Unlocking Patient Reported Outcomes to Advance Quality, Experience, and Decision Making

PRAKASH JAYAKUMAR, M.D., Ph.D.
Assistant Professor of Surgery and Perioperative Care
Director of Value-based Health Care & Outcome Measurement
University of Texas at Austin, Dell Medical School
Visiting Professor of Orthopaedic Surgery – Duke University

Optum Health Education
Grand Rounds 2023

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Disclosure Statement

Dr. Prakash Jayakumar has no financial relationships to disclose.

Learning Objectives

- Define the value provided by Patient Reported Outcome (PRO) measures and ways to unlock opportunities using PROs at the patient, team, and systems level

- Establish tactics to deliver high value patient centered care through shared decision-making using advanced patient decision aids driven by PRO measures

- Outline a strategic approach to integrating PRO measures in your health system and preparing for PRO-based performance measurement and payment

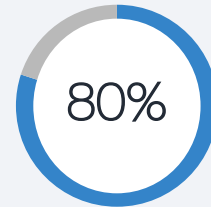# Patient Outcomes Data Fit for Today's (Musculoskeletal) Patient

Patient Profile

67%

- Pain & whole person impact
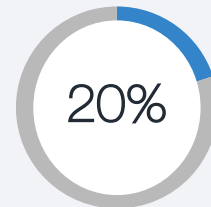- Up to 2/3 psychologic distress
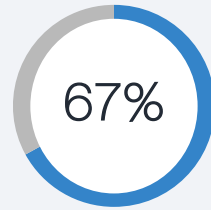
Condition Profile

80%

- 80% by orthopedic surgeons
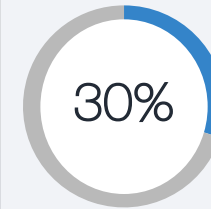- Procedural specialists treating complex and chronic conditions

Care Profile

20%

- Dominance of in-person care vs remote or virtual care (20%)
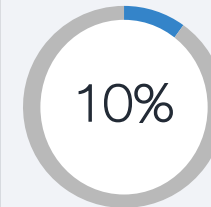- Lack of comprehensive, team-based integrated care

Treatment Profile

30%

- 30% spend on low value Rx
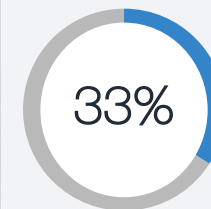- Poor compliance with evidence

Health Equity Lens

10%

- High variation in care
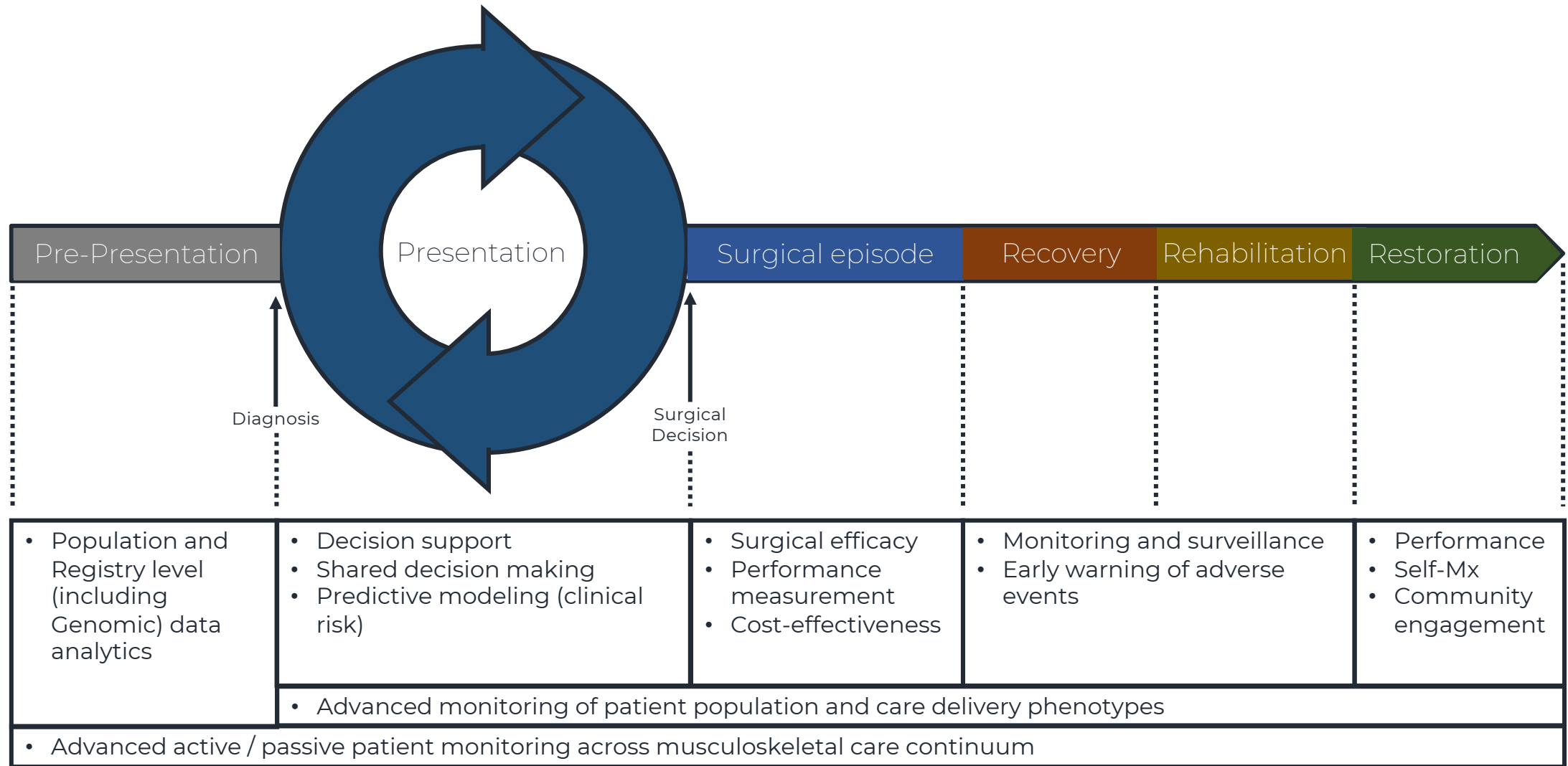- 10% have access to evidence-based non-operative strategies

Decision Support

33%

- Expectation:outcome mismatch and appropriateness
- Higher dissatisfaction/clinical equipoise e.g., 33% in TJR

Musculoskeletal Conditions
costly, disabling, prevalent, growing

Developed by RC Mather, P Jayakumar

Patient Outcomes Data Fit for Tomorrow's (Musculoskeletal) Care

Pre-Presentation	Presentation	Surgical episode	Recovery	Rehabilitation	Restoration

Diagnosis

Surgical Decision

• Population and Registry level (including Genomic) data analytics	• Decision support • Shared decision making • Predictive modeling (clinical risk)	• Surgical efficacy • Performance measurement • Cost-effectiveness	• Monitoring and surveillance • Early warning of adverse events	• Performance • Self-Mx • Community engagement

• Advanced monitoring of patient population and care delivery phenotypes

• Advanced active / passive patient monitoring across musculoskeletal care continuum

Why are we Measuring Patient Reported Outcomes (PROs)?

PREPARE — To understand patient stories ('WHO' we are treating) and identify modifiable factors associated with conditions and health outcomes ('WHAT' we are treating)

PERFORM — To enable clinical decision support and optimize shared decision-making to facilitate the 'right' decisions at the 'right' time for the 'right' patient

PERFECT — To track health outcomes for improving care delivery and identify populations and opportunities for payment & performance innovation

BIOMEDICAL MODEL OF CARE

SOCIO-DEMOGRAPHIC DATA	PATIENT GENERATED HEALTH DATA
CLINICAL DATA	IMAGING DATA
LIFESTYLE FACTORS	GENETIC DATA
ACTIVITY MONITORING	PHYSIOLOGICAL DATA

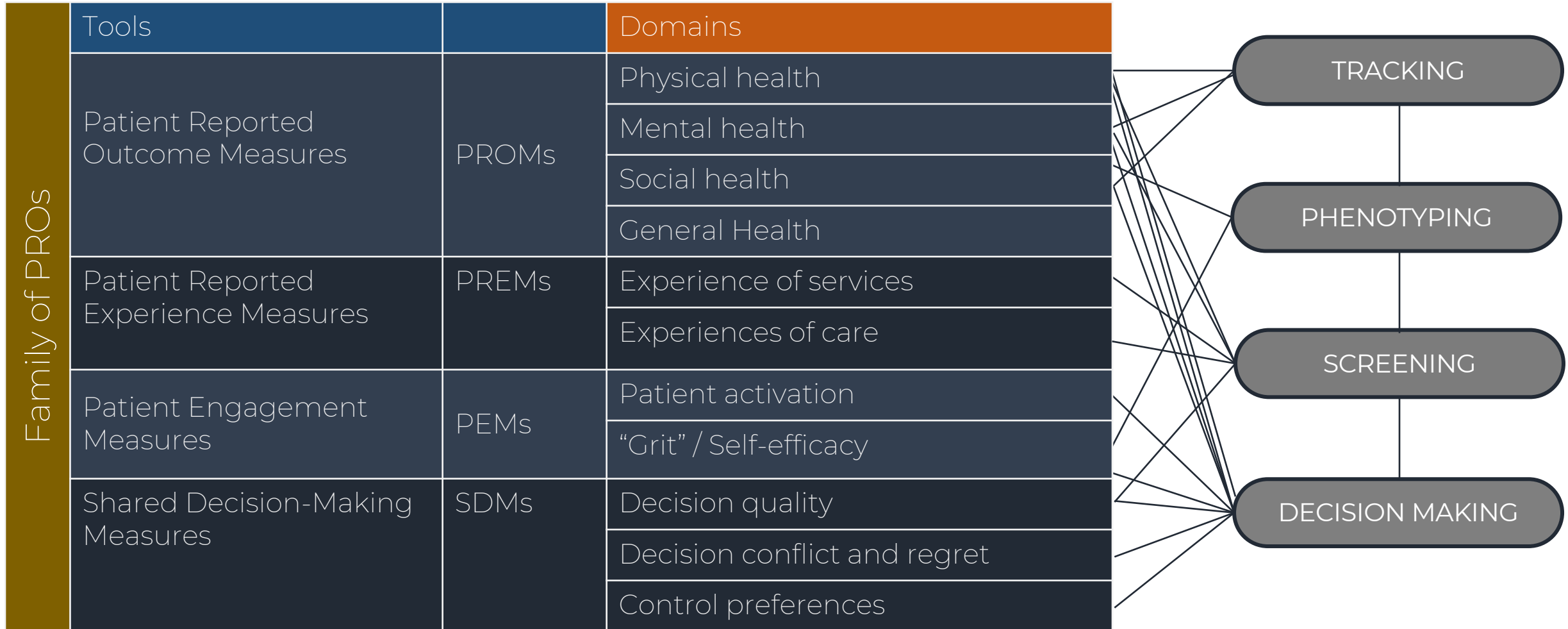**PERSONALIZED OUTCOMES DRIVEN PATIENT-CENTERED WHOLE PERSON CARE**

PROs: The Data Enabling Patient Centered Care

"Patient-centeredness" is a dimension of health care quality in its own right….[its] incorporation in new health care designs involve radical, unfamiliar, and disruptive shifts in control and power, out of the hands of those who give care and into the hands of those who receive it."

Don Berwick

Professor, Health Care Quality and Improvement

Berwick DM. What "patient-centered" should mean: Confessions of an extremist. Health Affairs. 2009 May 19;28(4):w555–w565

The Family of PROs: Driving Patient Centered Care

Tools		Domains
Patient Reported Outcome Measures	PROMs	Physical health
		Mental health
		Social health
		General Health
Patient Reported Experience Measures	PREMs	Experience of services
		Experiences of care
Patient Engagement Measures	PEMs	Patient activation
		"Grit" / Self-efficacy
Shared Decision-Making Measures	SDMs	Decision quality
		Decision conflict and regret
		Control preferences

Family of PROs (sidebar label)

TRACKING

PHENOTYPING
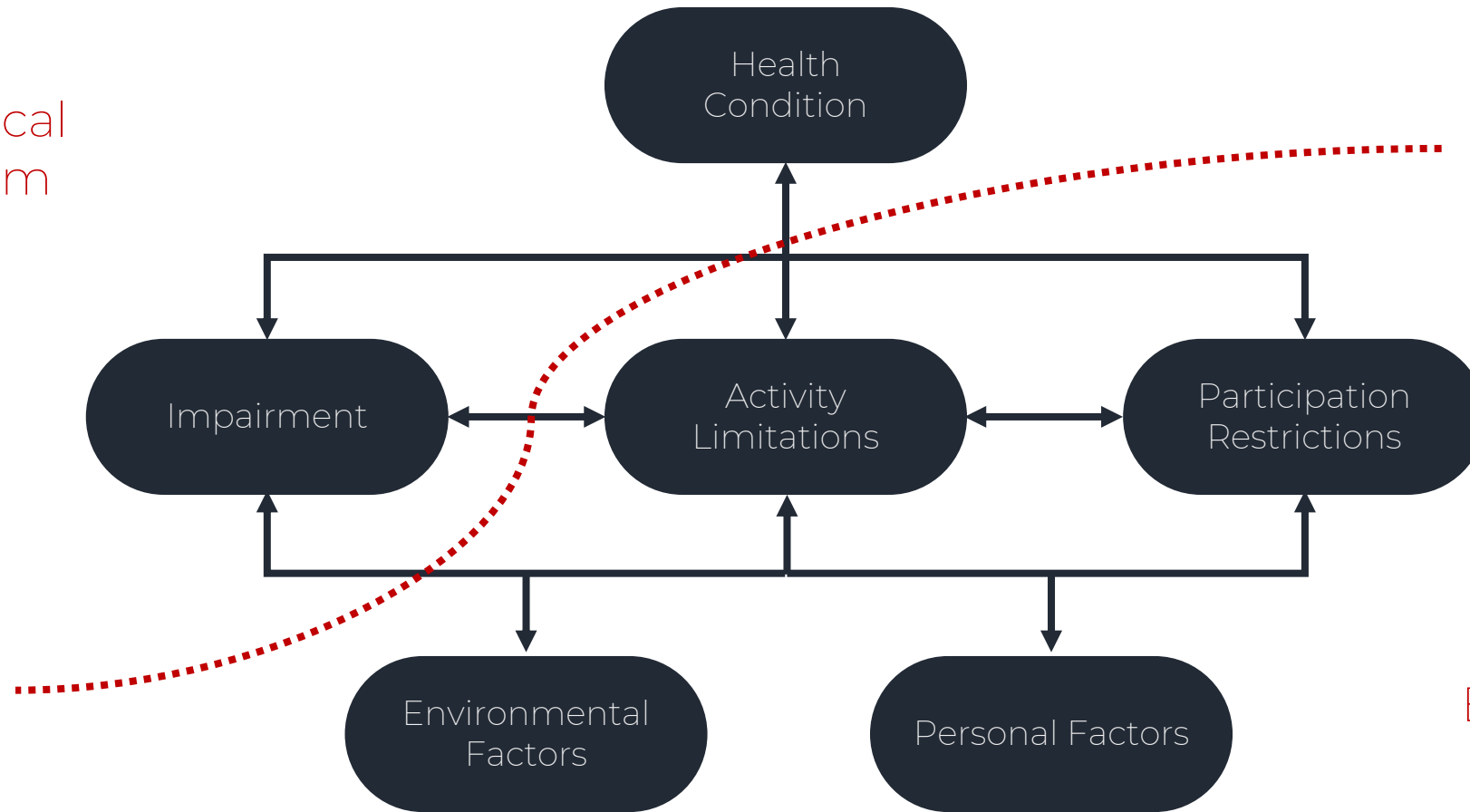
SCREENING

DECISION MAKING

PREPARE

To understand patient stories ('WHO' we are treating) and identify modifiable factors associated with conditions and health outcomes ('WHAT' we are treating)

