

Introduction to the Musculoskeletal Tumor Registry

www.aaos.org/registries/mstr

Benjamin Miller, MD, MS, FAAOS – MsTR Steering Committee Chair

Disclosures: Benjamin J. Miller, MD, MS

- AAOS: Chair of Musculoskeletal Tumor Registry (MsTR)
- Musculoskeletal Tumor Society (MSTS): Board or committee member
- Pilot Trial supported by OREF/MSTS Clinical Research Grant # 526883
 - “Improving Multi-Institutional Collaboration by Creating a Sarcoma Registry”
- No financial conflicts of interest relevant to this presentation

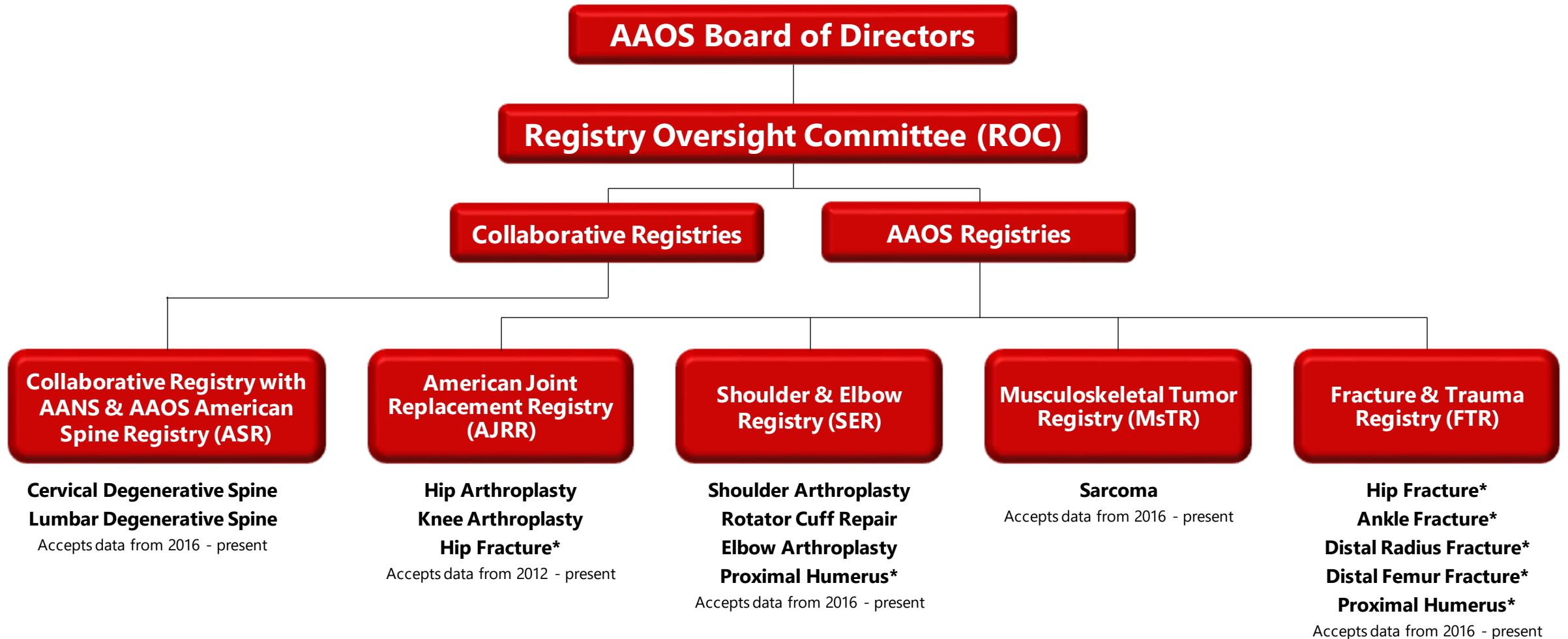
