

University of Iowa Department of Orthopedics and Rehabilitation

Patient Reported Outcome Collection through Online Portal and Tablet-based Clinic Collection

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Presenters

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Iowa's Only Comprehensive Academic Medical Center

University of Iowa Hospitals and Clinics 2023 Annual Report

- 3 Hospitals
- 33,189 Inpatient Admissions
 - 889 Inpatient beds
 - 205 Pediatric Beds at UI Stead Family Children's Hospital
- 227,049 Operative Procedures
 - 36,928 Major Surgical Operations
 - 190,121 Minor Surgical Procedures
- 1,278,688 Clinic Visits
- 18,400+ Employees



Future Orthopedic Hospital to open Spring 2025

Objectives

1. Appreciate patient reported outcomes collection at an academic medical center
2. Identify a multidisciplinary approach to workflow analysis and optimization
3. Apply clinically relevant suggestions for designing and implementing functional collection and reporting tools
4. Increase capture rates of PROs through dual collection method

Important Information

Acronyms

University of Iowa Health Care (Iowa Health Care)

Iowa River Landing (IRL)

Patient Reported Outcomes (PRO)/ Patient Reported Outcome Measures (PROM)

Electronic Medical Record (EMR)/Electronic Health Record (EHR)

Iowa Health Care Orthopedic Specifics

Ortho Main Clinic

Ortho South Clinic

Sports Medicine Clinic

Ortho Work Comp Clinic

IRL Ortho Clinic

Epic®

Using PROs Department of Orthopedics and Rehabilitation

- Insurance Payment Requirements
 - CMS Bundled Payments
 - Back pain scores required for pre- authorization before spine surgery
- “Standard of Care”
 - Assessment of patient disability, pain
 - Compare results between hospitals / surgeons (National Registries)
 - Clinical Improvement/ variation reduction
- Retrospective Research
 - Quality Control Research that will help Clinical Care

AAOS Registry Involvement

- American Joint Replacement Registry
- Shoulder and Elbow Registry
- Musculoskeletal and Tumor Registry
- American Spine Registry
- Fracture and Trauma Registry*

Importance of Patient Reported Outcomes

- Validated PROs versus regular required health history questionnaires
- Collection Methods and Involvement
- PROs Usages:
 - Insurance Payment Plans; Clinical; Research; National Registries; US News & World Report

UIHC Orthopedic PRO Database

University of Iowa Department of Orthopedics Patient Reported Outcomes

Department	Department
Ort Adult Recon & Jt Repl [10423008]	Ort Tumor [10423010]
Ort Foot [10423013]	Ort UI Work Recovery Center [10423035]
Ort General [10423016]	Ort South Adlt Recon and Jt Repl [10423018]
Ort Hand [10423011]	IRL ORT ADLT Recon & JT Repl [10740]
Ort IOSMR [10424030]	IRL ORT Foot [10742]
Ort Pediatrics [10423009]	IRL ORT Physical Med and Rehab Procedure Suite [10747]
Ort Physical Medicine and Rehab [10423017]	IRL ORT Physical Medicine and Rehab [10743]
Ort Shoulder [10423012]	IRL ORT Podiatry [10741]
Ort Spine [10423014]	IRL ORT Spine [10746]
Ort Trauma [10423005]	RedCap

Service PRO Collection Record (Total Joints)