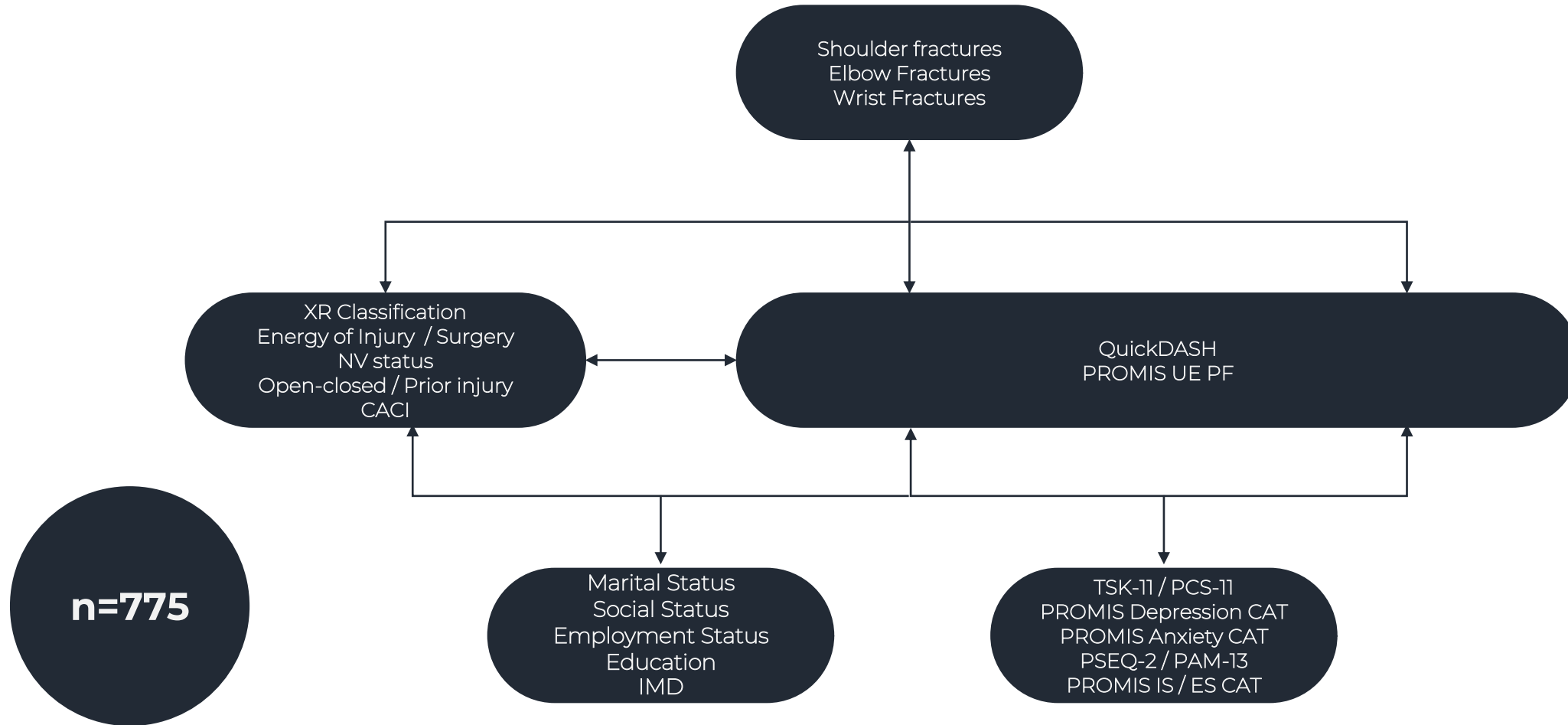# Understanding the Patient's Health Story

Biomedical Paradigm

Health Condition

Impairment ↔ Activity Limitations ↔ Participation Restrictions
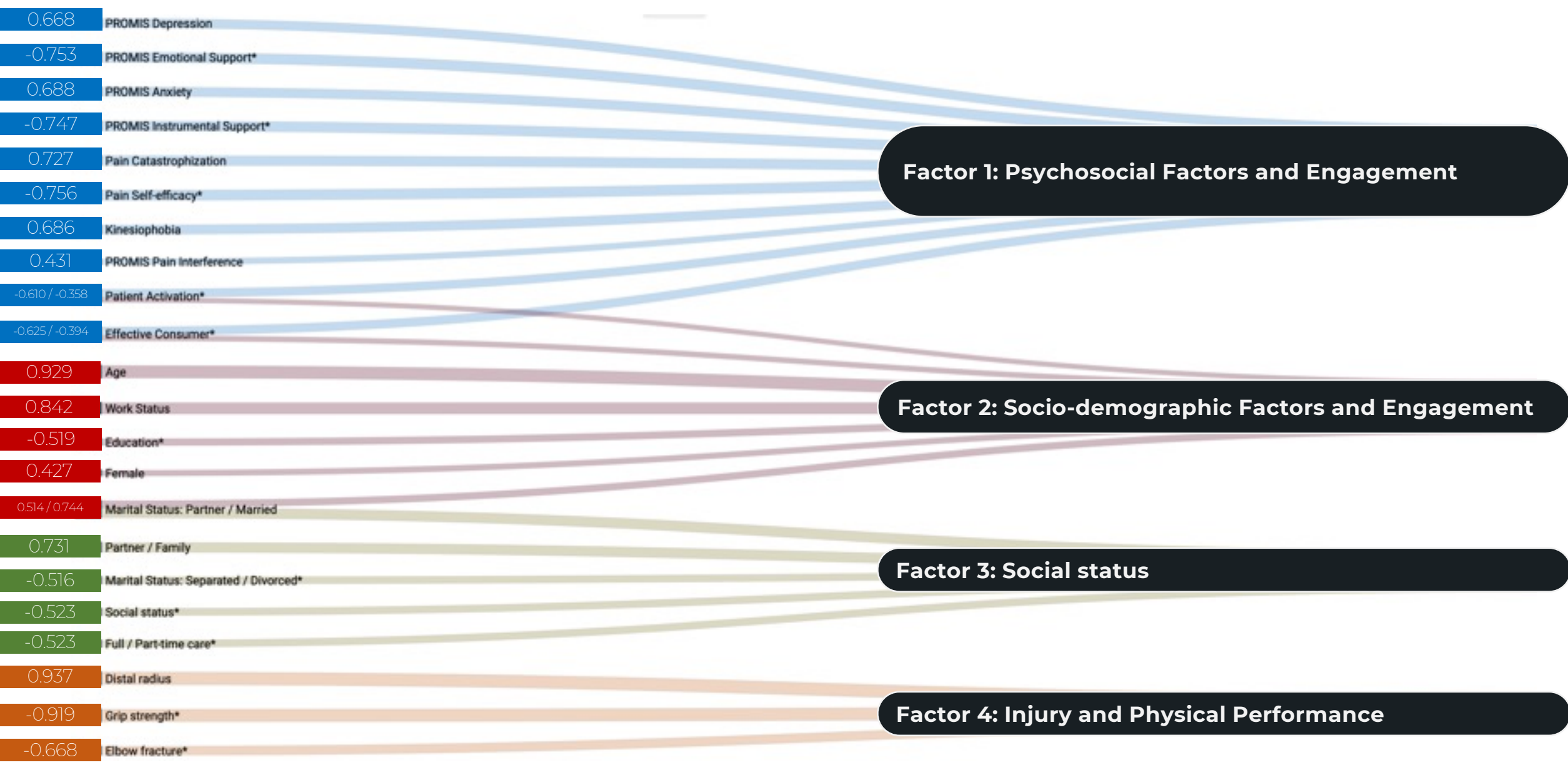
Environmental Factors

Personal Factors

Biopsychosocial Paradigm

Health is a multi-dimensional construct involving a dynamic interaction between impairment, activity limitations, participation restrictions and contextual factors

Optum Health Education. Grand Rounds 2023. P Jayakumar MD PhD

The World Health Organization (WHO) International Classification of Disability, Functioning, and Health

What Factors are Associated with Capability and Patient Experience after Fractures of the Arm?

PSEQ, Pain Self-efficacy Questionnaire; PCS, Pain Catastrophizing Scale; TSK, Tampa Scale for Kinesiophobia; ES, Emotional Support; IS, Instrumental Support; CACI, Age-adjusted Charlson Comorbidity Index; IMD, Index of Multiple Deprivation; XR, x-ray; NV, neurovascular; NRS, Numerical rating scale

0.668	PROMIS Depression
-0.753	PROMIS Emotional Support*
0.688	PROMIS Anxiety
-0.747	PROMIS Instrumental Support*
0.727	Pain Catastrophization
-0.756	Pain Self-efficacy*
0.686	Kinesiophobia
0.431	PROMIS Pain Interference
-0.610 / -0.358	Patient Activation*
-0.625 / -0.394	Effective Consumer*

Factor 1: Psychosocial Factors and Engagement

0.929	Age
0.842	Work Status
-0.519	Education*
0.427	Female
0.514 / 0.744	Marital Status: Partner / Married

Factor 2: Socio-demographic Factors and Engagement

0.731	Partner / Family
-0.516	Marital Status: Separated / Divorced*
-0.523	Social status*
-0.523	Full / Part-time care*

Factor 3: Social status

0.937	Distal radius
-0.919	Grip strength*
-0.668	Elbow fracture*

Factor 4: Injury and Physical Performance

Factor Loadings for QuickDASH only; Only variables with loading of >0.30 presented;: Variables p<0.10 in bivariate analysis; Four factor sets, consistent for PROMIS UE PF, NRS-C, NRS-S

Variables	Regression coefficient	(95% confidence interval)		Standard error	p value	Semi-Partial R^2	Adjusted R^2
QuickDASH							
Factor 1	19.84	18.87	20.81	0.49	0.00	0.632	
Factor 2	4.74	3.78	5.71	0.49	0.00	0.037	0.72
Factor 3	-0.15	-1.12	0.82	0.49	0.76	0.000	
Factor 4	-5.32	-6.36	-4.28	0.53	0.00	0.040	
PROMIS UE PF							
Factor 1	-7.38	-7.90	-0.69	0.27	0.00	0.454	
Factor 2	-3.47	-3.99	-2.96	0.26	0.00	0.102	0.59
Factor 3	-0.11	-1.58	-0.53	0.27	0.00	0.009	
Factor 4	1.38	0.82	1.94	0.28	0.00	0.014	
NRS Satisfaction (Clinical Care)							
Factor 1	-1.57	-1.67	-0.15	0.05	0.00	0.562	
Factor 2	0.06	-0.04	0.17	0.05	0.25	0.001	0.59
Factor 3	0.20	0.09	0.31	0.05	0.00	0.008	
Factor 4	-0.33	-0.45	-0.21	0.06	0.00	0.018	
NRS Satisfaction (Health Service)							
Factor 1	-1.96	-2.07	-1.85	0.05	0.00	0.641	
Factor 2	-0.02	-0.12	0.09	0.05	0.78	0.000	0.66
Factor 3	0.29	0.18	0.41	0.06	0.00	0.012	
Factor 4	0.15	0.03	0.26	0.06	0.01	0.003	

Factor 1: Psychosocial Factors and Engagement
Factor 2: Socio-demographic Factors and Engagement
Factor 3: Social status
Factor 4: Injury and Physical Performance

Only the partial R^2 of significant values is displayed. Bold indicates statistical significance, P < 0.05.

Comprehensive Assessment of Health Status in Osteoarthritis of the Hip and Knee
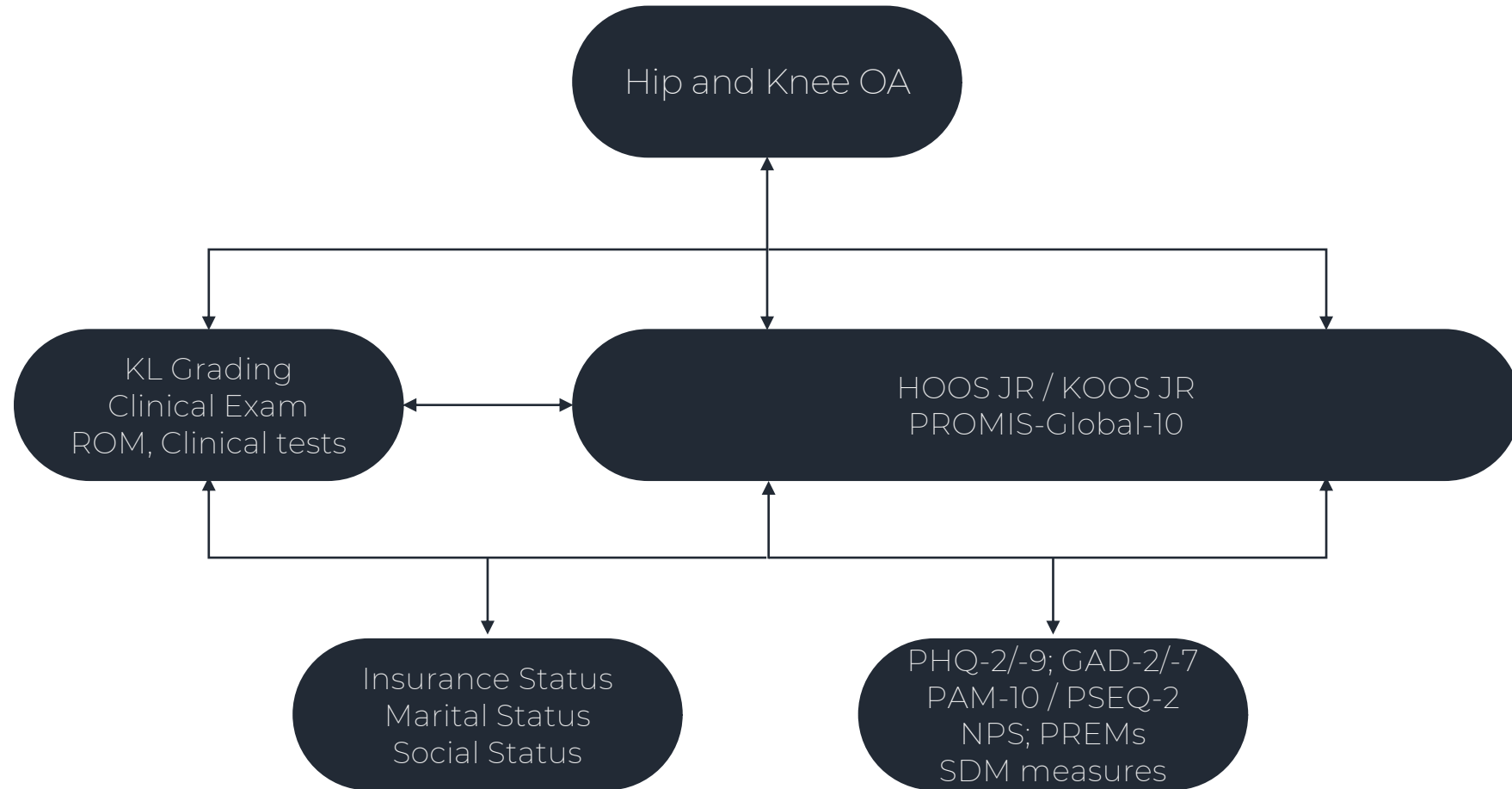
HOOS JR, Hip Disability and Osteoarthritis Outcome Score Joint Replacement; Knee Injury and Osteoarthritis Outcome Score, KOOS JR; Patient Health Questionnaire, PHQ; Generalized Anxiety Disorder Questionnaire, GAD; Patient Reported Experience Measures; Shared Decision-Making Measures

What Factors are Associated with Patient Perceptions of OA symptoms and Limitations in Hip and Knee OA?

