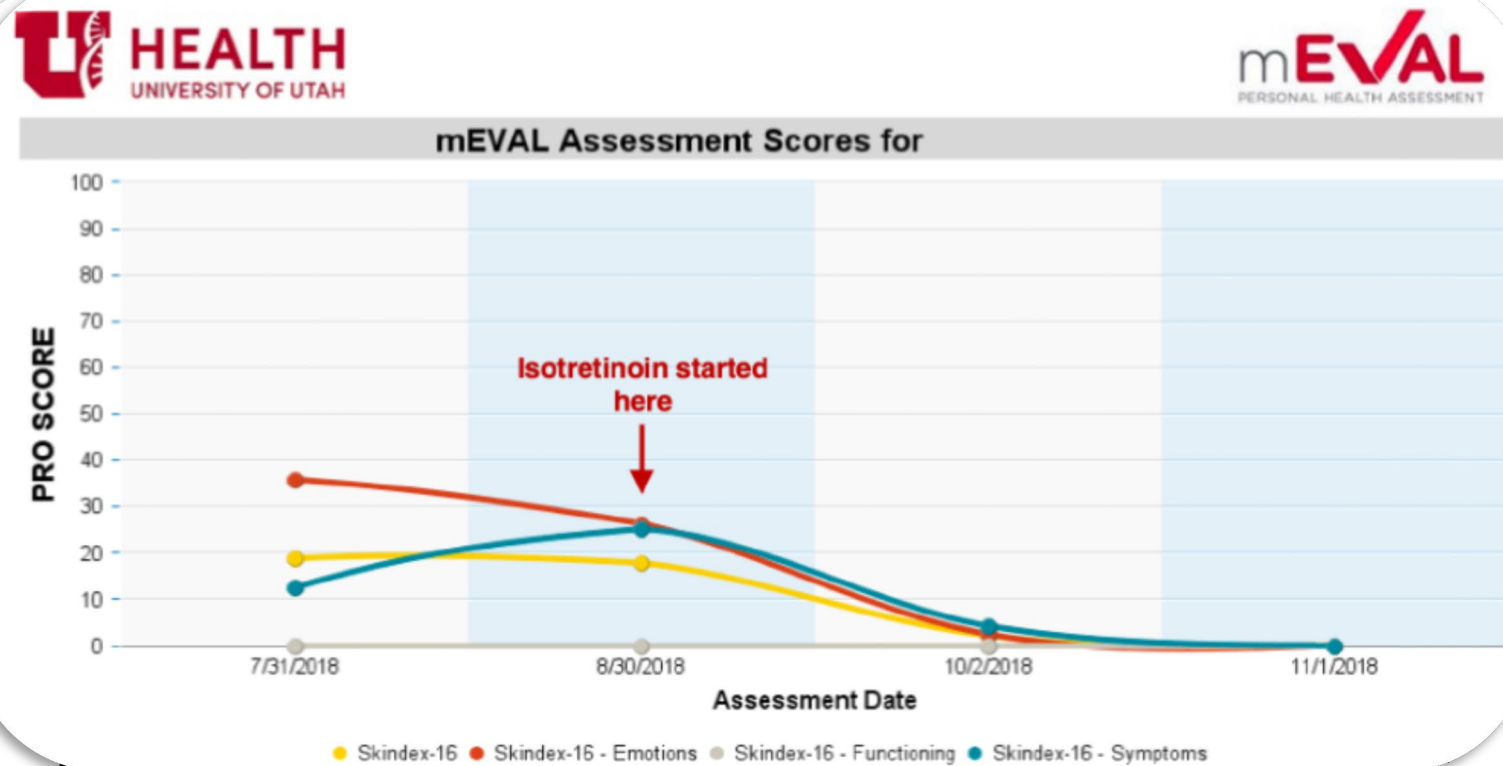
18 year old female presented for a Total Body Skin Examination