Back to Index							DEP 10740				
Department	Visit Type	Questionnaire Name	Questionnaire ID	Days before appt	Assignment Rule	Notes	Import	Visit Type	Rule	Questionnaire ID	Days
IRL ORT ADLT Recon & JT Repl	NEW PATIENT [1003]	PROMIS SCALE V1.2 – GLOBAL HEALTH	330000006	5		Added 2/11/20, 6/9/20 back to GH 1.0, 3/23/21 GH v 1.2		1003		330000006	5
IRL ORT ADLT Recon & JT Repl	NEW PATIENT [1003]	ORT JOINT HIP/KNEE	791000098	5	PATIENT AGE >= 18 YEARS [337299]	Added 2/11/20, Added age rule 4/13/21		1003	337299	791000098	5
IRL ORT ADLT Recon & JT Repl	New Facilitated Access [5999]	PROMIS SCALE V1.2 – GLOBAL HEALTH	330000006	5		Added 2/11/20, 6/9/20 back to GH 1.0, 3/23/21 GH v 1.2		5999		330000006	5
IRL ORT ADLT Recon & JT Repl	New Facilitated Access [5999]	ORT JOINT HIP/KNEE	791000098	5	PATIENT AGE >= 18 YEARS [337299]	Added 2/11/20, Added age rule 4/13/21		5999	337299	791000098	5
IRL ORT ADLT Recon & JT Repl	RETURN [181]	PROMIS SCALE V1.2 – GLOBAL HEALTH	330000006	5		Added 2/11/20, 6/9/20 back to GH 1.0, 3/23/21 GH v 1.2		181		330000006	5
IRL ORT ADLT Recon & JT Repl	RETURN [181]	ORT JOINT HIP/KNEE	791000098	5	PATIENT AGE >= 18 YEARS [337299]	Added 2/11/20, Added age rule 4/13/21		181	337299	791000098	5
IRL ORT ADLT Recon & JT Repl	POST OP [1011]	PROMIS SCALE V1.2 – GLOBAL HEALTH	330000006	5		Added 2/11/20, 6/9/20 back to GH 1.0, 3/23/21 GH v 1.2		1011		330000006	5
IRL ORT ADLT Recon & JT Repl	POST OP [1011]	ORT JOINT HIP/KNEE	791000098	5	PATIENT AGE >= 18 YEARS [337299]	Added 2/11/20, Added age rule 4/13/21		1011	337299	791000098	5
IRL ORT ADLT Recon & JT Repl	NEW PATIENT [1003]	UIHC STANDARD HEALTH HISTORY-ORTHO	[200400]	5							
IRL ORT ADLT Recon & JT Repl	New Facilitated Access [5999]	UIHC STANDARD HEALTH HISTORY-ORTHO	[200400]	5		Added 4/23/19					
IRL ORT ADLT Recon & JT Repl	SDM KNEE [697]	ORTHO-REFERRAL QUESTIONNAIRE (MAIN)	[79100169]	5		Removed 2/15					
IRL ORT ADLT Recon & JT Repl	SDM KNEE [697]	UIHC STANDARD REVIEW OF SYSTEMS	[79100200]	5		Removed 2/15					
IRL ORT ADLT Recon & JT Repl	SDM KNEE [697]	ORTHO-EDUCATION,ETC	[791001999]	5	PATIENT AGE >= 18 YEARS [337299]	Removed 2/15					
IRL ORT ADLT Recon & JT Repl	SDM HIP [698]	ORTHO-REFERRAL QUESTIONNAIRE (MAIN)	[79100169]	5		Removed 2/15					
IRL ORT ADLT Recon & JT Repl	SDM HIP [698]	UIHC STANDARD REVIEW OF SYSTEMS	[79100200]	5		Removed 2/15					
IRL ORT ADLT Recon & JT Repl	SDM HIP [698]	ORTHO-EDUCATION,ETC	[791001999]	5	PATIENT AGE >= 18 YEARS [337299]	Removed 2/15					
IRL ORT ADLT Recon & JT Repl	SDM KNEE [697]	UIHC STANDARD HEALTH HISTORY-ORTHO	[200400]	5		Removed 2/15					
IRL ORT ADLT Recon & JT Repl	SDM HIP [698]	UIHC STANDARD HEALTH HISTORY-ORTHO	[200400]	5		Removed 2/15					
IRL ORT ADLT Recon & JT Repl	NEW PATIENT [1003]	HOOS JR-Hip Disability and Osteoarthritis Outcome Score for Joint Replacement	[64022]	5		Removed 2/23/19					
IRL ORT ADLT Recon & JT Repl	NEW PATIENT [1003]	KOOS JR-Knee Injury and Osteoarthritis Outcome Score for Joint Replacement	[64021]	5		Removed 2/23/19					
IRL ORT ADLT Recon & JT Repl	RETURN [181]	HOOS JR-Hip Disability and Osteoarthritis Outcome Score for Joint Replacement	[64022]	5		Removed 2/23/19					
IRL ORT ADLT Recon & JT Repl	RETURN [181]	KOOS JR-Knee Injury and Osteoarthritis Outcome Score for Joint Replacement	[64021]	5		Removed 2/23/19					
IRL ORT ADLT Recon & JT Repl	POST OP [1011]	HOOS JR-Hip Disability and Osteoarthritis Outcome Score for Joint Replacement	[64022]	5		Removed 2/23/19					
IRL ORT ADLT Recon & JT Repl	POST OP [1011]	KOOS JR-Knee Injury and Osteoarthritis Outcome Score for Joint Replacement	[64021]	5		Removed 2/23/19					

Reporting

Clinic Use

PRO Summary Report for Individual Patient

Print group report where providers can view

Monthly Reports

BI Reporting & Epic Reporting Workbench

Capture rates

Monthly reports to each service

PRO Summary Page

← Snapshot PRO Summary PRO Summary

Promis Scale V1.2 – Global Health
Submitted 8/21/24

PROMIS Global Mental Health T-Score ↘ 39 (Fair) !	PROMIS Global Physical Health T-Score 37 (Fair) !
PROMIS General Health Score ↘ 3	PROMIS Global Social Activities & Roles Score 3

Pain Clinic-Pcs
Submitted 8/21/24

Total PCS: ↗ 31	Rumination sub-scale: ↗ 10
Magnification sub-scale: ↗ 7	Helplessness sub-scale: ↗ 14

Iowa Spine Intake Questionnaire
Submitted 8/21/24

Arm Pain VAS Incomplete	Percentage of pain in arm ↗ 81 (%)	Neck Pain VAS Incomplete
Percentage of pain in neck ↗ 76 (%)	Back Pain VAS Incomplete	Back pain percentage ↗ 89 (%)
Leg Pain VAS Incomplete	Percentage of pain in leg ↗ 59 (%)	