Misinterpretation of OA Symptoms is Common. Psychosocial factors have a greater influence on limitations than objective pathophysiology (KL grade).

n=123

Marital Status
Insurance
Employment Status
Education

PCS-11
PHQ-2/9
Symptom Duration
Perceived Injury

Furlough et al., What Factors are associated with perceived disease onset in patients with hip and knee osteoarthritis? J Orthop 2021; 26:88-93

Many surgeons recognize psychological and social concerns. Fewer feel comfortable talking about such concerns. Fewer still are likely to screen for and refer individuals for evaluation.

Lack of Time

Feeling stigma and discomfort

Lack of care pathway

Vranceanu AM ABJS 2017;5(1):2-9. How do Orthopaedic Surgeons Address Psychological Aspects of Illness?

WIDER CONTEXT (Macro-level)

Political
Social
Economic
Environmental
Cultural context

MENTAL HEALTH

Negative Mood
PHQ-2/-9
GAD-2/7
OSPRO-YF

Fear Avoidance
TSK-11
PCS
OSPRO-YF

Positive Affect
PSEQ-2
CPS
OSPRO-YF

Behavioral therapies, Coaching self-efficacy, resilience, Coping resources, Social support

SOCIAL HEALTH

SOCIAL STATUS
Education status
Occupation status
Income/Wealth
Home ownership
Insurance status
ADI (ADI)
Health Literacy

SOCIAL CONTEXT
Housing stability
Food insecurity
Safe transport
Interpersonal safety
Access to utilities
ACEs/DLEs
Social needs surveys

SOCIAL RELATIONSHIPS
Marital status
PROMIS ES
PROMIS IS
Social isolation
Loneliness
Vulnerability Indices

Case Management, Strategies to build social capital, cohesion, relationships

HEALTH BEHAVIORS
Lifestyle Factors
e.g., diet, exercise, smoking, alcohol, PAM

PATHO-PHYSIOLOGY

HEALTH OUTCOMES

Generic Health PROs

Condition Specific PROs

Clinical Measures

Adapted and modified from Psychosocial pathways and health outcomes: Informing action on health inequalities. Public Health England. Demographic characteristics not included i.e., Age, Gender, Race/Ethnicity, Sexuality; ADI, Area Deprivation Index; ACE, Adverse Childhood Experiences; DLE, Difficult Life Experiences; CPS, Control Preference Scales

Comprehensive Assessment of Psychological Factors

OSPRO-YF
Optimal Screening for Prediction of Referral and Outcome (OSPRO)

Psychological Construct	PROM
Negative Mood	
Depression	PHQ-9
State-trait Anxiety	STAI
State-trait Anger	STAXI
Fear Avoidance	
Fear Avoidance Beliefs / Work and Physical Activity	FABQ / FABQWP
Pain Catastrophizing	PCS
Kinesiophobia	TSK-11
Pain Anxiety	PASS-20
Positive Affect / Coping	
Pain Self-Efficacy	PSEQ
Self-Efficacy for Rehabilitation	SER
Chronic Pain Acceptance	CPAQ

Development of a Yellow Flag Assessment Tool for Orthopaedic PTs: Results from the Optimal Screening for Prediction of Referral and Outcome (OSPRO) Cohort. Lentz.

Unhelpful Thoughts
Negative pain coping
Fear avoidance

7%

High Distress
Symptoms of depression
Symptoms of anxiety

52%

15%

Low **Self efficacy**
Low pain acceptance

26%

n=2110
Hip, Knee, Shoulder,
Back Pain

Psychological
Phenotypes
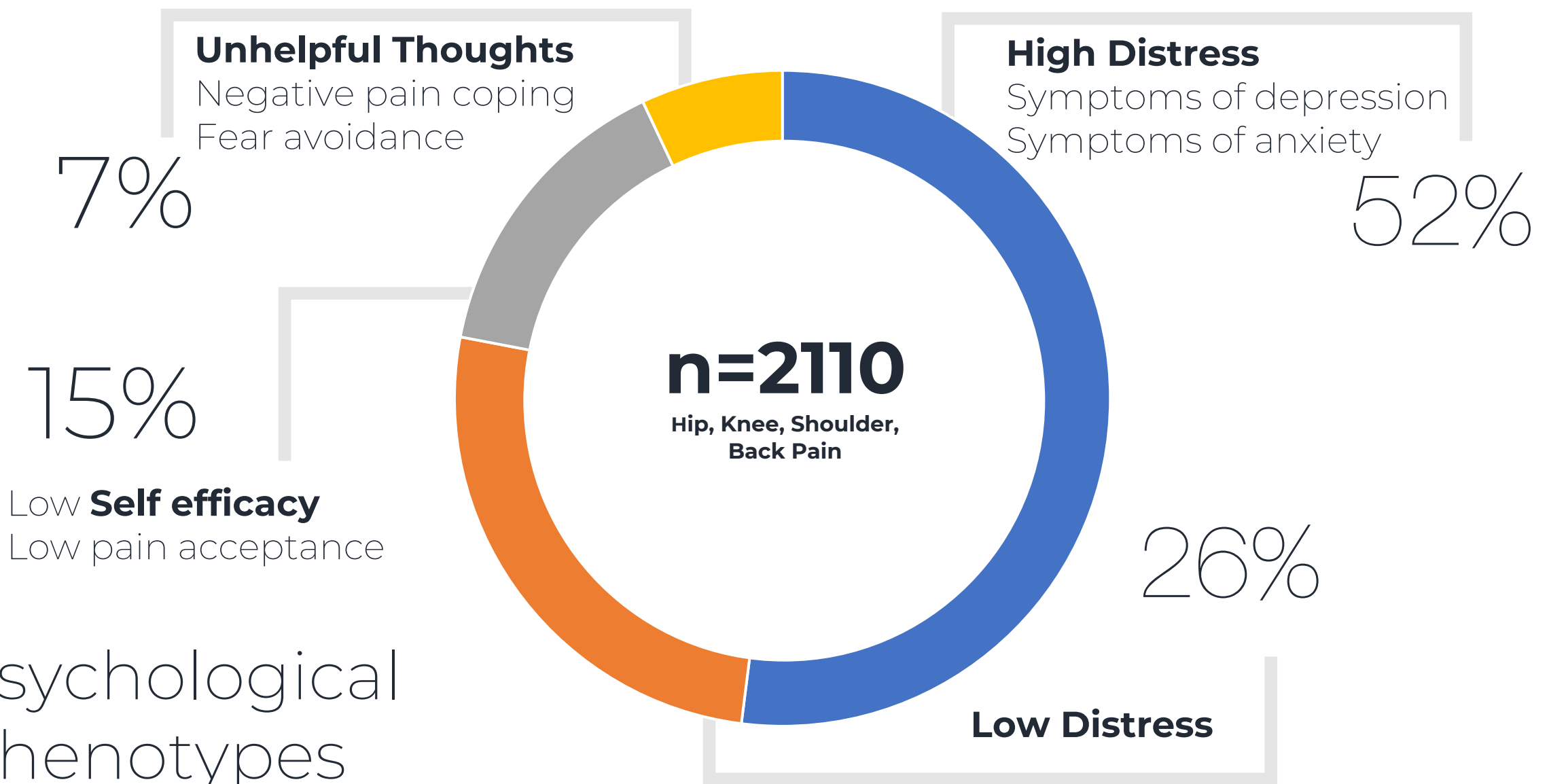
Low Distress

Lentz et al., 478(12, CORR 2022; Cohens d effect sizes d=0.20 (small), d=0.50 (medium), d=0.80 (large). Latent Class Analysis for distress phenotypes (% samp[e). * Except for trait anxiety

Unhelpful Thoughts
Negative pain coping
Fear avoidance

7%

High Distress
Symptoms of depression
Symptoms of anxiety

52%

High Distress
and Unhelpful
Thoughts
Dominantly
impact Pain
and Functional
Limitations

Self efficacy
Low pain acceptance

15%

Psychological
Phenotypes

26%

Low Distress

Lentz et al., What General and Pain-associated Psychological Distress Phenotypes Exist Among Patients with Hip and Knee Osteoarthritis? CORR 2020;478(12):2768-2783. Cohens d effect sizes d=0.20 (small), d=0.50 (medium), d=0.80 (large). Latent Class Analysis for distress phenotypes (% samp[e). * Except for trait anxiety

Unhelpful thoughts are the most dominant factors associated with Physical Function at Baseline

High Distress and Unhelpful thoughts are dominantly associated with 6-month Functional Outcomes

Social Construct: Social Determinants of Health

Health Care System

Economic Stability

Community and Social Context

Neighborhood and Physical Environment

Food

Education
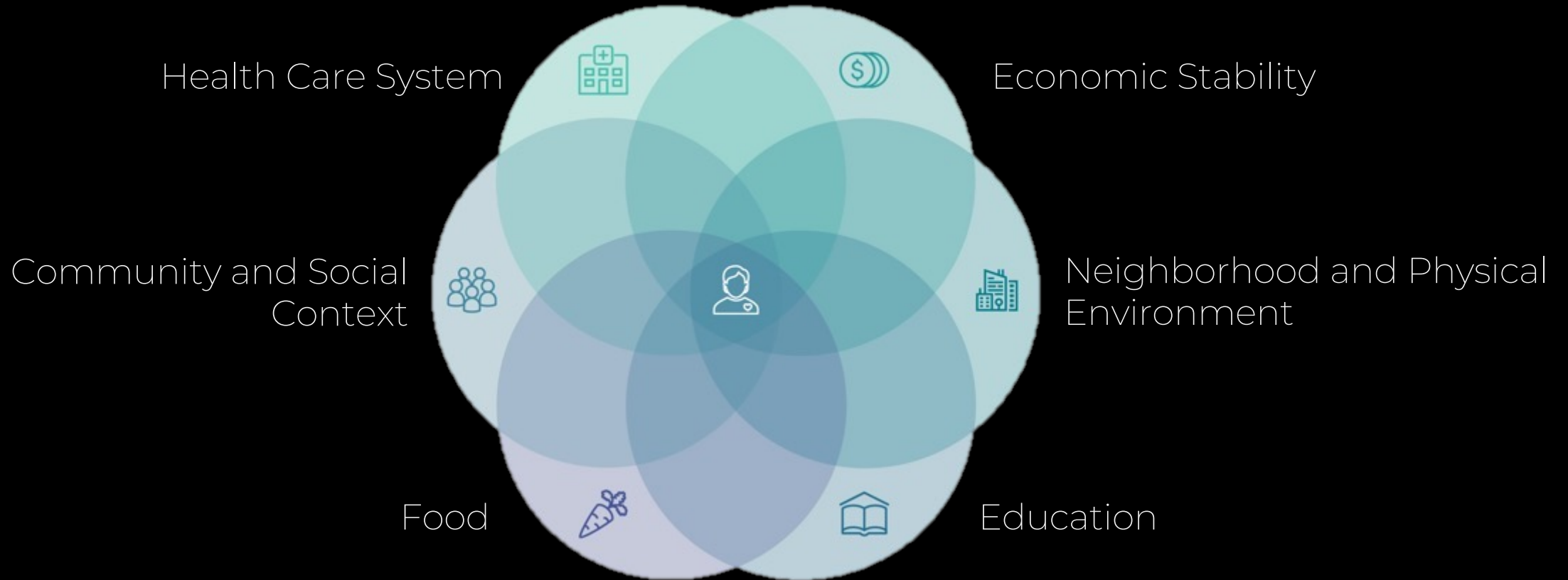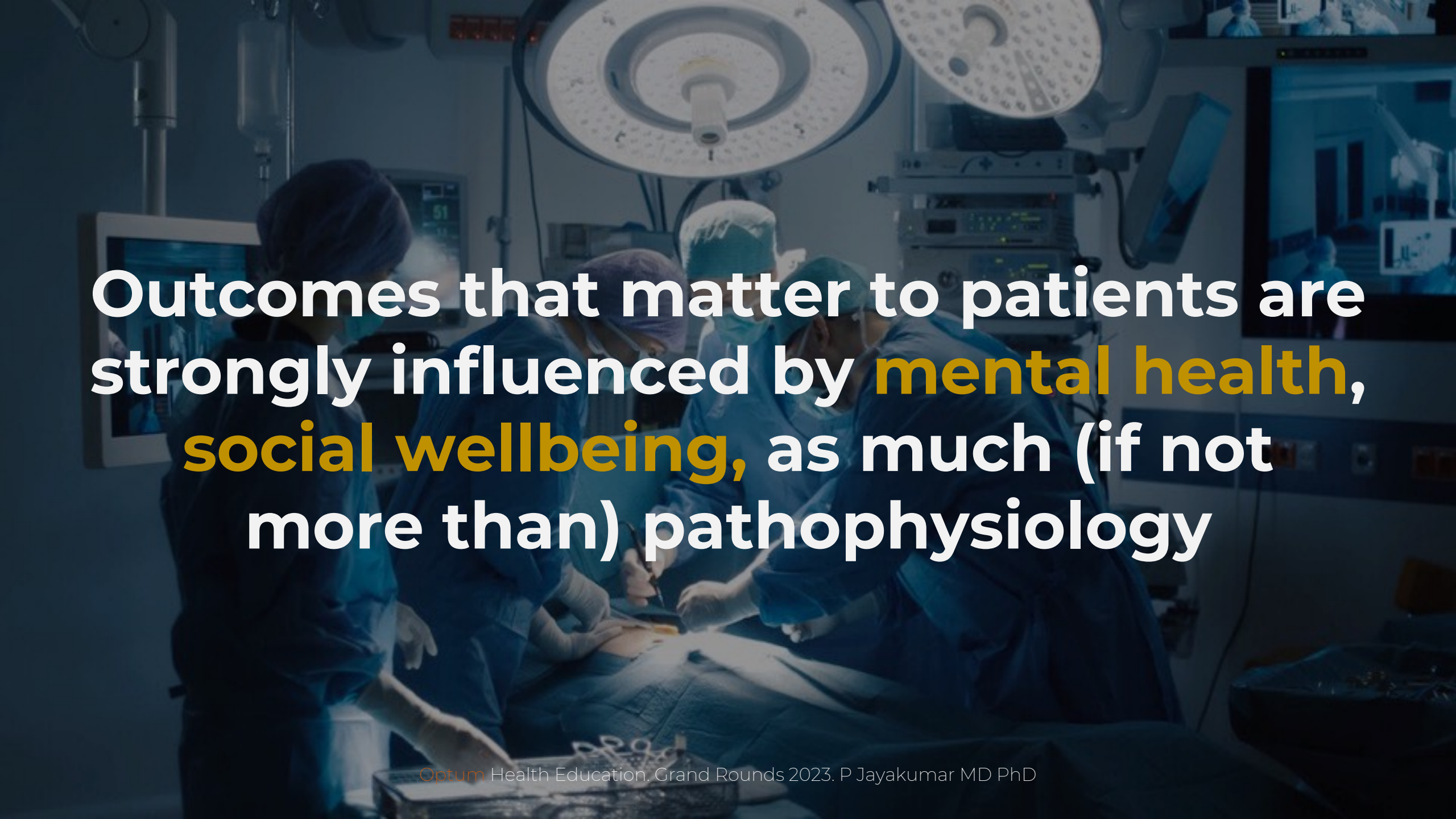
What is the Association between Unmet Social Needs and Limitations in Patients with Hip and Knee OA?
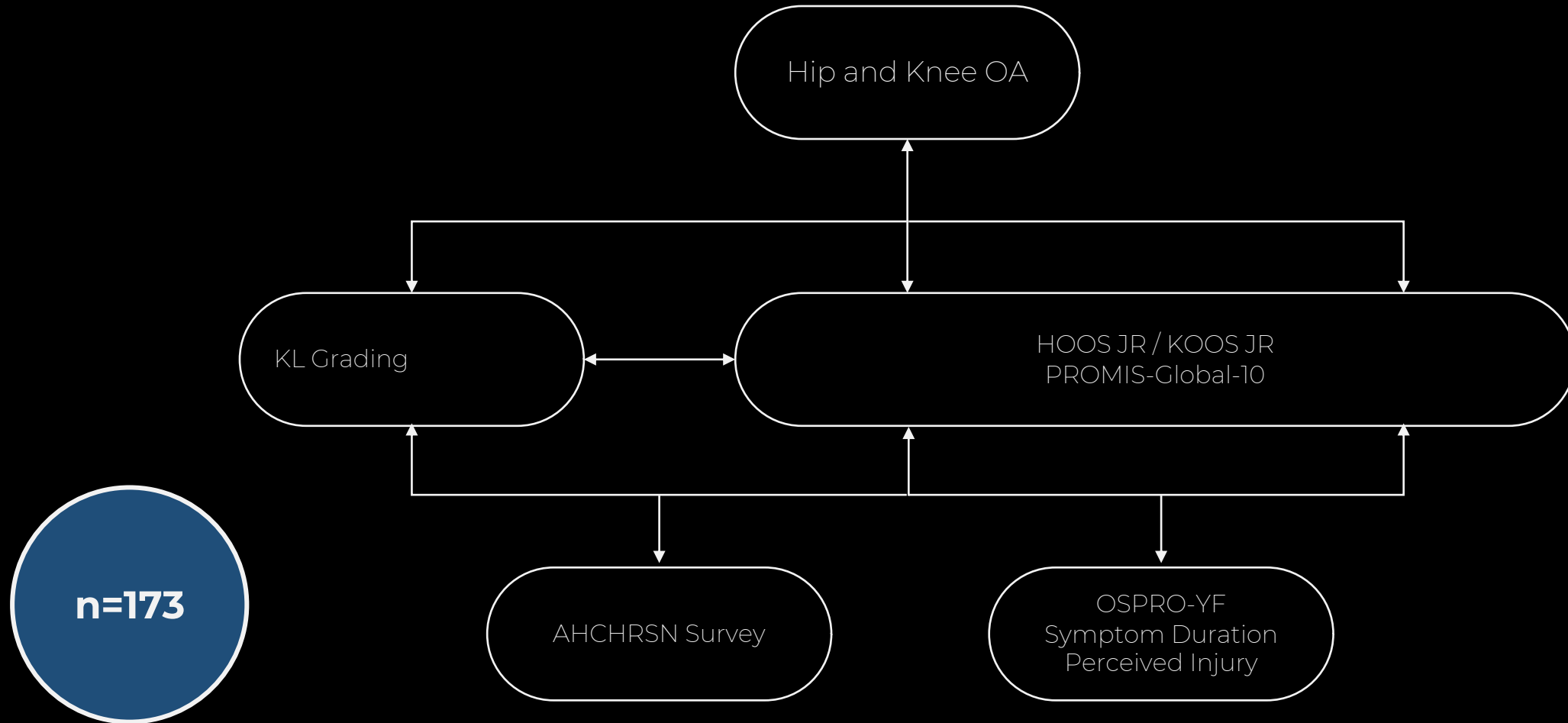
Lin et al., Unmet Social Needs have a Negative Impact on Health Outcomes in the Management of Knee Osteoarthritis (In Press. CORR 2023); Accountable Health Communities Health-Related Social Needs Survey (AHCHRSN) – 5 domains: Housing, Food, Transportation, Utilities, Interpersonal violence