At the Core of Academy Strategy



Registry Effort Goals

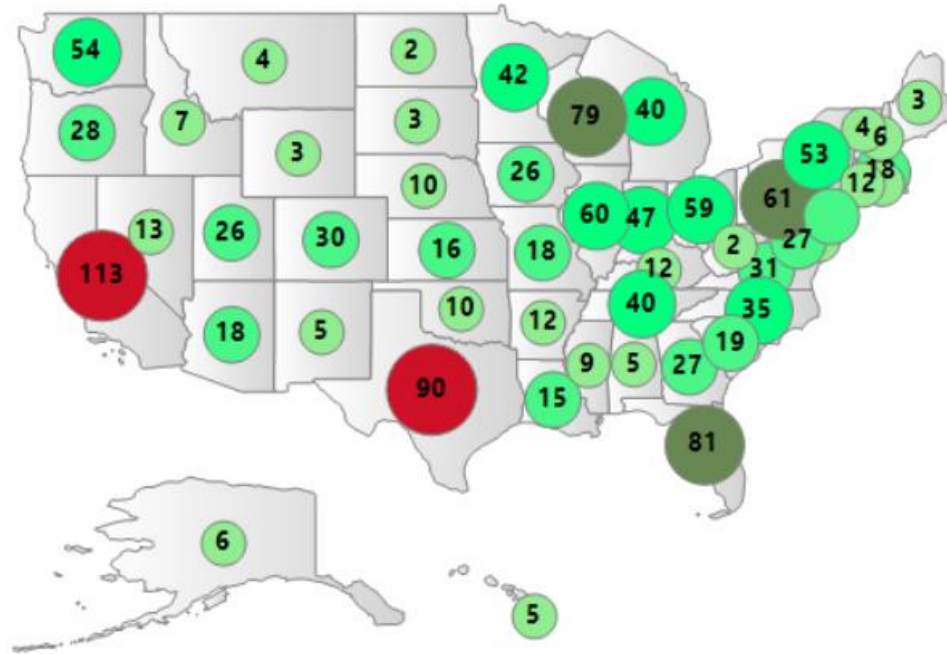
- ✓ Collect unique clinical information demonstrating ***real-world practice***
- ✓ Enable ***performance measurement*** by physicians for physicians
- ✓ Facilitate national registry-driven ***quality improvement*** programs
- ✓ Support novel scientific ***research***

AAOS Family of Registries



Participation Across the Registries

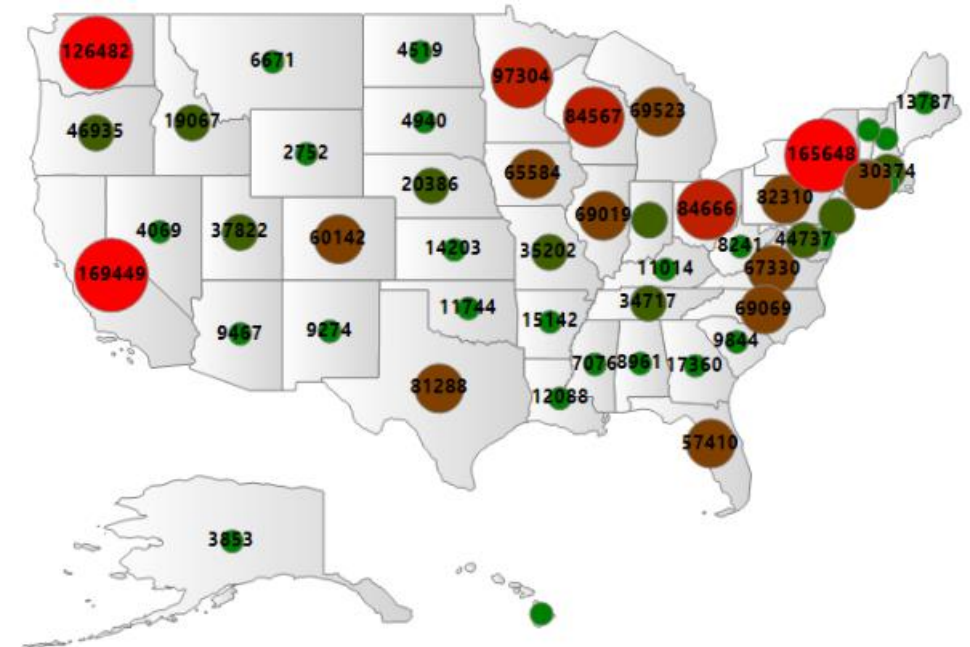
Sites by State



Over 1,600 participating sites contracted and 12,200 registered surgeons across all 50 states.