Uihc Ort Spine
Submitted 8/21/24

NDI Score-Total ↗ 19 (Moderate Disability)	NDI Score-Percentage ↗ 38 (Moderate Disability)	mJOA Myelopathy Score: ↗ 7
SRS-30 Function/Activity Scoring ↘ 3.14	SRS-30 Pain Scoring ↘ 2.67	SRS-30 Self Image/Appearance Scoring ↘ 2.56
SRS-30 Mental Health Scoring ↘ 2.2	SRS-30 Sub Total Scoring ↘ 2.67	SRS-30 Satisfaction with Management Scoring ↗ 3.33
SRS-30 Total Score ↘ 2.73	Oswestry Raw Score: 19	Oswestry Disability Index Score 38
Oswestry Disability Index Completed 38	Neck Pain VAS 8	Arm Pain VAS ↗ 8
Back Pain VAS ↗ 8	Leg Pain VAS ↗ 8	

Promis Cat V2.0 - Physical Function
Submitted 8/21/24

PROMIS Physical Function T-Score ↘ 47 (within normal limits)

Promis Cat V1.1 - Pain Interference
Submitted 8/21/24

PROMIS Pain Interference T-Score (range: 10 - 90) ↗ 60 (mild)

PRO Summary Page Trendlines

PROMIS Global Mental Health T-Score
Last 5 Responses (out of 50 assigned)

Date	T-Score
1/16/24	48
2/14/24	53
3/12/24	46
8/19/24	46
8/21/24	39

View last response

In general, how would you rate your satisfaction with your social activities and relationships?
8/19/24: Excellent | 8/21/24: Good

How often have you been bothered by emotional problems such as feeling anxious, depressed or irritable?
Never | Rarely

Unchanged responses

PROMIS Pain Interference T-Score (range: 10 - 90)
Last 5 Responses (out of 16 assigned)

Date	T-Score
7/25/23	52
12/18/23	62
1/16/24	54
8/19/24	56
8/21/24	60

View last response

Oswestry Disability Index Score
Last 4 Responses (out of 8 assigned)

Date	Score
5/8/23	10
7/25/23	32
8/19/24	38
8/21/24	38

View last response

Iowa Spine Intake Questionnaire
Submitted 8/21/24

Total PCS: 31
Magnification sub-scale: 7

Arm Pain VAS: Incomplete
Percentage of pain in neck: 76 (%)
Leg Pain VAS: Incomplete

Uihc Ort Spine
Submitted 8/21/24

NDI Score-Total: 19 (Moderate Disability)
SRS-30 Function/Activity Scoring: 3.14
SRS-30 Mental Health Scoring: 2.2
SRS-30 Total Score: 2.73
Oswestry Disability Index Completed: 38
Back Pain VAS: 8

Promis Cat V2.0 - Physical Function
Submitted 8/21/24
PROMIS Physical Function T-Score: 47 (within normal limits)

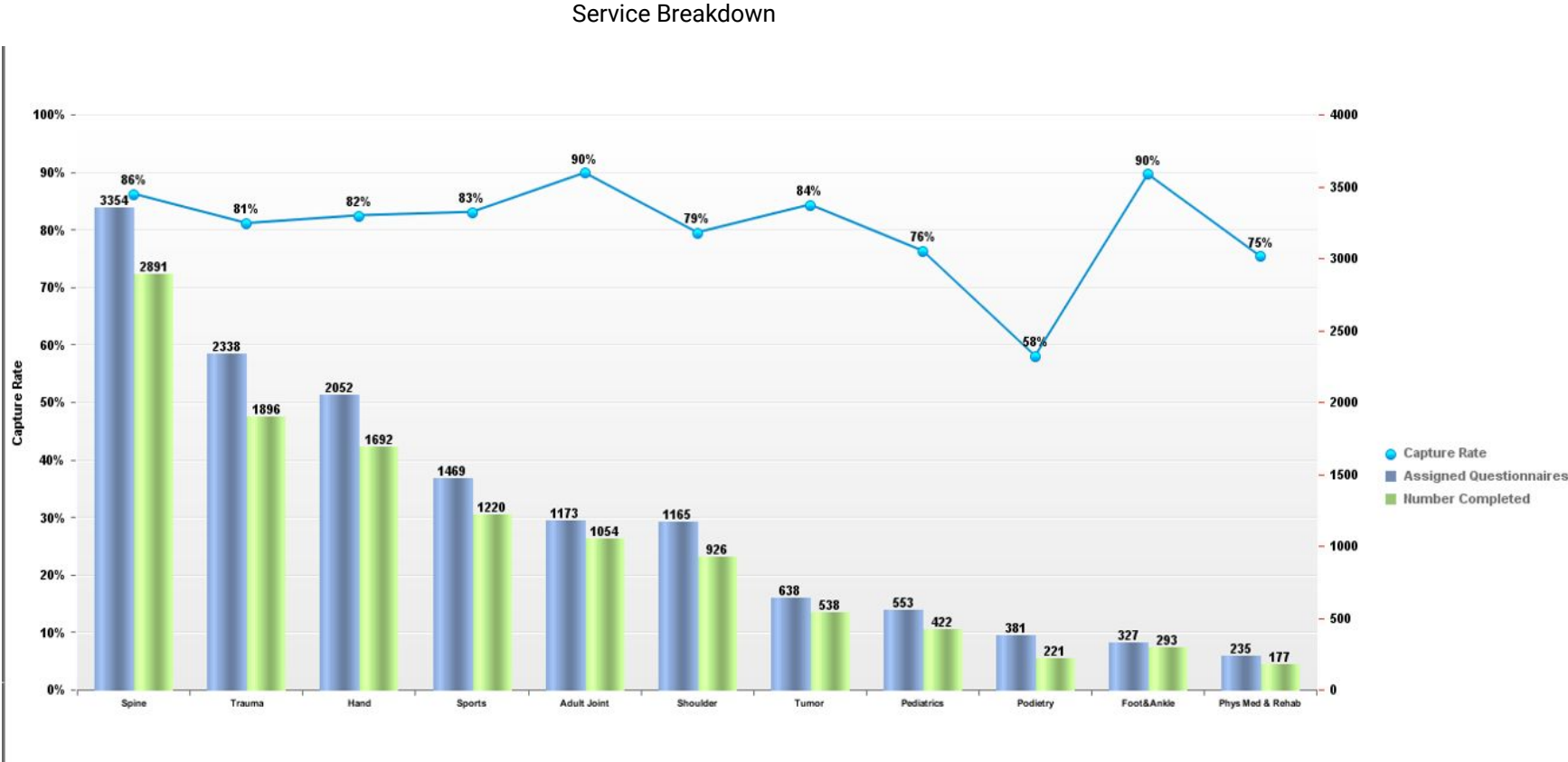
Promis Cat V1.1 - Pain Interference
Submitted 8/21/24
PROMIS Pain Interference T-Score (range: 10 - 90): 60 (mild)