Greater numbers of unmet social needs and being unemployed are factors associated with lower levels of limitations and poorer mental health

Outcomes that matter to patients are strongly influenced by **mental health, social wellbeing,** as much (if not more than) pathophysiology

However...It's not what you know but what you do with it that counts!

"Psychosocial Talk"

1. Observe verbal and non-verbal cues	2. Assess the patient story with a whole person lens	3. Reframe the clinical message and person-specific narrative
GENERAL LANGUAGE "Help me to better understand how your feeling" "Help me to better understand how things are for you at home and in your community" "This is a normal part of ageing rather than an injury." "Help me to better understand"	**ON OBSERVING OR GAUGING SYMPTOMS OF NEGATIVE MOOD** "I can see you feel down about something…can you tell me more?"	**ON OBSERVING OR GAUGING SYMPTOMS OF NEGATIVE PAIN THOUGHTS** "It's normal to have pain right now / with this condition" "Pain is something we expect people to experience with this condition."
REORIENTING MINDSETS TOWARD A LONGER-TERM VIEW "What your experiencing can happen in waves." "Ups and downs are very normal." "It can get worse before it gets better … but it will get better"	**BUILDING RESILIENCE AND COPING STRATEGIES** "This type of condition can be painful for a while. But it will get better over time" "We can help you better manage things when they get bad"	**PROMOTING AGENCY AND SHARED DECISION MAKING** "How does this fit with what you are thinking?" "How does this fit with your current life situation?"

PRO Measures driving Care Pathways

No. of Yellow Flags & Clusters?	**Low Distress**	**Negative Pain Coping**	**Low Self-efficacy and acceptance**	**High Distress**
No. of Yellow Flags & Clusters?	1-2 Yellow Flags without clusters	2-3 yellow flags including pain anxiety, kinesiophobia, catastrophizing	2-3 Yellow Flags inc Pain self-efficacy, Self-efficacy for rehab, Chronic Pain Acceptance	>4 Yellow Flags
Activity Focused Strategies?	Physical activity education, Lifestyle maintenance, Traditional PT	Graded activity exposure	Functional analysis	Graded Activity / Exposure
Behavioral Health Focused Strategies?	General training (nutrition education, sustainable changes, goals, lifestyle changes	Neuroscience education, CBIT coping thoughts, PMR, Pleasant imagery, Deep breathing, Goal setting, Self reinforcement, Promote early success	Goal Setting, CBIT-Value based goal setting, Motivational interviewing, Problem Solving, Positive Reinforcement, Functional Analysis, Modifiable factors	CBIT Pain Education Positive Psychological Interventions Mindfulness Meditation
No. Visits and Duration	1-6 visits over 1-6 months	8-12 visits over 4-6 months	6-8 visits over 4-6 months	MDT approach 8-12 visits over 6-12 months

DukeHealth

Decision Support based on Functional and Psychosocial PROs

Not a biomedical problem
Does not have a primary MSK problem. Their psychosocial concerns are likely the primary driver of their pain.

Assess Expectations
At risk of having a low incremental benefit or not achieving the MCID/SCB for a given treatment. Their expectations may be high either appropriately or inappropriately

Mental + Social Health Co-management
Appropriate candidate for surgery but would also benefit from minimum co-management of the psychological needs (e.g., behavioral therapy) +/- social needs (e.g., case management) with strong engagement and communications with interdisciplinary care team

Ideal surgical candidate
Problem likely to be predominantly biomedical in origin. Likely to meet the MCID / SCB for given treatment if clinical (biomedical) parameters for appropriateness met.

Psychosocial Impact (vertical axis)
Physical Function (horizontal axis)

High psychosocial concerns Low dysfunction

High psychosocial concerns High dysfunction

Low psychosocial concerns Low dysfunction

Low psychosocial concerns High dysfunction

PERFORM   To enable clinical decision support and optimize shared decision-making to facilitate the 'right' decisions at the 'right' time for the 'right' patient

PRO measures can guide decision-making

Knee Injury & Osteoarthritis Outcome Score (KOOS) predicts the likelihood of benefit following TKR

KOOS scores of 58+ lower chances of surgical benefit
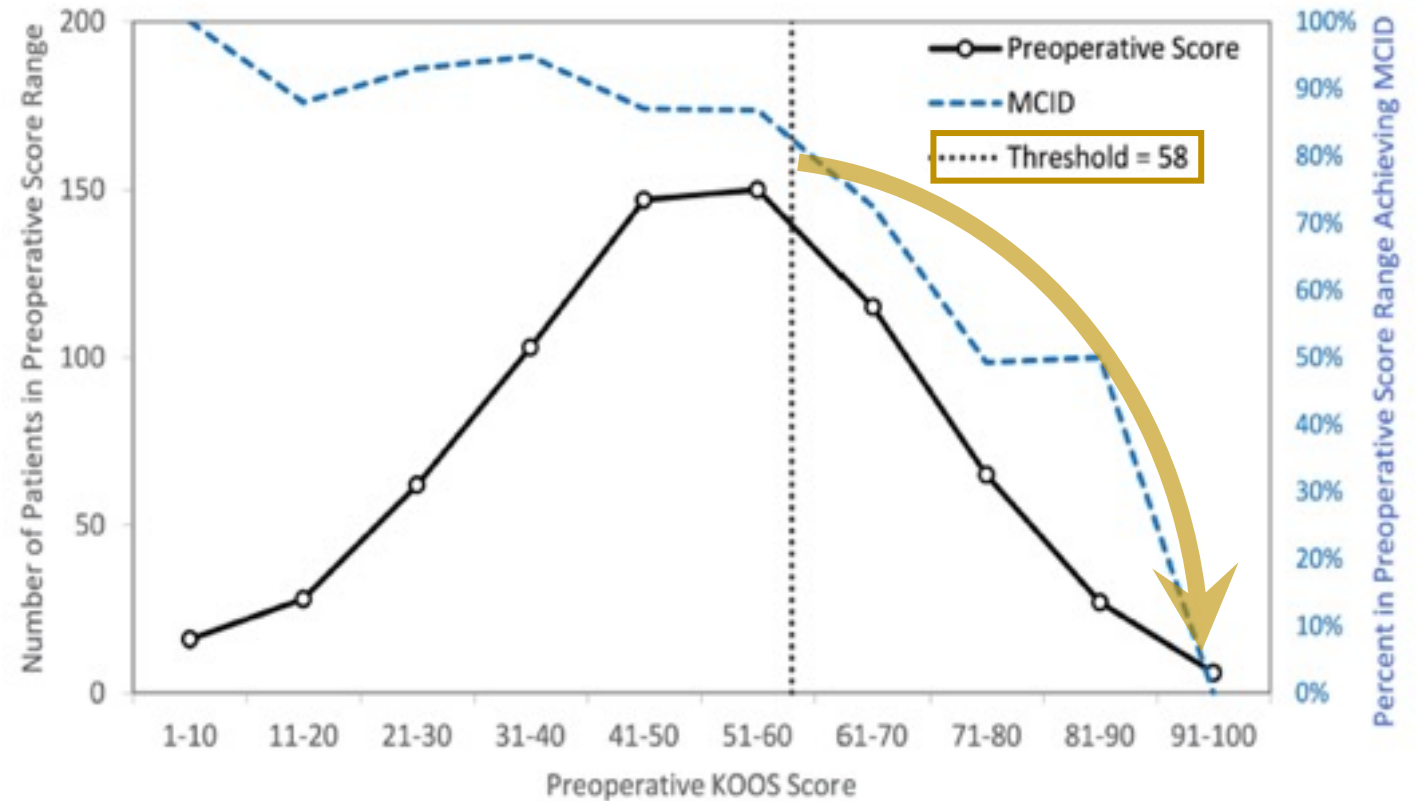
Berliner et al., 2015 Can Preoperative Patient-Reported Outcome Measures Be Used to Predict Meaningful Improvement in Function after TKA; MCID, Minimal Clinically Important Difference

Integration of Mental Health PRO measures can guide decision-making based on likelihood of treatment benefit

Layering mental health (SF12 v2 MCS) onto baseline limitations (KOOS) can map the variable influence of psychological factors on clinical improvement in limitations
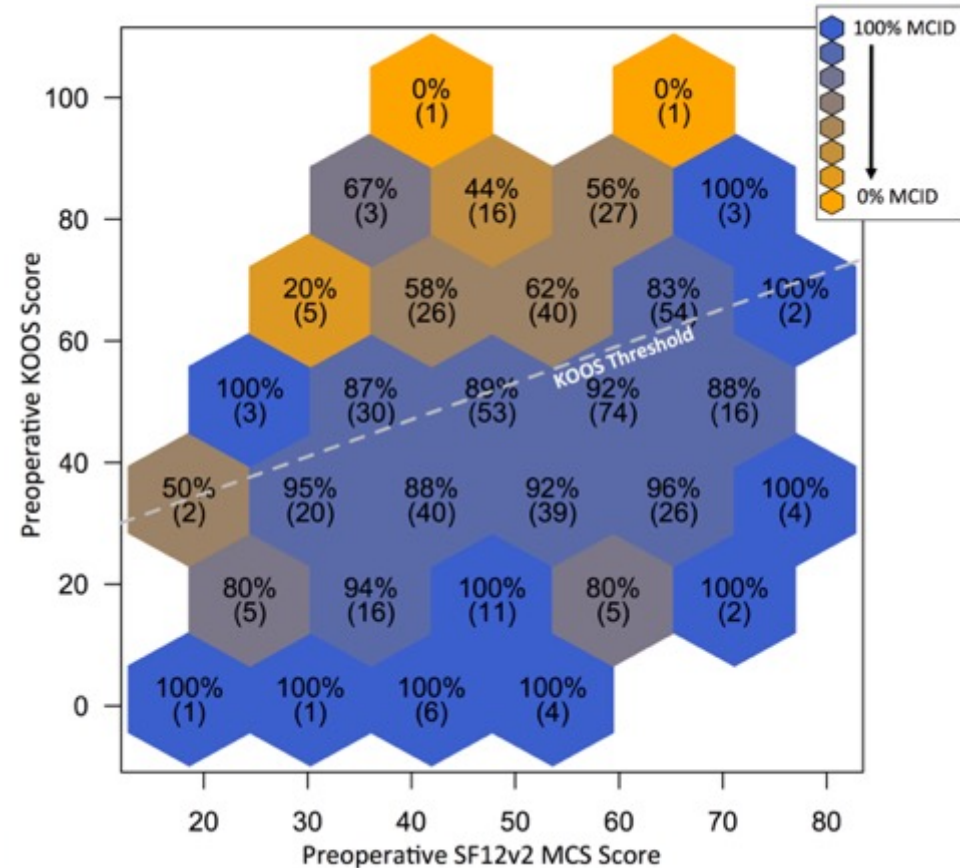
Berliner et al., 2015 Can Preoperative Patient-Reported Outcome Measures Be Used to Predict Meaningful Improvement in Function after TKA; MCID, Minimal Clinically Important Difference

Surgeons misperceive patient participation in decision-making. A need for strategies to limit uncertainty, enhance patient engagement, and improve our understanding of patient preferences in decision-making

Alokozai et al., Patient Rated Involvement and Surgeon Ratings of Patient Involvement in Decision-Making Are Not Aligned. JBJS 2022.