No Family History of Skin Cancer reported

A few very benign looking moles on her abdomen were noted on examination



Figure 1*

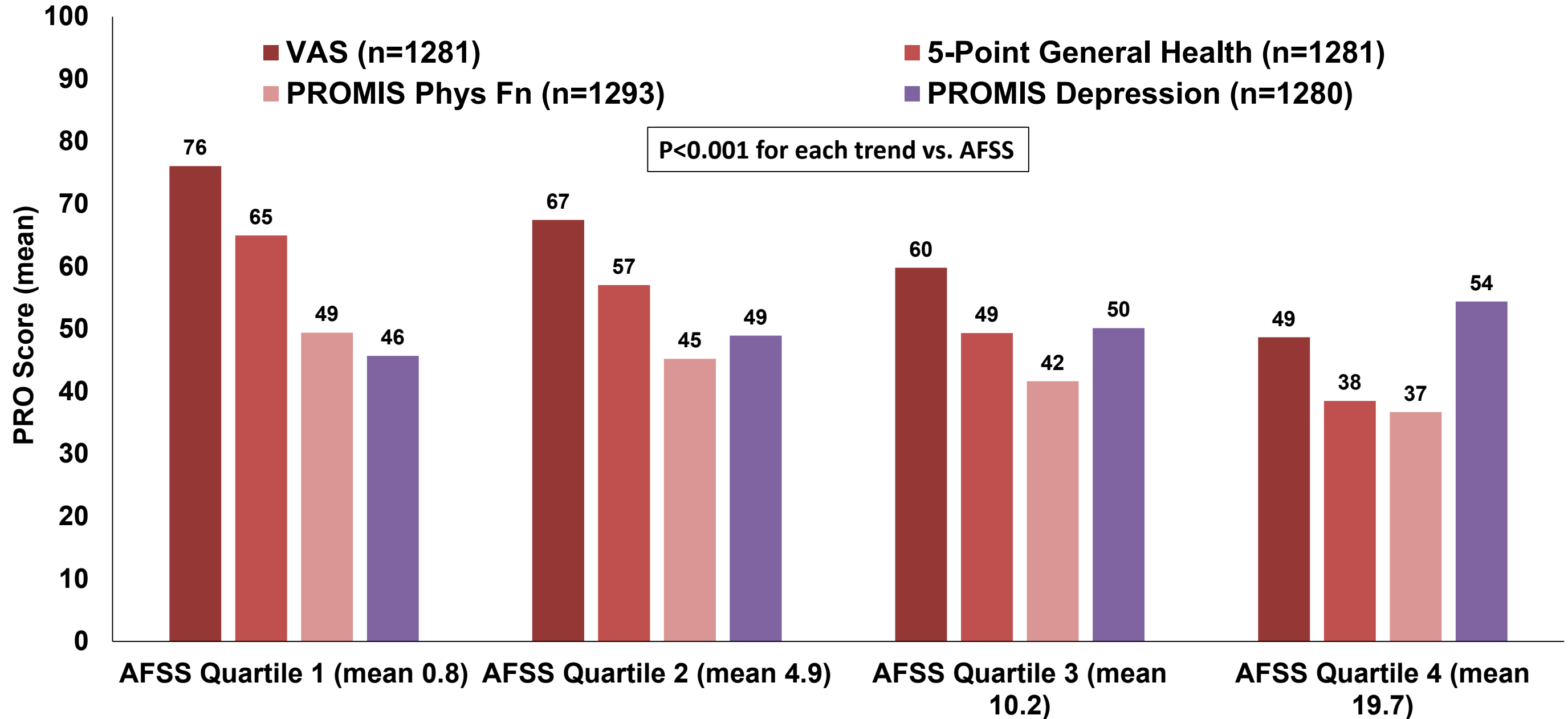