HEDI Reporting

February 2024

- Monthly capture rates
- Breakdown by service and provider



Epic Reporting Workbench

- Capture Rates
- Breakdown by visit type and provider
- Can be broken down based on service location
 - Ortho Main
 - Work Comp
 - Ortho South
 - Sports Medicine

Completion Rates by visit type

Reporting Period: 06/30/21 - 07/30/21

Grouped by: [Department](#), [Attend Prov](#), [Type](#), [Appt Month](#), [Questionnaire I](#)

	# Encounters	% Completion	Rates
Bedard, Nicholas A	34		
NWP [1003]	12		
July 2021	12		
ORT JOINT HIP/KNEE		75 %	9 / 12
PROMIS SCALE V1.2 – GLOBAL HEALTH		83.33 %	10 / 12
Post-Op [1011]	2		
July 2021	2		
ORT JOINT HIP/KNEE		100 %	2 / 2
PROMIS SCALE V1.2 – GLOBAL HEALTH		100 %	2 / 2
RTN [181]	20		
June 2021	2		
ORT JOINT HIP/KNEE		0 %	0 / 2
PROMIS SCALE V1.2 – GLOBAL HEALTH		0 %	0 / 2
July 2021	18		
ORT JOINT HIP/KNEE		55.56 %	10 / 18
PROMIS SCALE V1.2 – GLOBAL HEALTH		55.56 %	10 / 18

Detail Completion Rates GH 10 v1.2 GH 10 v1.0 PASS Hip PASS Knee HOOS Jr KOOS Jr MOD/SCB SANE

PROMIS Global Health 10 v1.2

Reporting Period: 06/30/21 - 07/30/21
Grouped by: [Attend Prov](#), [Name \(MRN\)](#), [Date](#), [Details](#)

Grand Total

Bedard, Nicholas A

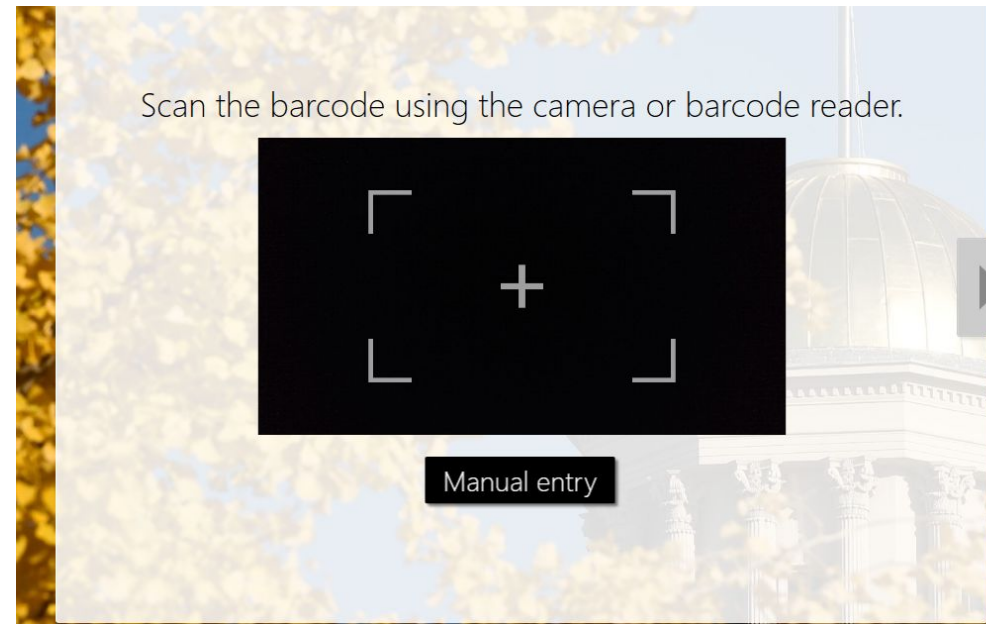
General Health Score	Mental Health T-Score	Physical Health Items T-Score	Social Activities & Role Score
3	45.8	42.3	3
3	45.8	44.9	2
3	31.3	37.4	2
3	45.8	44.9	3
4	48.3	34.9	3
3	45.8	42.3	3
4	53.3	37.4	4