Shared Decision Making: A Key Concept Unlocking the Power of PROMs

Knowledge

Goals

Communication

OPTIMAL TREATMENT DECISION
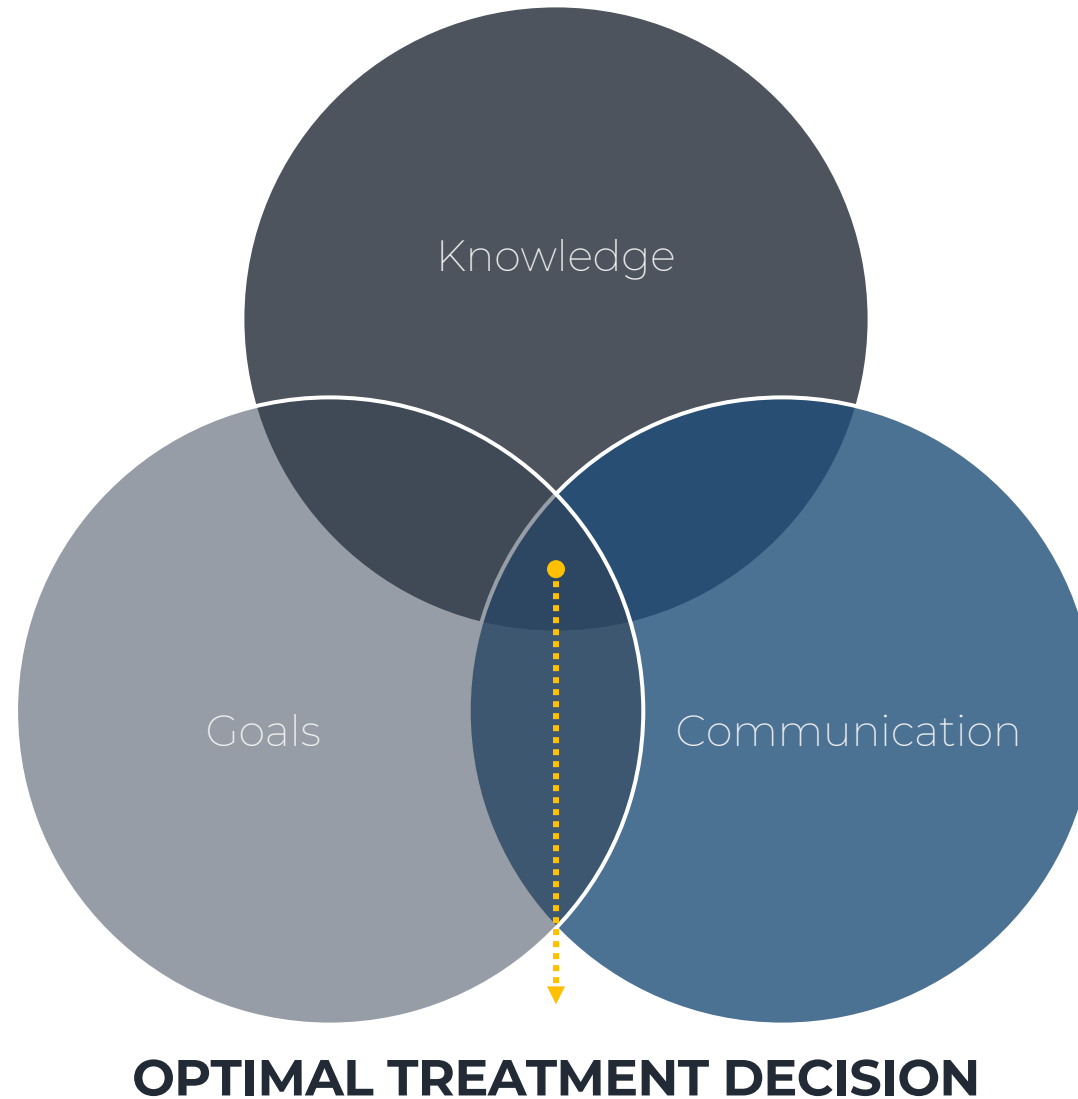
Patients share knowledge and preferences with clinicians AND

Clinicians tailor and communicate clinical data to patients

CLINICIAN → PATIENT
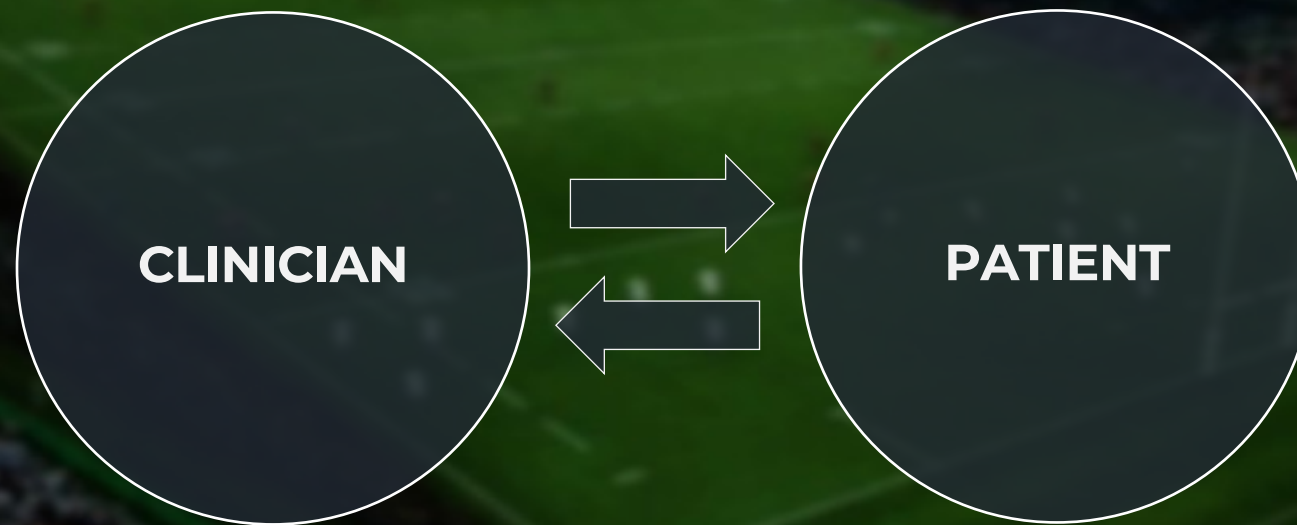
Restore balance to point of care interactions and level the information playing field to achieve better decisions and outcomes

Jayakumar P, Bozic KJ, Lee T. Information Asymmetry: The Untapped Value of the Patient. NEJM Catalyst. Oct 2019.

Optum Health Education. Grand Rounds 2023. P Jayakumar MD PhD

Shared Decision-Making and The Knowing-Doing Gap

"It Is Unrealistic to Use SDM and PDAs in my Busy Practice During Short Office Visits"

- Myth buster: Office times aren't significantly extended by PDAs
- Both clinician and patients feel experiencing PDAs is time well spend and enhances care interactions
- Best decisions made with time, space, and opportunities for deliberation

"My Patients Want Me to Make the Decision"

- Surgeon and patient perceptions of preferences and control over decision making often misaligned*
- Barriers to patient engagement i) power dynamics ii) doctor knows best iii) lack of awareness
- Expectation outcome / experience mismatch

"Our Resources Are Limited and There's no Budget for SDM"

- Driving appropriateness and SDM initiatives within Fee For Service systems
- Outcomes-based care: Valuing and renumerating whatever leads to better outcomes relative to cost
- PDAs are value-generating tools and NOT volume drivers or diminishers

The New Science of Advanced Shared Decision Making

Biomedical Sciences and Clinical Outcomes Research

Outcome Measurement Science

Decision Science

SDM

Implementation and Health Economics

Communication and Behavioral Science

Implementing a Structured Shared Decision-Making and PRO Strategy

PURPOSE — Surveillance; Surgical screening; Surgical SDM; Non-operative SDM

KNOWLEDGE

GOALS

COMMUNICATION

TOOLS & TECHNOLOGIES

- Teach Back Method
- Heuristic frameworks
- Digital literacy frameworks
- Health literacy checklist
- Predictive analytics / A.I

- Preferences Elicitation
- SMART Goals
- AHRQ Question-Builder

- Narratives
- Ottawa Decision Guide
- Telehealth

IMPLEMENTATION

- Pathway mapping
- Triggers events
- Platform integration
  - EMR, patient portal
  - PRO / SDM platform
- Modes of delivery
  - Paper, Email, Text
- Clinical team
  - Primary care
  - Specialist care
  - PT / Other
- Non-clinical teams
  - Administrators
  - Schedulers
- Decision Coach

MEASUREMENT

- Knowledge test
- HL assessment
- PAM

- Decision Conflict (DCS)
- Decision Regret (DRS)
- Utilization
- Cost effectiveness
- PROMs / PRO Completion

- Decision quality (HK-DQI)*
- SDM Process Survey*
- Level of SDM (CollaboRATE)*
- PREMs
- Treatment Concordance

* NQF endorsed

Implementing a Structured Shared Decision-Making and PRO Strategy

KNOWLEDGE

GOALS

COMMUNICATION

PURPOSE
Surveillance; Surgical screening; Surgical SDM; Non-operative SDM

TOOLS & TECHNOLOGIES

- Teach Back Method
- **Heuristic frameworks**
- Digital literacy frameworks
- **Health literacy checklist**
- **Predictive analytics / A.I**

- **Preferences Elicitation**
- SMART Goals
- AHRQ Question-Builder

- **Narrative Guides**
- Ottawa Decision Guide
- Telehealth

IMPLEMENTATION

- **Pathway mapping**
- **Triggers events**
- **Platform integration**
  - EMR, patient portal
  - PRO / SDM platform
- **Modes of delivery**
  - Paper, Email, Text
- Clinical team
  - Primary care
  - **Specialist care**
  - PT / Other
- **Non-clinical teams**
  - Administrators
  - Schedulers
- Decision Coach

MEASUREMENT

- **Knowledge test**
- **HL assessment**
- PAM

- **Decision Conflict (DCS)**
- **Decision Regret (DRS)**
- Utilization
- Cost effectiveness
- **PROMs** / PRO Completion

- **Decision quality (HK-DQI)***
- SDM Process Survey*
- **SDM Level (CollaboRATE)***
- **PREMs**
- **Treatment Concordance**

* NQF endorsed

A Technology-enabled Approach to Shared Decision Making

ARTIFICIAL INTELLIGENCE
A technique which enables machines to mimic human behaviour

MACHINE LEARNING
Subset of AI technique which use statistical methods to enable machines to improve with experience

DEEP LEARNING
Subset of ML which make the computation of multi-layer neural network feasible

COMPUTER VISION
A field of AI that spans ML and DL that enables computers to derive meaningful information from digital images and visual inputs and act based on this information

An Advanced Patient Decision Aid for SDM in Knee OA

Clinical Data and PROMs	+	A.I Machine Learning	+	SDM

Advanced Patient Decision Aid

Education Module	+	Preferences Module	+	Forecasting Module
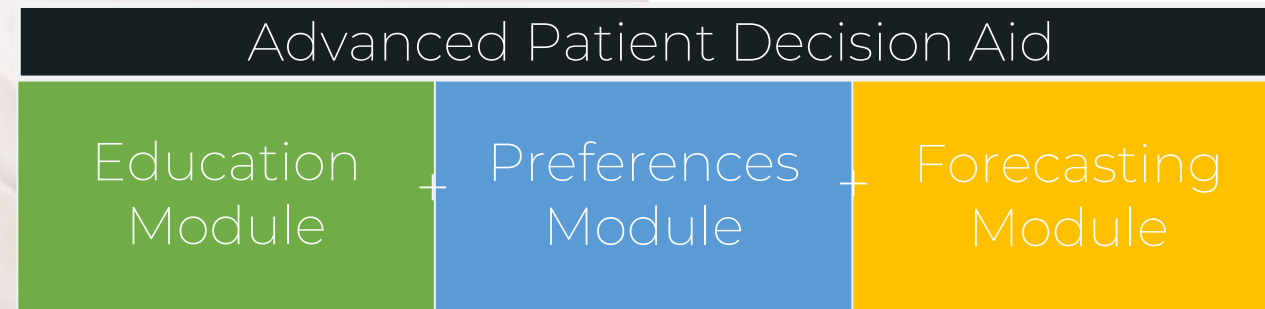
Knowledge sharing of risks, benefits, treatment options

Eliciting patient goals, preferences, values & needs

Personalized prediction of health outcomes

* ML algorithm: 100,000+ data points from a national dataset including PROMs
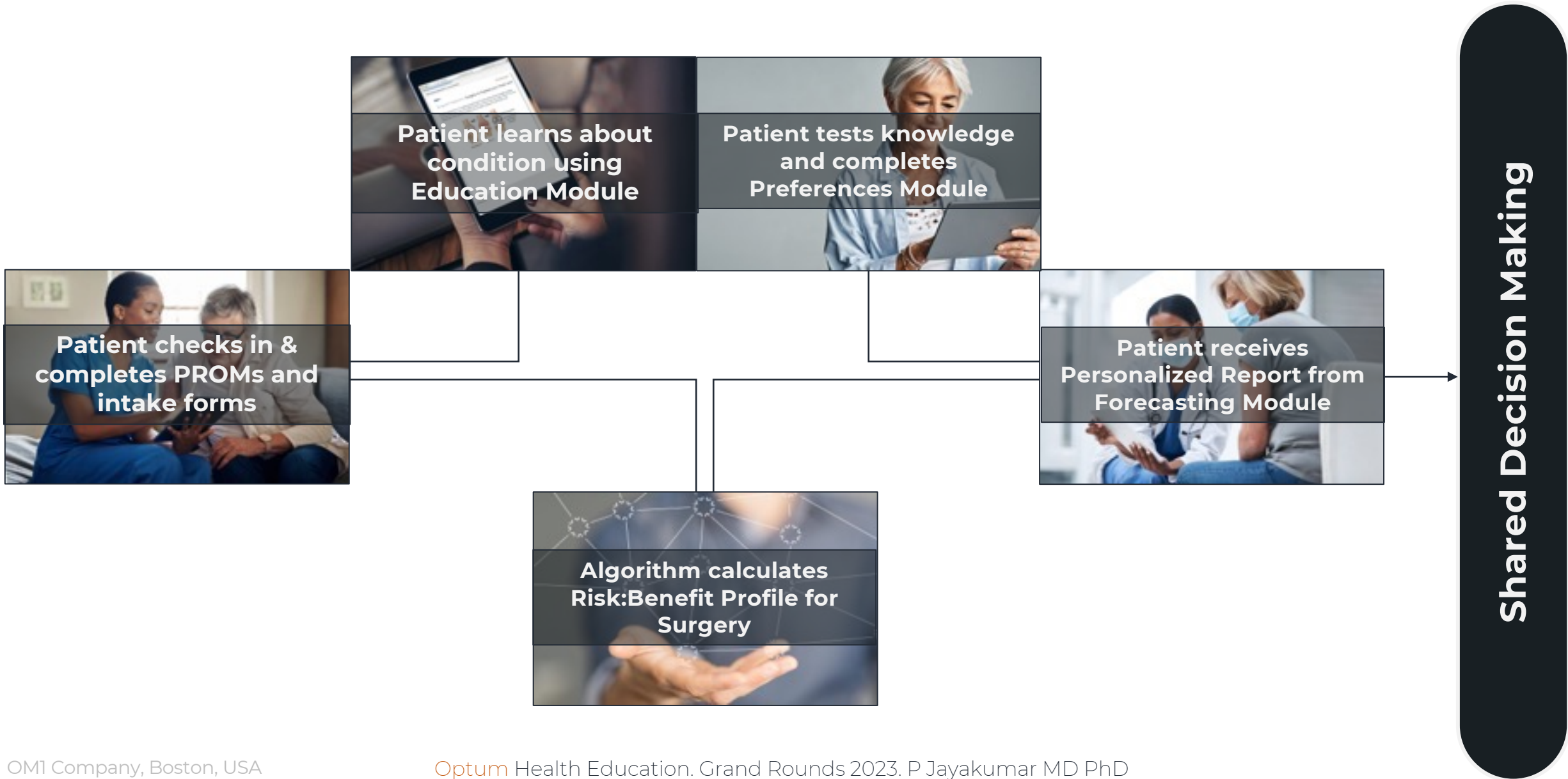
Patient checks in & completes PROMs and intake forms

Patient learns about condition using Education Module

Patient tests knowledge and completes Preferences Module

Algorithm calculates Risk:Benefit Profile for Surgery

Patient receives Personalized Report from Forecasting Module

Shared Decision Making

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Education Module

Digital & Paper versions

English & Spanish versions

Contents
- Osteoarthritis – The Condition
- Non-surgical treatment options
- Surgical treatment options
- Risks and Benefits
- Knowledge Test

Preferences Module

Preferences for:

Pain Relief

Surgery Risk
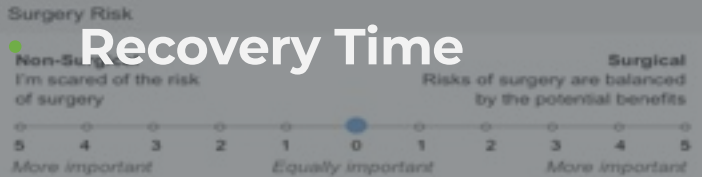
Recovery Time

Dynamic visualizations of:

Risk : benefit

Sliding scales based on modifiable factors
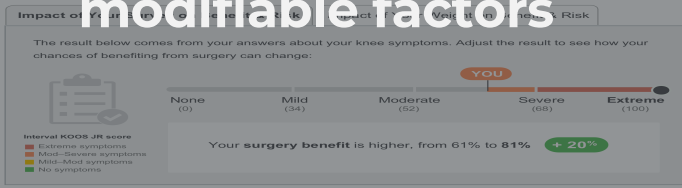
Forecasting Module

Data Inputs for ML Model:

Demographics
Age; Sex; BMI

Clinical
Comorbidities; Smoking Status

PRO Measures
KOOS JR; PROMIS-Global-10 MCS

Utilization
Number of attendances in ED;
Number of hospitalizations (<1y)

Generates likelihood of:

- Benefit and Risk from TKR

- Improvement in QOL, Stiffness, Pain

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Forecasting Module: Report

Personalized Forecasts

Education Module Outputs

Preferences Module Outputs

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RCT: Comparison of an Artificial Intelligence–Enabled Patient Decision Aid vs Education Material Among Adults With Knee Osteoarthritis

POPULATION

46 Men, 83 Women

Adults with knee osteoarthritis of Kellgren-Lawrence grade 3 or 4, with body mass index 20-46
Mean (SD), 62.6 (8.9) y

SETTINGS / LOCATIONS

Single academic musculoskeletal integrated practice unit clinic, Austin, Texas, US

INTERVENTION

129 Individuals randomized and analyzed

60 Control
Informational decision aid only

69 Intervention
Decision aid plus artificial intelligence-based personalized risk-benefit report

PRIMARY OUTCOME

Decision quality, measured by questions 3.1-3.5 of the Knee Osteoarthritis Decision Quality Instrument (K-DQI)

FINDINGS

Intervention resulted in statistically significant increase in decisional quality score with a between-group difference of 20.0% (SE, 3.0; 95% CI, 14.2%-26.1%; $P < .001$)

48.8%

68.9%
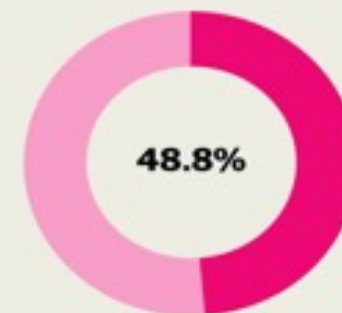
Control
Group 1: K-DQI, mean (SD) score 48.8% (14.5%)
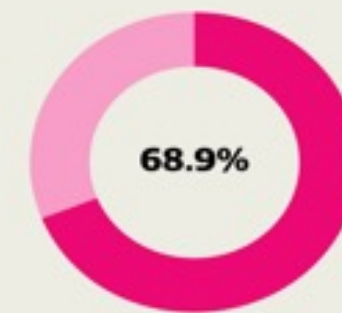
Intervention
Group 2: K-DQI, mean (SD) score 68.9% (19.8%)

Jayakumar P, Moore MG, Furlough KA, et al. Comparison of an artificial intelligence–enabled patient decision aid vs educational material on decision quality, shared decision-making, patient experience, and functional outcomes in adults with knee osteoarthritis: a randomized clinical trial. *JAMA Netw Open.* 2021;4(2):e2037107. doi:10.1001/jamanetworkopen.2020.37107

© AMA

ClinicalTrials.gov Identifier: NCT03956004

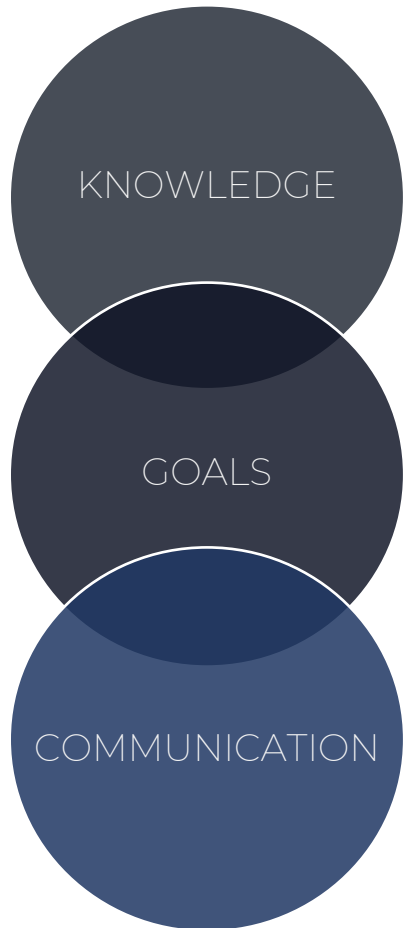Optum Health Education. Grand Rounds 2023. P Jayakumar MD PhD

Intervention group showed improved:
- **Decision Quality (K-DQI 3.1-3.5)**
- **Level of Shared Decision Making (CollaboRATE)**
- **Patient Satisfaction with the consultation (NRS)**
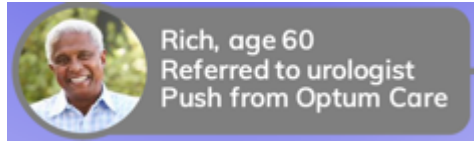- **Limitations (KOOS JR).**

No significant differences in:
- **Consultation time**
- **TKR rates**
- **Treatment concordance**

Implementing a Structured Shared Decision-Making and PRO Strategy

PURPOSE — Surveillance; Surgical screening; Surgical SDM; Non-operative SDM

KNOWLEDGE

GOALS

COMMUNICATION

TOOLS & TECHNOLOGIES

- Teach Back Method
- Heuristic frameworks
- Digital literacy frameworks
- **Health literacy checklist**
- Predictive analytics / A.I

- Preferences Elicitation
- SMART Goals
- **Question-Builder**

- Narratives
- Ottawa Decision Guide
- Telehealth

IMPLEMENTATION

- **Pathway mapping**
- **Trigger events**
- **Platform integration**
  - EMR, patient portal
  - PRO / SDM platform
- **Modes of delivery**
  - Paper, Email, Text
- **Clinical team**
  - **Primary care**
  - **Specialist care**
  - PT / Other
- **Non-clinical teams**
  - Administrators
  - Schedulers
- Decision Coach

MEASUREMENT

- Knowledge test
- HL assessment
- PAM

- Decision Conflict (DCS)
- Decision Regret (DRS)
- **Utilization**
- Cost effectiveness
- PROMs / PRO Completion

- Decision quality (HK-DQI)*
- SDM Process Survey*
- Level of SDM (CollaboRATE)*
- **PREMs**
- Treatment Concordance

* NQF endorsed

Journey of Patient Referred to Urologist

Optum
Project PROCIAS

Rich, age 60
Referred to urologist
Push from Optum Care

Rich's journey

Optum Care PCP refers patient to a urologist.

Optum Send Link

Rich receives push notification from Optum with SDM URL.

On-site clinic

Rich goes to specialist appointment equipped with skills and questions from completing the SDM tool.

Rich makes informed choices.

Regardless of bx outcome, Rich will have better interactions with specialists with increased health literacy and awareness of AS options. Rich shares experience in a follow-up PROs survey sent by Optum Health.

Referral Detection*

Optum Care detects referral (following inclusion criteria).

Rich receives reminders.

If needed, Rich receives automatic RELEVANT reminders to complete content prior to visit with urologist. Rich completes tool in timely manner.

Rich receives bx results.

Rich receives bx results and due to SDM he is better equipped to prepare for follow-up questions with his doctors.

*This will vary for CDOs.

PERFECT

To track health outcomes for improving care delivery and identify populations and opportunities for payment & performance innovation
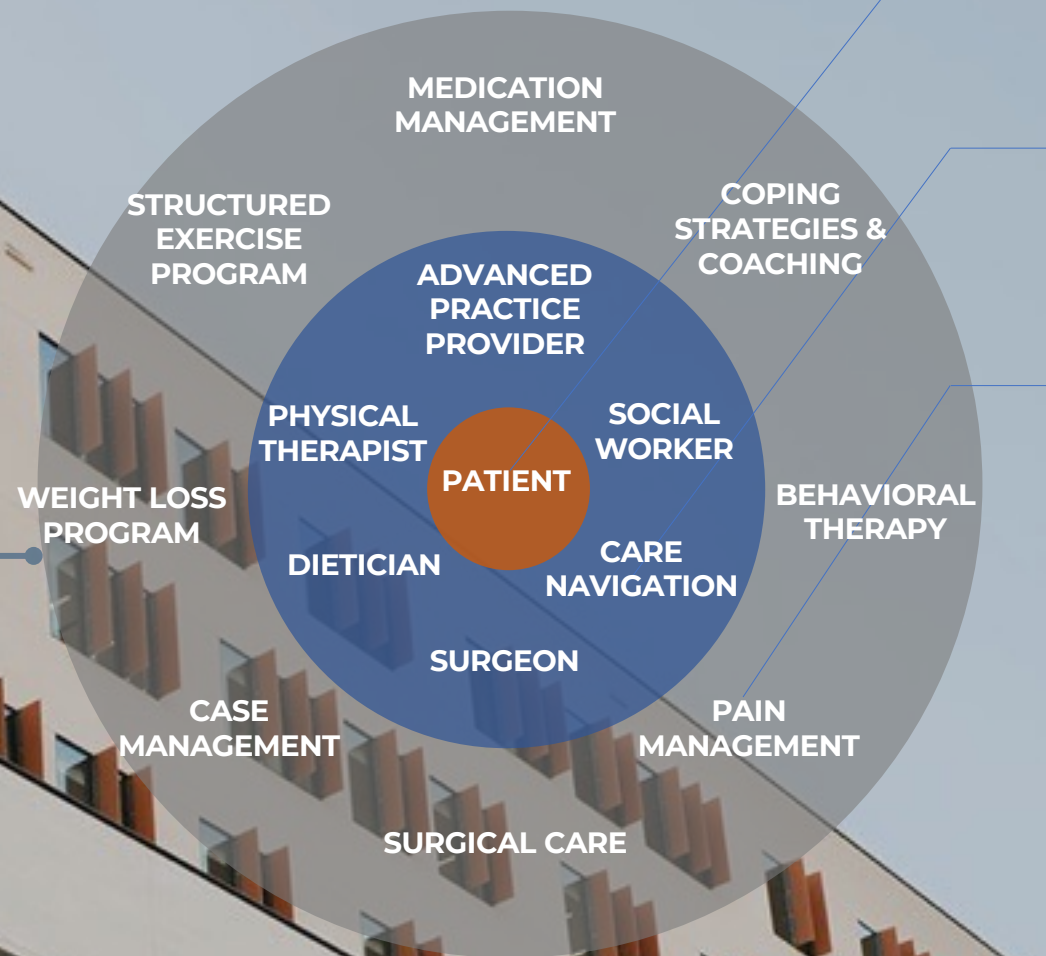
The University of Texas at Austin
UT Health Austin

The Musculoskeletal Integrated Practice Unit

Value-based
Condition-focused
MDT-based
Comprehensive 360o Whole Person Care

"PROs are 'in our DNA', treated like any test, and central to care delivery and routine decision making"

MEDICATION MANAGEMENT

STRUCTURED EXERCISE PROGRAM

COPING STRATEGIES & COACHING

ADVANCED PRACTICE PROVIDER

PHYSICAL THERAPIST

PATIENT

SOCIAL WORKER

BEHAVIORAL THERAPY

WEIGHT LOSS PROGRAM

DIETICIAN

CARE NAVIGATION

SURGEON

CASE MANAGEMENT

PAIN MANAGEMENT

SURGICAL CARE

Improved 6 month and 1-year Functional Outcomes in IPU-based Non-operative Care and IPU-based Surgical Care
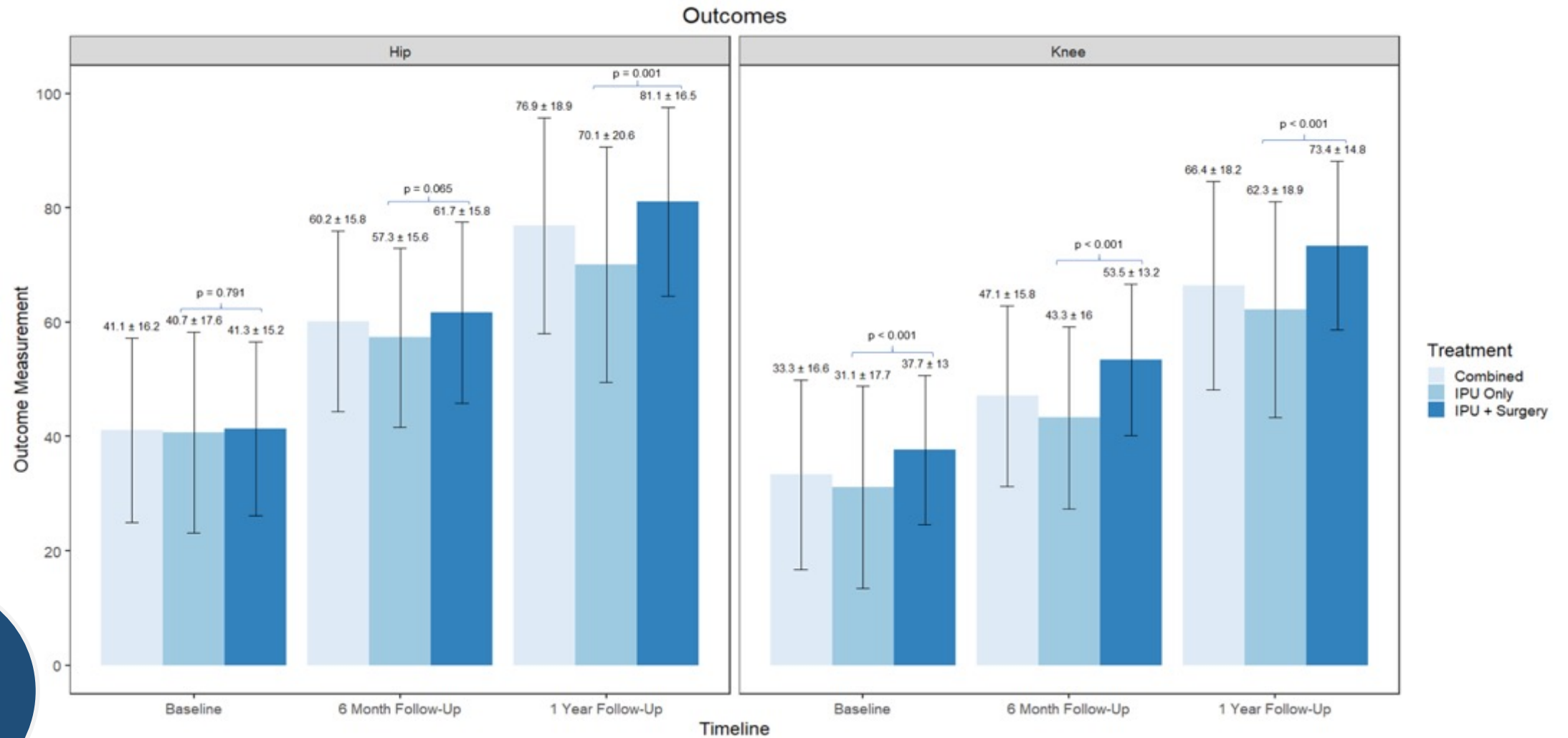
n=2743

High Proportion of Surgical Patients Achieving Minimal Clinical Improvement and Substantial Clinical Benefit