Skindex – 16: Emotions	36	26	2	0
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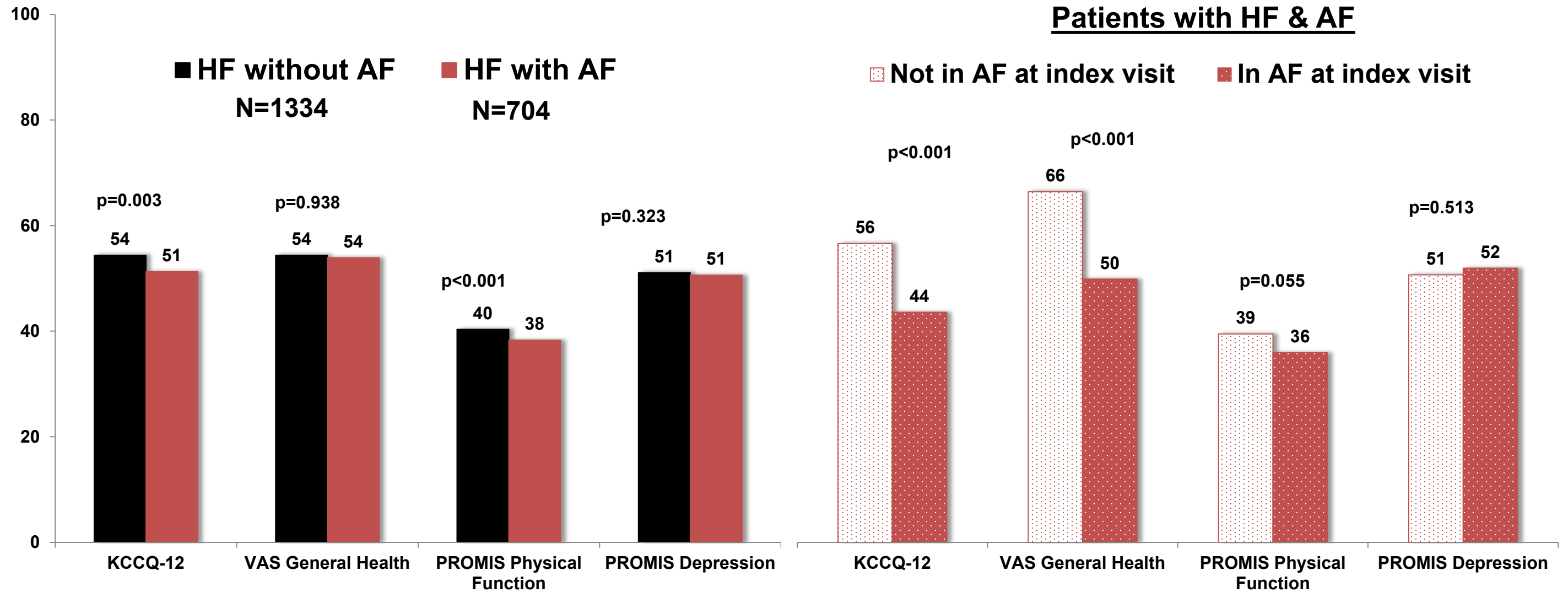
prescribed for Acne