Patient Reported Outcomes Education Series

- In-person workshops for individual groups
 - Pre-session survey, 15-min presentation, suggestions for improvements, post-session survey
- Multidisciplinary approach to optimize workflow for both patients and clinicians
- Provide education on the use of PROs in modern healthcare
 - Support Patient Reported Outcomes (PROs) as a standard for orthopedic clinical care
- Discussed the difference between research PROs and clinical PROs




Launching Questionnaires: Frontline Staff

- Staff simply click the button from their DAR menu to launch QR code
 - All patients should have at least 1 questionnaire
 - If there are no questionnaires or they have already been completed a message will display stating “***”



Patient Assistance: Clinical Team

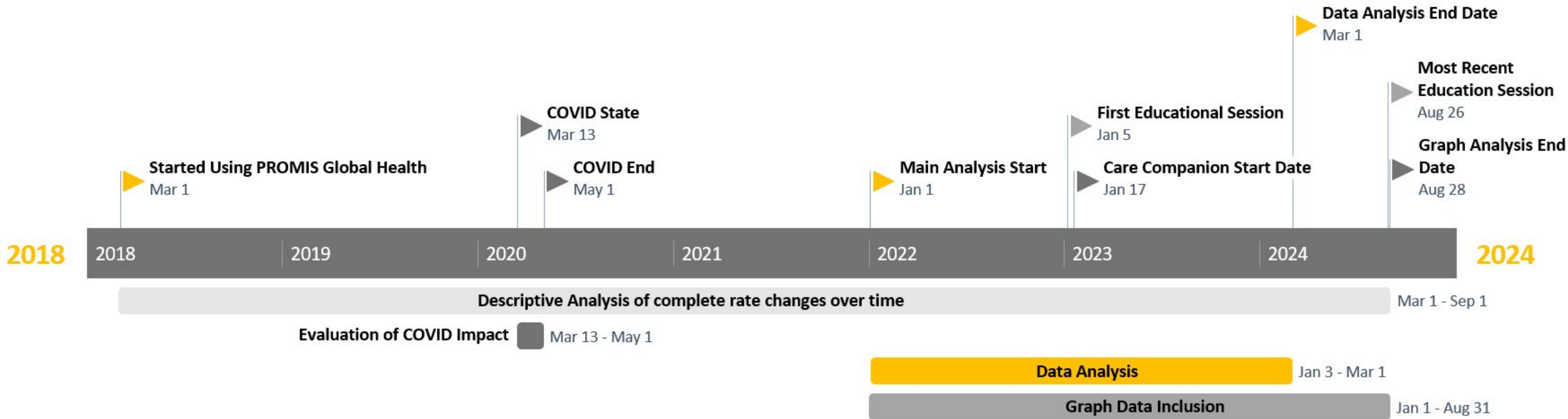
- If a patient gets locked out of the tablet or if the tablet times out
 1. Input the Welcome ID for the patient into the tablet
 2. Have them input their date of birth
 3. Check that it is them on the tablet
 4. They should be good to go

Visit Type	Time	Patient	MRN/DOB	Welcome ID	Provider / Department	Notes	Unanswered questionn...
Surgery	12:45 PM	 Wayne, Bruce "Batman" 9 y.o. / M	00025844 3/30/2015		Noiseux, Nicolas O, MD MAIN		No
Bariatric Arthroplasty Edu	3:00 PM	 Curie, Marie 56 y.o. / F	00050474 11/7/1967	152838	Elkins, Jacob M, MD ORT RECON	Test Joint Bariatric PROs	No
Pre-Op Knee Replacement	3:30 PM	 Lamarr, Hedy 62 y.o. / F	00050440 11/9/1961	152840	Noiseux, Nicolas O, MD ORT RECON	Test Joint PROs	No

Feedback from Groups

- QR code for signing in patients on tablet implemented
- Remove patient-entered history questionnaire
- Update languages available*
- Increase number of tables or update tablets
 - Issues with timing out, dying, not charging, and bulkiness
- Monthly capture rate reports
 - Send to department leadership, including frontline staff
 - Break down reports by location and service instead of just provider