Distribution of PRO Score Changes in Surgical Patients
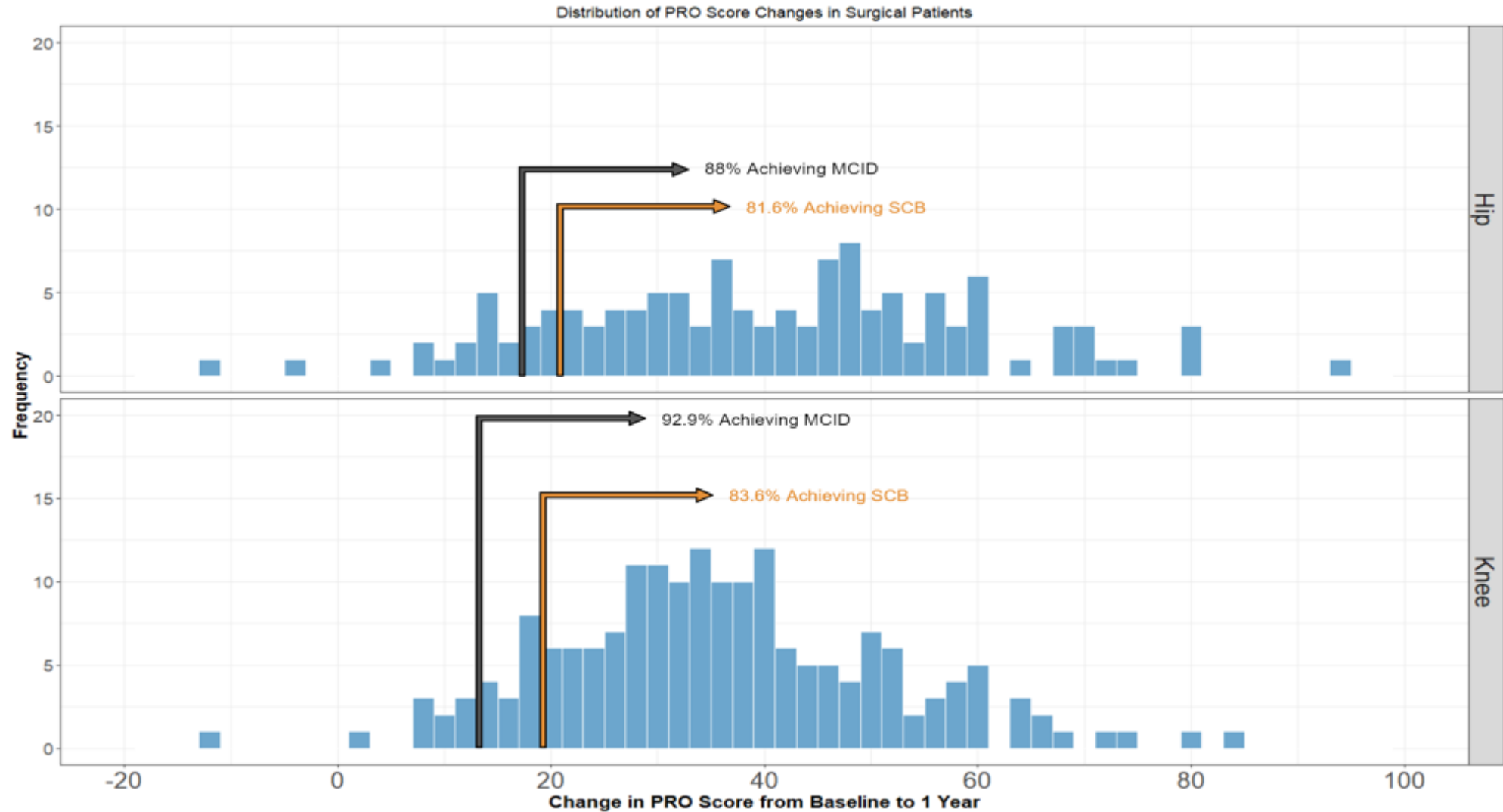
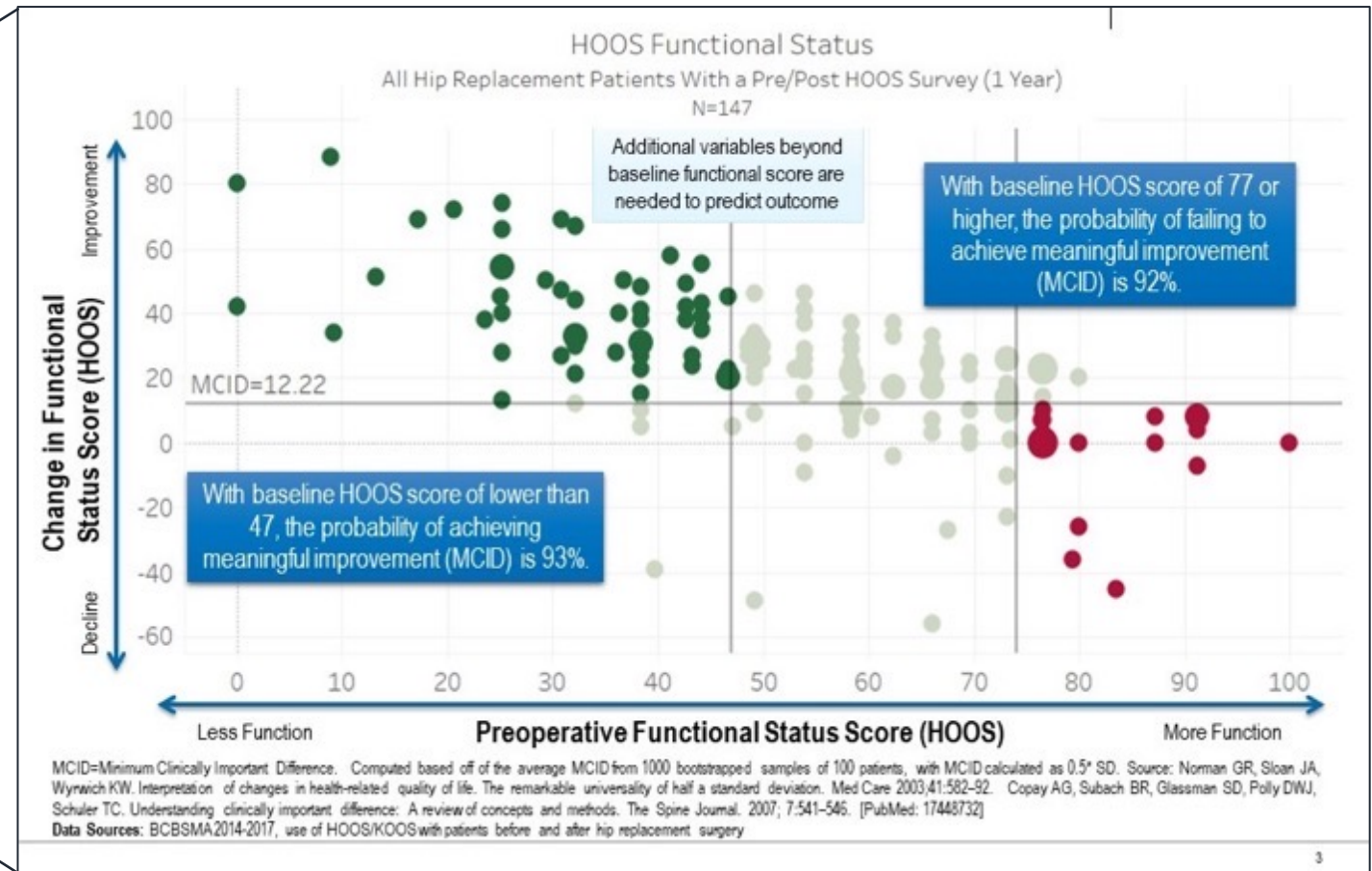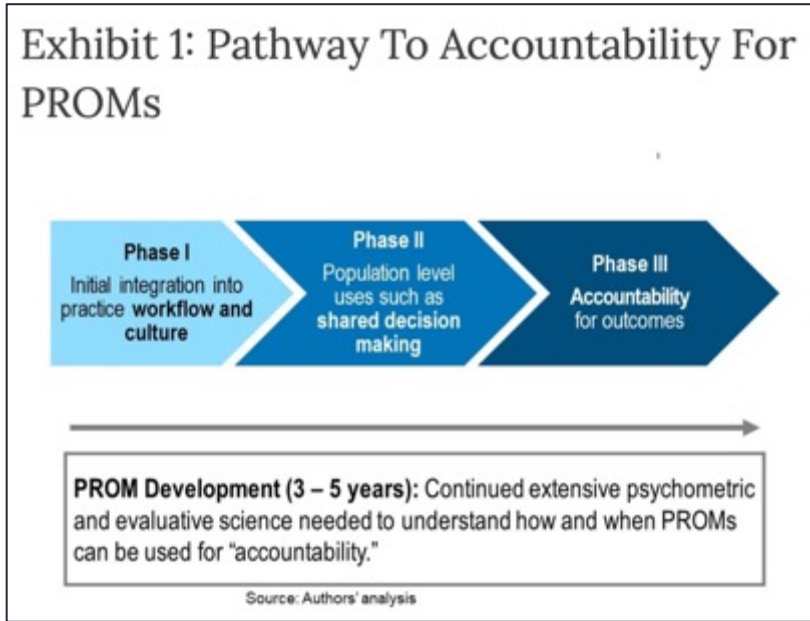# High Proportion of Non-Surgical Patients Achieving Minimal Clinical Improvement and Substantial Clinical Benefit

Distribution of PRO Score Changes in Non-Surgical Patients

72.7% Achieving MCID
62.3% Achieving SCB

81.2% Achieving MCID
69.0% Achieving SCB

Hip

Knee

Frequency

Change in PRO Score from Baseline to 1 Year

DukeHealth

PATIENT EDUCATION

STRUCTURED EXERCISE PROGRAM

COPING STRATEGIES & COACHING

PRIMARY OA CARE PROVIDER

PATIENT

WEIGHT LOSS PROGRAM

BEHAVIORAL THERAPY

SURGEON

SLEEP HEALTH

RISK MODIFICATION

PSYCHOLOGICALY INFORMED PHYSICAL THERAPY

The Joint Health Program
Physical therapist led
Condition-focused
Comprehensive 360o Whole Person Care

Improved 6 month and 1-year Functional Outcomes in JHP-based Non-operative Care and JHP-based Surgical Care