* For illustration purposes only

SAME-DAY GENERIC PROS BY AFSS GROUP

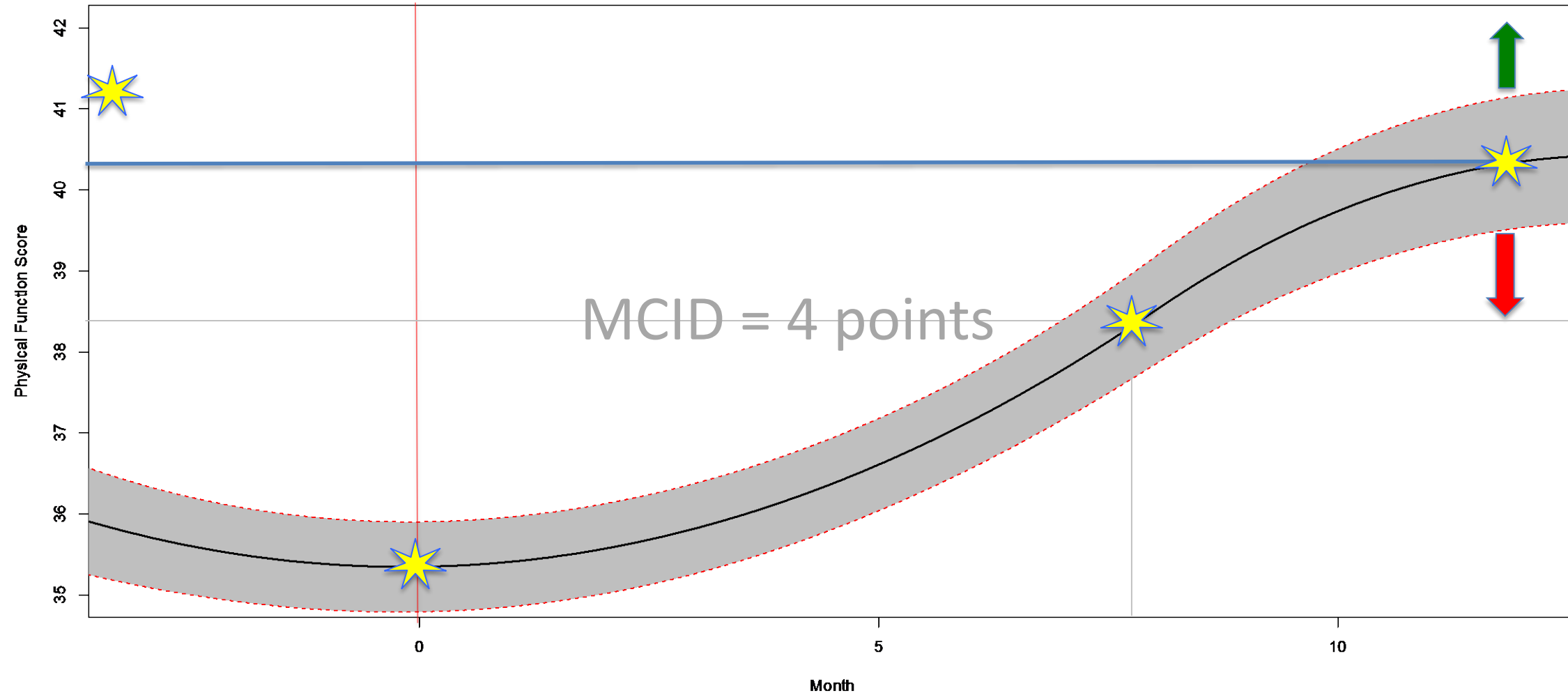


PROS IN HF & AF



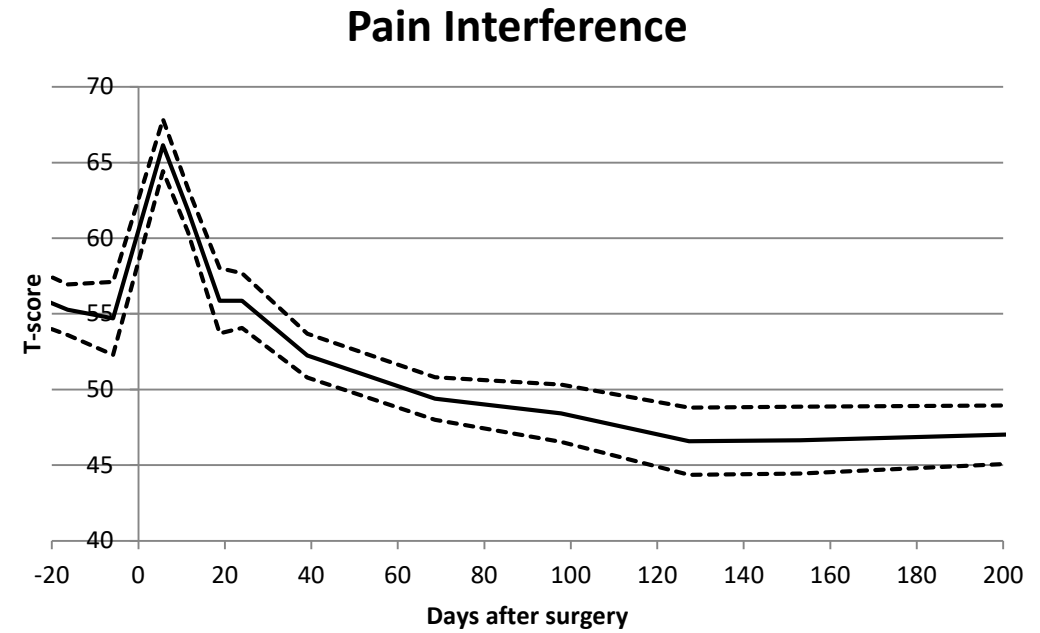
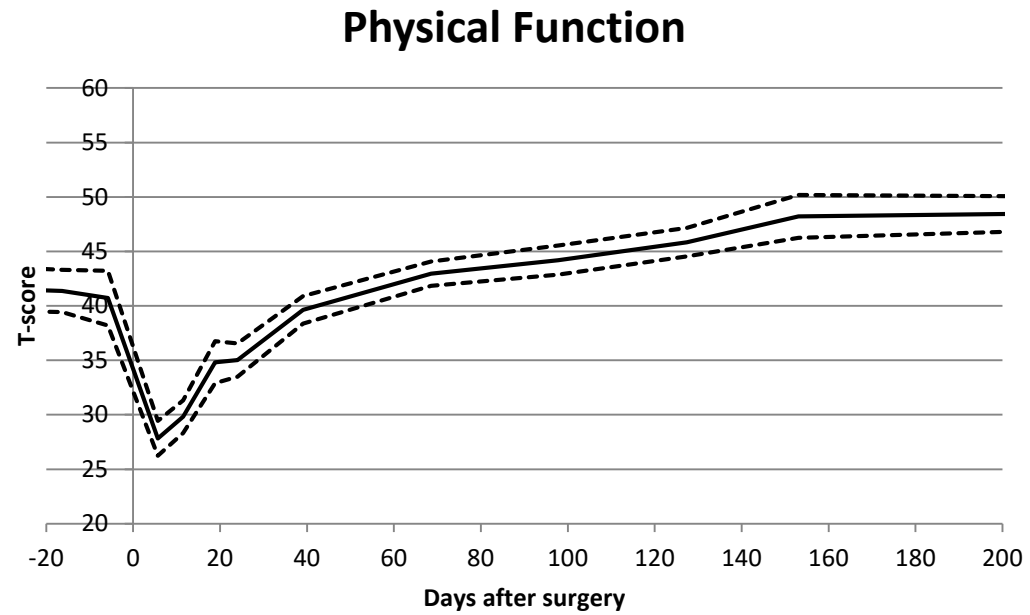
ASSESSING THE BETTER PAYS OF CARE

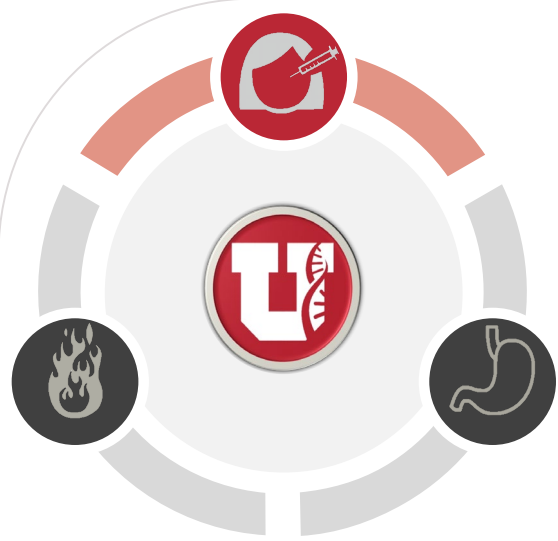
BENCHMARKING



Data from 5,659 Measures in 870 Lumbar Spine Surgery Patients
before and after treatment

403 ACL PATIENTS; 6 SURGEONS





16 year old female presented for
Acne follow-up

Significant improvement was noted with residual scattered pustules on her cheeks

Treatment plan **before PROs** –
Taper/ stop the 3 month Oral Antibiotics regimen (Tretinoin, QHS), and switch to topical



Figure 1*



	DLQI/ PROMIS	
PRO mEVAL – Dermatology	5/9/2017	8/15/2017
PROMIS Depression	64	-
PROMIS Physical Function	57	-
SkinDex – 16	3	28
SkinDex – 16: Emotions	11	48
SkinDex – 16: Symptoms	9	17
SkinDex – 16: Functioning	7	10

The patient was more bothered by her Acne than before

Treatment plan **after PROs** –
Continue the aggressive regimen for 2 months and reassess

* For illustration purposes only

What if physicians self-replenished outcomes?