Timeline



Educational Series Survey

Pre-Education Series Survey

Sent out 5-7 days before session and a QR code on opening slide for collection

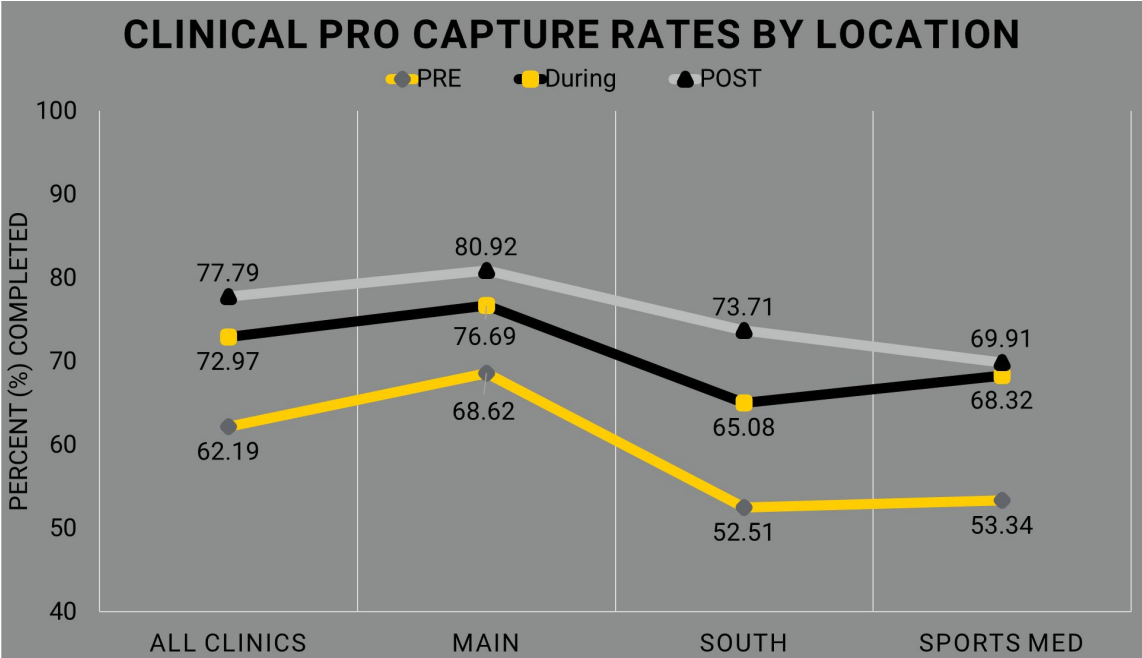
80 responses across our multiple iterations