Knee PRO Scores Over Time
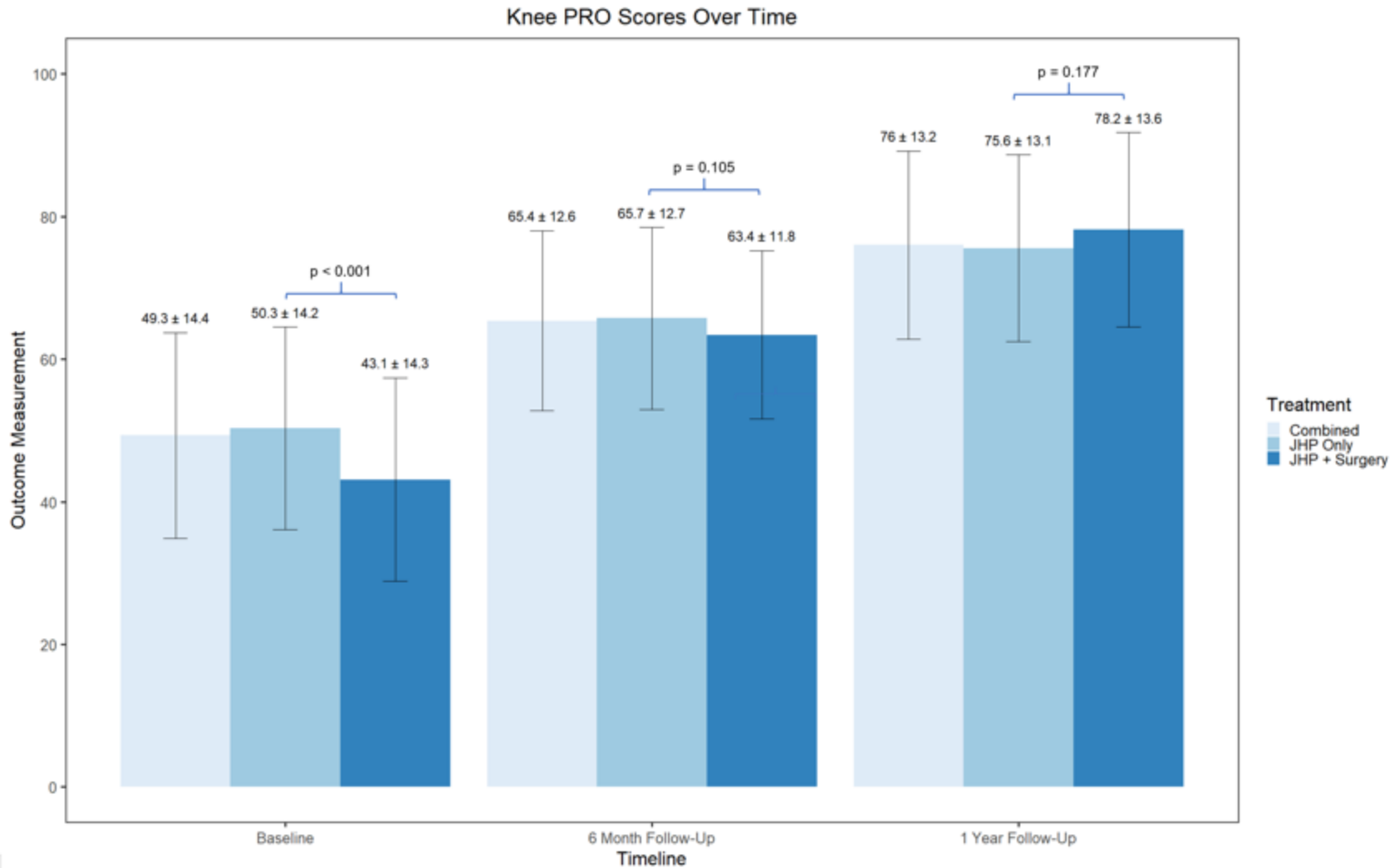
n=2021

High Proportion of Surgical Achieving Minimal Clinical Improvement and Substantial Clinical Benefit with and without Surgery
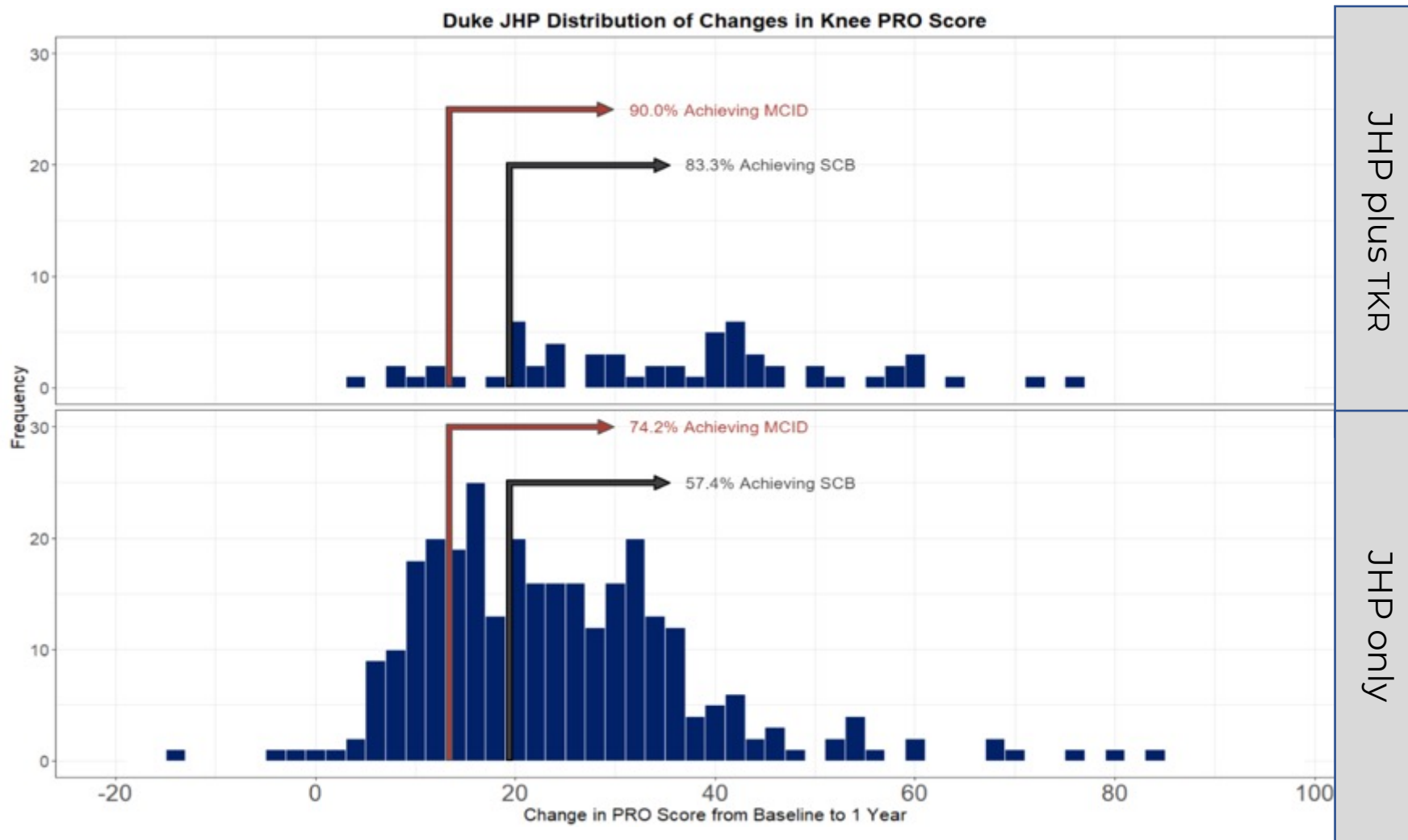
The Pathway from PROs to PRO-PMs
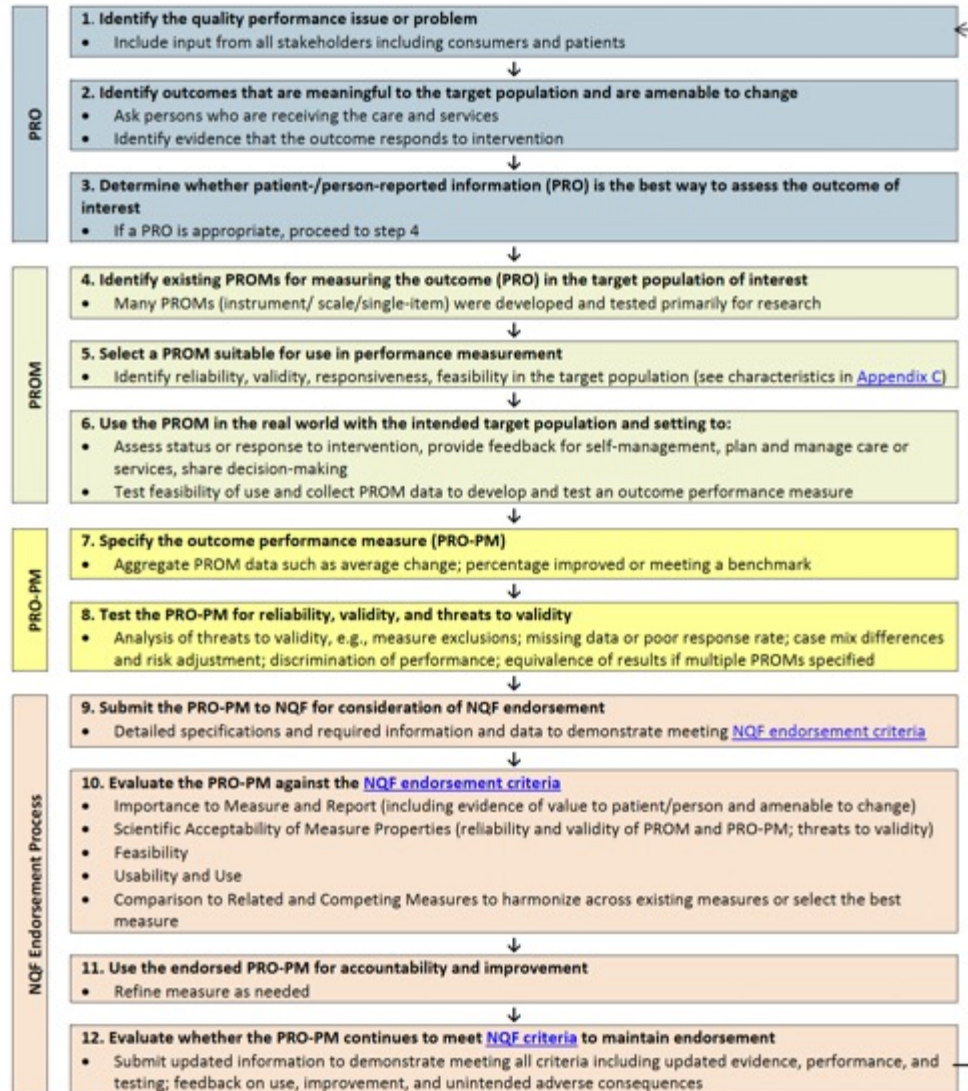
PROMs are now recognized as tools for accelerating performance improvement as PRO-based Performance Measures (PRO-PMs)

PRO-PM
"A performance measure based on PROM data aggregated for an accountable healthcare entity (e.g., % patients in an ACO whose depression score as measured by the PHQ-9 improved over 6m)"

PRO-PMs can drive accountability for processes, pathways, and clinical decisions across populations with orthopaedic problems

Use Of PROMs To Guide Clinical Decisions Hip Replacement Outcomes Over 1 Year (2014-2017)

Safran et al., Getting To The Next Generation Of Performance Measures For Value-Based Payment. Health Affairs Blog. Jan 2019.

Change is Coming: Risk-Sharing Contracts Incorporating PROMs

2016 BCBSMA Alternative Quality Contracts including PROMs (for joint degeneration and depression)

2016 TJA Pre-Authorization and Waiver of requirements

2022 MIPS Clinical Quality Measures are Incorporating PROMs (7 MIPS measures for change in functional status)

2023 Medicare Inpatient Final Rule for Elective TJR

2016 Medicare Comprehensive Care for Joint Replacement (CJR)

- Payors recognize PROMs fill critical gaps in the measurement set for global budget contracts involving conditions based on high prevalence, cost, and utilization.
- Payors are using financial incentives to promote PROMs implementation (collection) and using PROMs to redefine hospital level performance measures (e.g., Medicare CJR)

Multi-faceted Strategy for PROMs and SDM Implementation

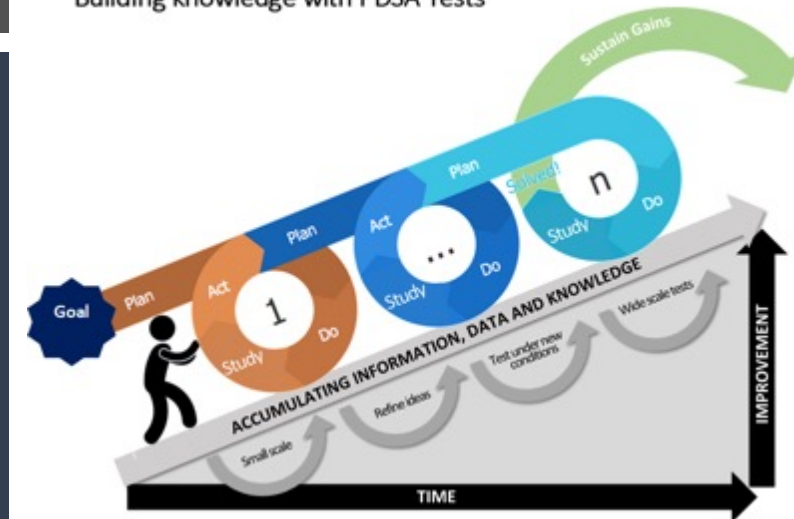| TEAMS	TOOLS	PROCESSES

Workflow

- Integration
- Scheduling
- Automation
- PROM protocol
- Patient protocol

Technology

- Hardware
- Software
- Delivery Mode
- Follow-up strategy

Logistics

- Training
- IT Support
- Compliance
- Security
- Data Governance

Engineering

- Functionality
- KPIs
- Analytics

Q1. What are we trying to accomplish?

Q2. How will we know that a change is an improvement?

Q3. What change can we make that will result in improvement?
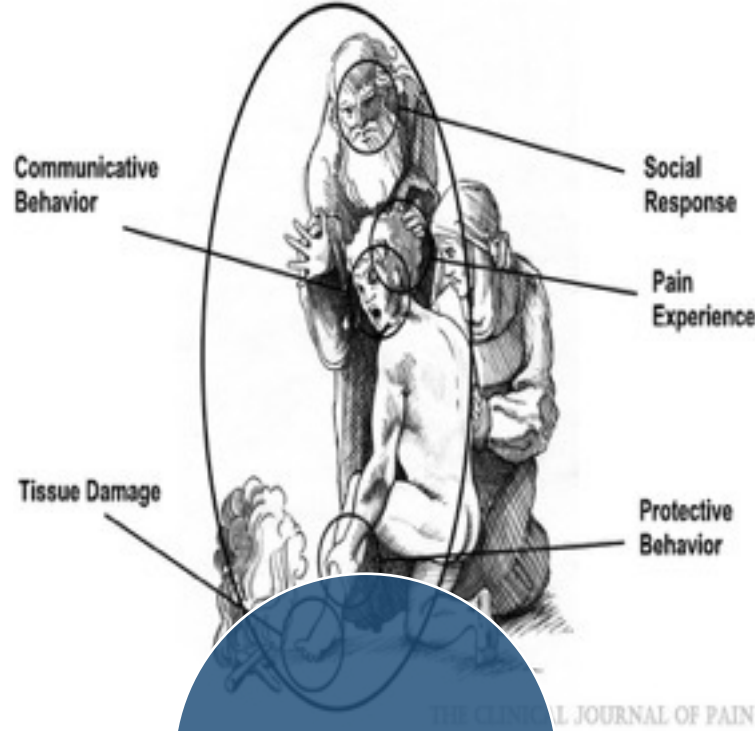
Building knowledge with PDSA Tests

Teams diagram: Patients, Clinical Champion, Q.I / Ops Champion, Other clinical providers, Other non-clinical providers, IT & Technical Champion

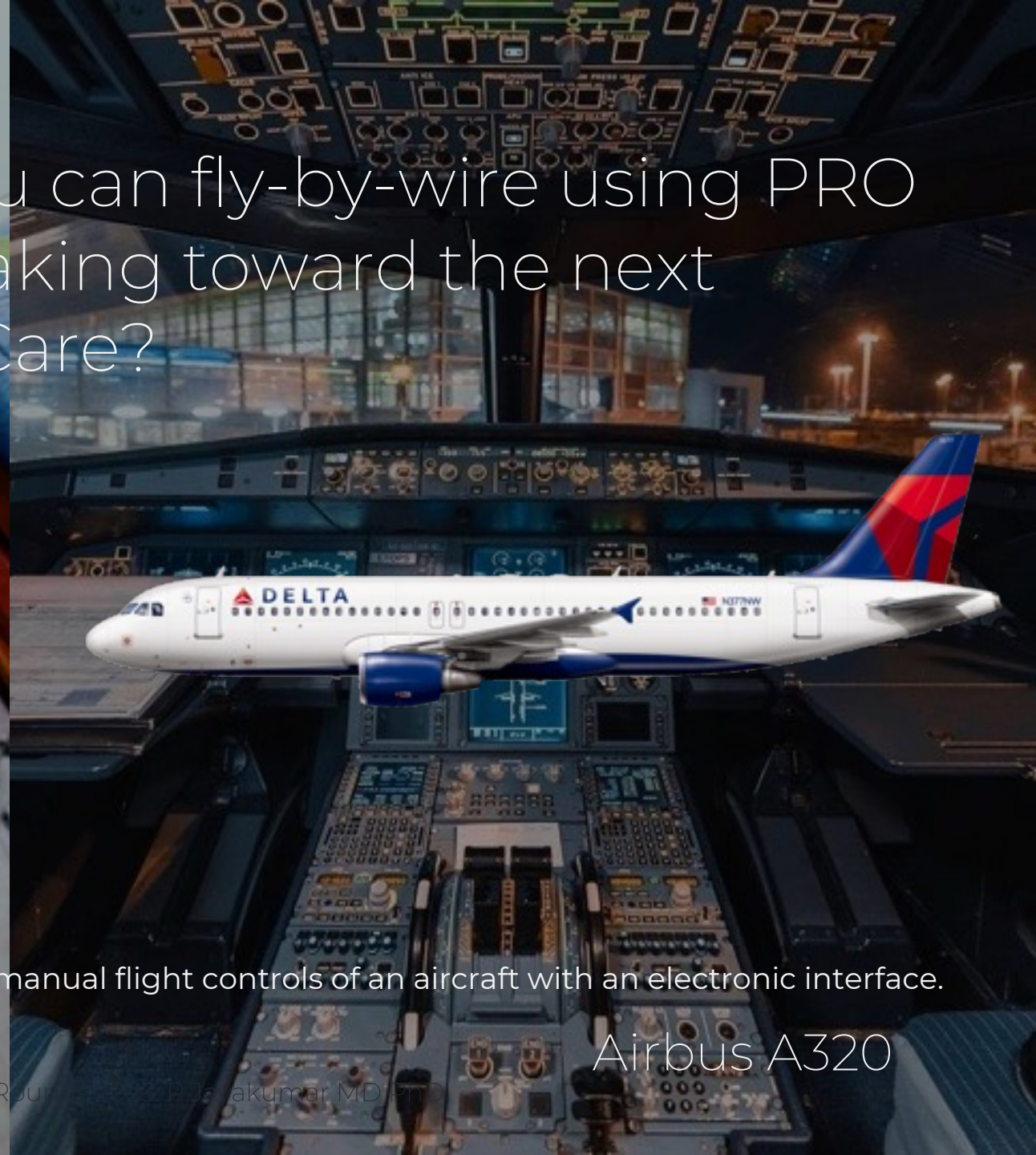# PROs and Shared Decision: Central to Triple Win for High Value Care
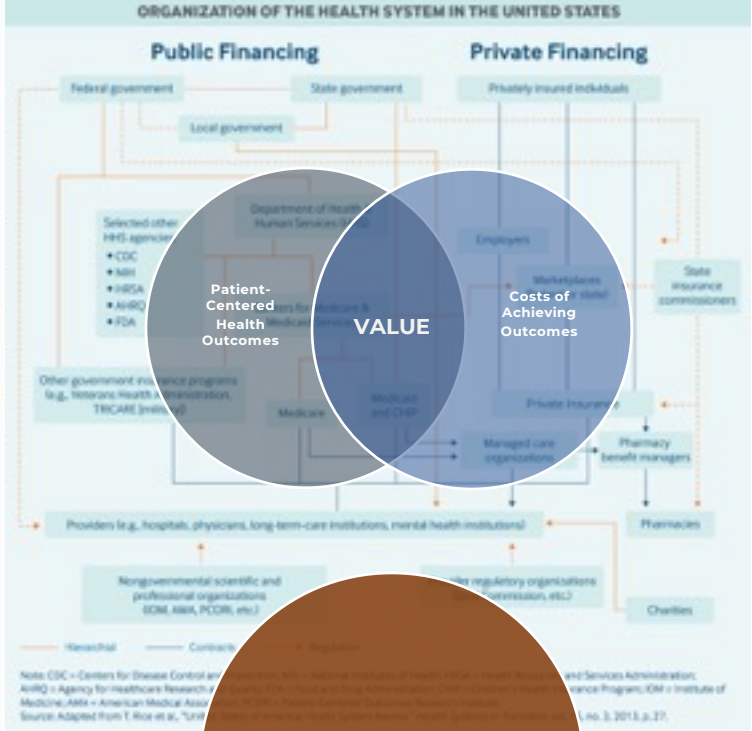
Why fly manually when you can fly-by-wire using PRO data for better decision making toward the next generation of High Value Care?

Fly-by-wire (**FBW**): a system that replaces the conventional manual flight controls of an aircraft with an electronic interface.

Sopwith Dove

Airbus A320

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