Funding: R01 AT007262 (Hess PI)

METHODS: STUDY DESIGN

- Sampling strategy
 - Age \geq 50 years
 - 50% men/50% women
 - 70% White/30% Black
 - 50% high/ 50% low subjective well-being
- Enrollment
 - Primary care clinics
 - Community and senior centers
 - Barber shops

METHODS: QUESTIONNAIRES

- Annually for 3 years
- Subjective well-being (Diener temporal subjective well-being)
 - Participants reported past, present, and future subjective well-being annually
- Sociodemographic characteristics
- Life transitions

DEFINING TRANSITIONS: ECONOMIC

- Change in difficulty paying for basics
- Change in employment status
- Change in partner's employment status

DEFINING TRANSITIONS: SOCIAL

- Marriage/cohabitation
- Divorce/Separation
- Death of spouse/partner/close friend/
loved one
- Assumption or loss of caregiving
- Children leaving or returning

DEFINING TRANSITIONS: HEALTH

- Self-reported development or worsening of:
 - Arthritis
 - Visual Impairment
 - Hearing Impairment
 - Hypertension
 - Ischemic Heart Disease
 - COPD
 - Diabetes

RATING TRANSITIONS AS POSITIVE OR NEGATIVE

- Participants self-rated social and economic transitions as positive or negative
- Health transitions were assumed to be negative

METHODS: ANALYSIS

- Longitudinal, multivariate models—
triplicate outcomes of past, present and
future subjective well-being
- Additional models adjusted for race and
gender including the interactions with
transition
- Separate models fit for each transition

OVERALL BURDEN FOR AN INDIVIDUAL

- Pick two people (A and B)—one has a transition and one does not. Otherwise they are the same.
- Each has an average subjective well-being score over 3 years
- We compare A's average subjective well-being to B's average subjective well-being

DIFFERENCES BETWEEN THOSE WITH AND WITHOUT TRANSITIONS IN A GIVEN YEAR:

- Pick up 2 people (A and B)—one has transition in that year, one does not. Otherwise they are the same.
- We subtract A's subjective well-being at time-t from A's average subjective well-being and do the same with B's
- We compare the difference in A's subjective well-being to the difference in B's subjective well-being

RESULTS: POPULATION

634 (80%) of enrollees completed baseline questionnaires

Age (mean)	63 years
Female	60%
Married	42%
Black	30%
Economic transition (≥ 1)	54%
Social transition (≥ 1)	68%
Health transition (≥ 1)	64%

RESULTS: OVERALL BURDEN FOR AN INDIVIDUAL (AVERAGE OF PERSON A vs. AVERAGE OF PERSON B)

	Transition		
	Economic	Social	Health
Subjective Well-Being Temporal Perspective	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Past	-4.68 (<0.001)	-4.83 (<0.001)	-3.49 (<0.001)
Present	-7.75 (<0.001)	-6.61 (<0.001)	-6.23 (<0.001)
Future	-5.24 (<0.001)	-4.55 (<0.001)	-4.35 (<0.001)

RESULTS: DIFFERENCES BETWEEN THOSE WITH AND WITHOUT TRANSITIONS IN A GIVEN YEAR (DIFFERENCE OF PERSON A vs. DIFFERENCE OF PERSON B)

	Transition		
Subjective Well-Being Temporal Perspective	Economic	Social	Health
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Past	-0.80 (0.03)	-0.17 (0.56)	-0.16 (0.61)
Present	-0.92 (0.01)	-0.48 (0.08)	-0.12 (0.70)
Future	-0.70 (0.03)	-0.14 (0.57)	-0.34 (0.20)