Post-Education Series Survey

Sent out 1-2 days after session

62 responses across our multiple iterations

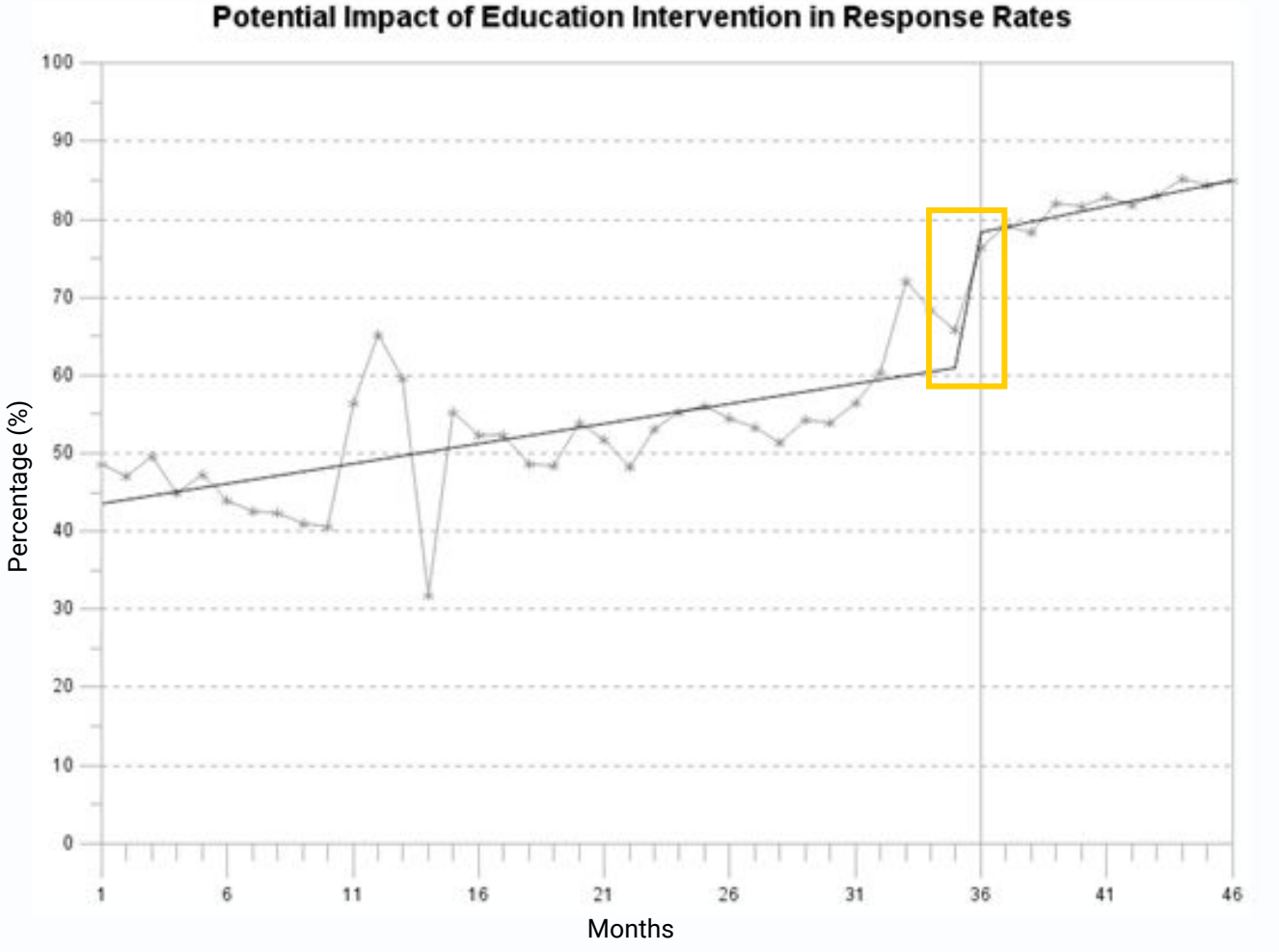
3 months pre- and post-series Data



Education Series Impact Analysis

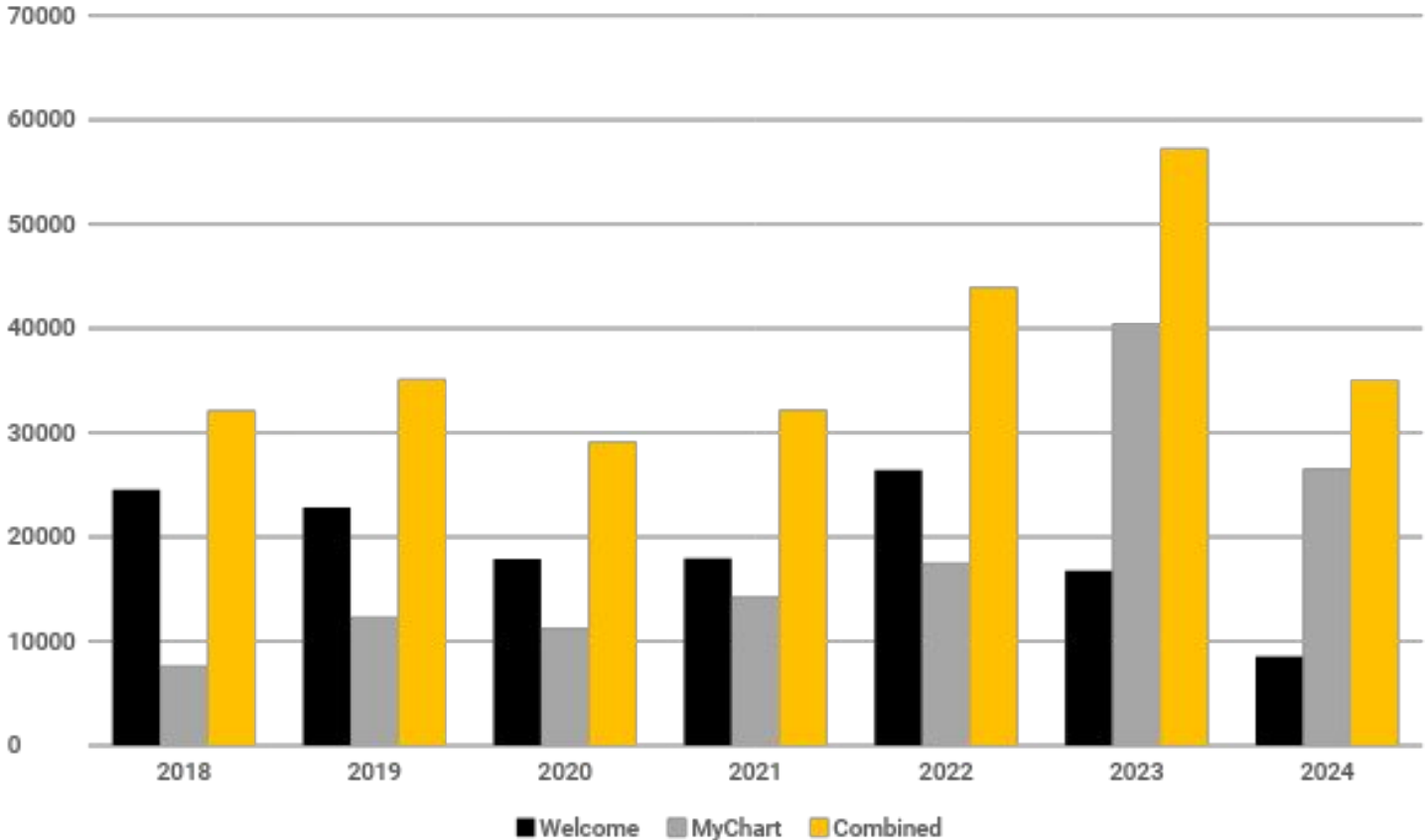
Variable	Estimate	Standard Error	p-value
Intercept	42.9780	1.9263	<.0001
time	0.5130	0.0933	<.0001
intervention	16.7638	3.6491	<.0001
postslope	0.1453	0.3813	0.7049

The intervention was associated with a 16.8±3.6% increase in the completion rates.