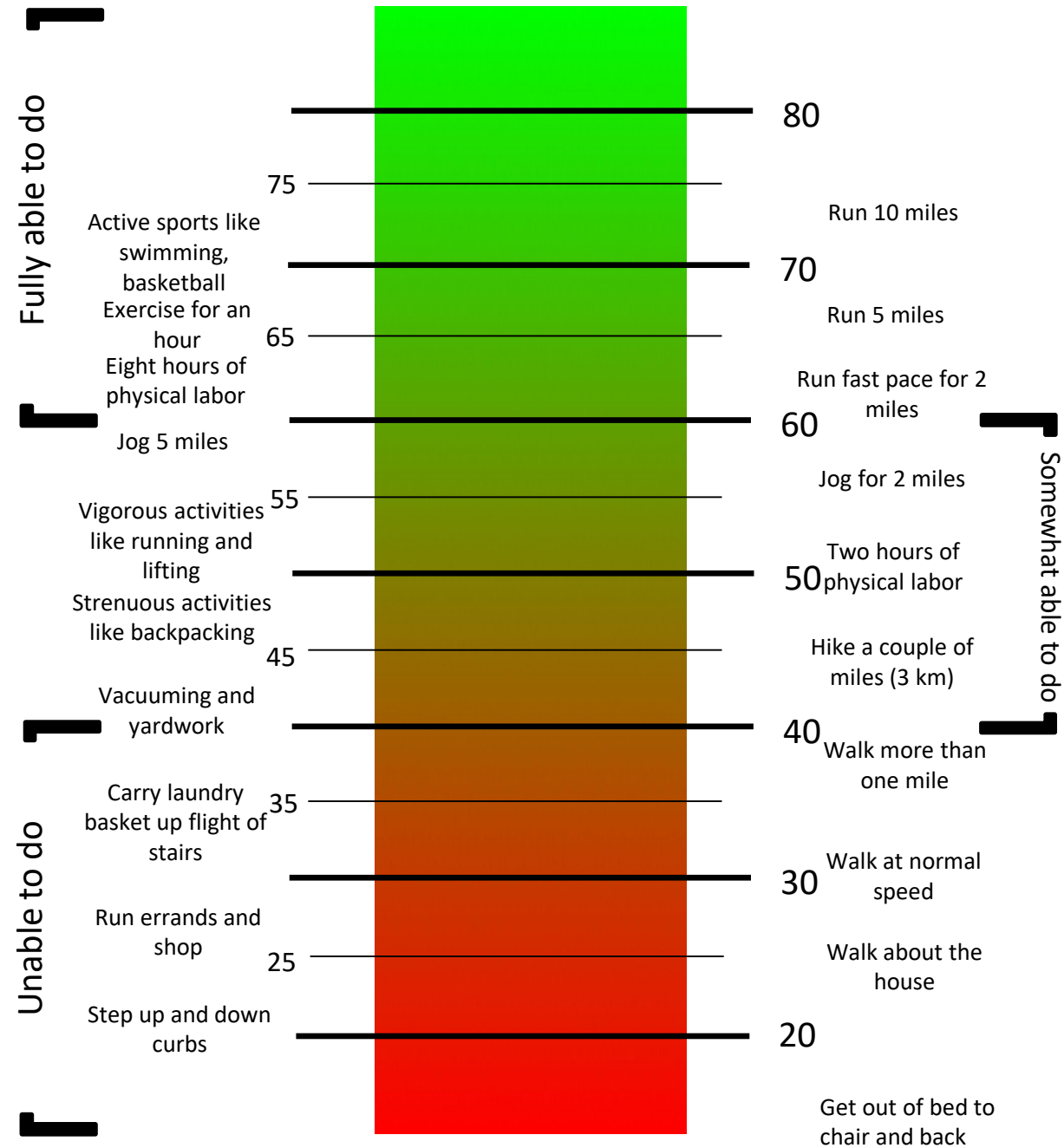
CONCLUSIONS

- Economic, social, or health transitions were associated with decreased subjective well-being
- Compared to subjects without transitions in that year:
 - Social or health transitions were not associated with change in subjective well-being
 - Economic transitions were associated with a decline in subjective well-being

SO WHERE DOES THAT LEAVE US

- PROs can help us:
 - Understand variation
 - Identify individuals for intervention
 - Evaluate change after intervention
 - But...Respond to economic and social change as well as health change

PROMIS PHYSICAL FUNCTION





“We’re ready to begin the next phase of keeping things exactly the way they are.”



Let's Talk!