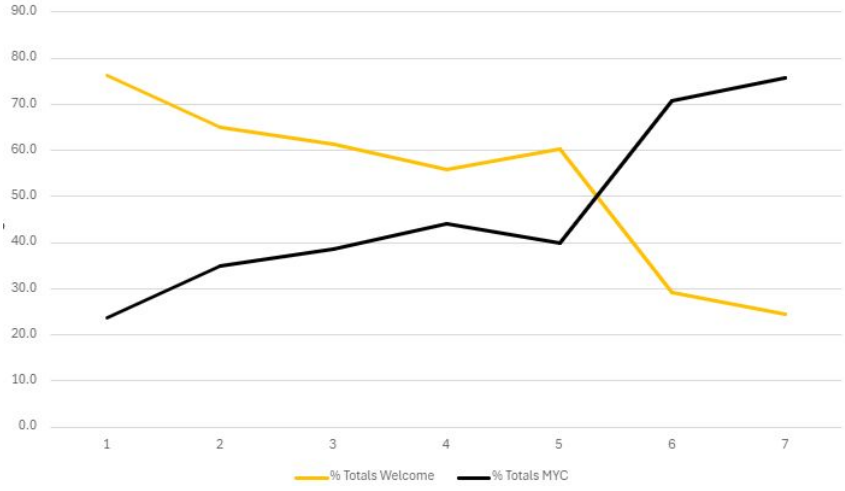


Questionnaire Submission Graphs

PROMIS Global Health Questionnaire Submission Type



Promis Global Health Questionnaire Submission Type Percentages

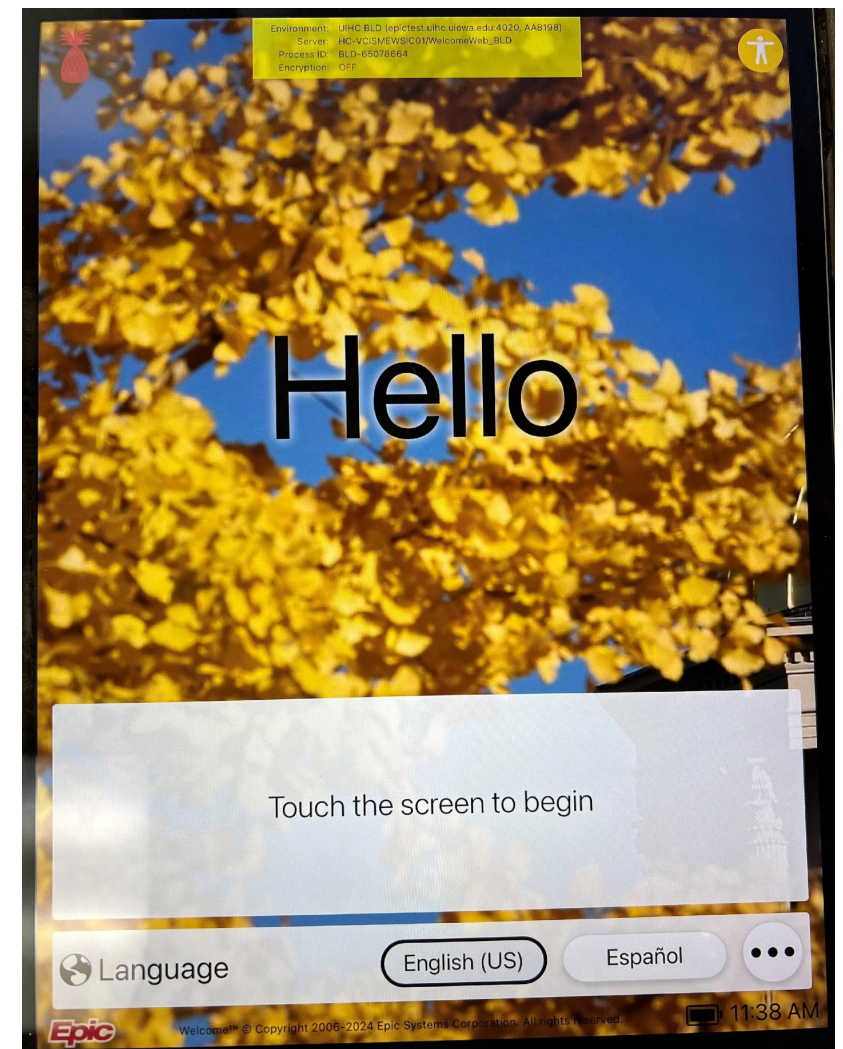


Welcome App transition

- Transitioning from using windows surface tablets and using iPads instead
- Windows tablets to be swapped out:
 - October 11th, 2024
- No changes to existing workflow for clinic staff

Welcome App (iPad)

- Benefits
 - Smaller/lighter form factor of iPads
 - Quicker response and more user-friendly interface of Welcome App
 - Auto advance of questions
 - Less scrolling



Patient's completion of PRO via iPad

- Hold for picture of Kyle Patient ***

Current Optimization Projects

- Ongoing Educational Sessions with new clinical and non-clinical staff members
- Additional Patient Education on importance of PRO completion for clinical usage
- Working with Epic PRO development team and PHO on language overrides for Spanish translated PROMIS measures

Acknowledgements

- Dr. Catherine Olinger, MD
- Dr. J. Lawrence Marsh, MD
- Dr. Andrew Pugely, MD
- Dr. Maria Bozoghlian, MD
- Dr. Natalie Glass, PhD
- Brian Cassady
- Brian Hegland
- Kyle Askling
- Mary Jo Duffy
- Denise Grafft, BSN, RN
- Mark Mason, MHA
- Bridget Hess
- Linda Kleinmeyer

Patient Reported Outcomes Collection

Questions?

→ uihc.org



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Thank you

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