Data representing over 2,100,000 procedures capturing over 40% of all US TJA volume annually.

Procedures by State



Musculoskeletal Tumor Registry

In collaboration with



Registry Timeline

Conception/Society support March 2016

- First subcommittees (data elements, vendors) formed

Six (6)-center pilot trial began March 2018

July 2017

Mar. 2020

Mar. 2016

Mar. 2018

OREF/MSTS grant awarded July 2017

- Pause to wait for AAOS

Officially approved by AAOS March 2020

- Steering Committee formed

Pilot Team

University of Iowa

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Dartmouth

Dr. Eric Henderson

Todd E. Vogt

Jenica E. Nelan

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Amanda Maggiotto

Dale Shepard

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Dr. Robert J. Steffner

Deborah Kenney

MsTR Steering Committee

- **Benjamin Miller, MD, MS, Chair**
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- **John Alexander Abraham, MD**
Rothman Orthopaedic Institute
- **Megan E. Anderson, MD**
Boston Children's Hospital
Dana-Farber Cancer Institute
- **George T Calvert, MD**
Norton Healthcare
- **Eric Henderson, MD**
Dartmouth-Hitchcock Medical Center
- **Adam Levin, MD**
Johns Hopkins Medicine
- **Nathan Mesko, MD**
Cleveland Clinic Foundation
- **Peter Rose, MD**
Mayo Clinic
- **Mark Scarborough, MD**
University of Florida
- **Kristy L Weber, MD**
University of Pennsylvania

MsTR Pillars

- Collect **research quality** data
 - Patient, tumor, treatment details
 - Local recurrence, metastasis, complications
 - Functional outcomes and QoL
- **Minimize burden** of data entry on providers
 - EHR abstraction
- Be **inclusive** to all interested MSTs/AAOS members
- Flexible framework for **future innovation**

MsTR Data Element Overview: Baseline

Module: Sarcoma

Patient

- Name, Date of Birth, SSN
- Diagnosis (ICD-10, CPT)
- Gender
- Race/Ethnicity
- Height + Weight/Body Mass Index
- Payer Status

Site of Service

- Name and Address (TIN, NPI)

Surgeon

- Name (NPI)
- Trainee

Surgical Intervention

- Procedure Type (ICD-10, CPT)
- Date of Surgery
- Implants
- Details surrounding surgery type
- Comorbidities (ICD-10)

Non-Surgical Intervention

- Chemotherapy
- Radiation
- Clinical Trial

Tumor Baseline

- Size
- Metastasis at diagnosis
- Margins
- Tissue Type
- Biopsy Type

MsTR Data Element Overview: Encounters & PROs

Encounters

- Comorbidities (ICD-10, CPT)
- Hospital Admission
- Procedure (ICD-10, CPT)
- Diagnosis (ICD-10, CPT)
- Recurrence
- Chemotherapy
- Radiation

Patient-reported Outcomes

- PROMIS-10 Global
- VR-12
- MSTS
- TESS

—————→
Each Tab
Includes Basic
Demographic
Information
—————→

Patient

- Name (Last, First)
- Date of Birth
- Social Security Number
- Diagnosis (ICD-10)
- Gender
- Race/Ethnicity
- Payer Status

Site of Service

- Name and Address
(TIN, NPI)

Surgeon

- Name (NPI)

Data Elements

- Abstracted from EHR
 - Patient demographics, labs
 - Treatment dates, procedures
- Entered by practitioner
 - Tumor details
 - Location, size, histology, stage
 - Treatment details
 - Systemic therapy, radiation, reconstruction, complications
- Three (3) "SmartForms"
 - Patient level: tumor baseline and treatment summary
 - Encounter level: operative details (tied to op note) and complications

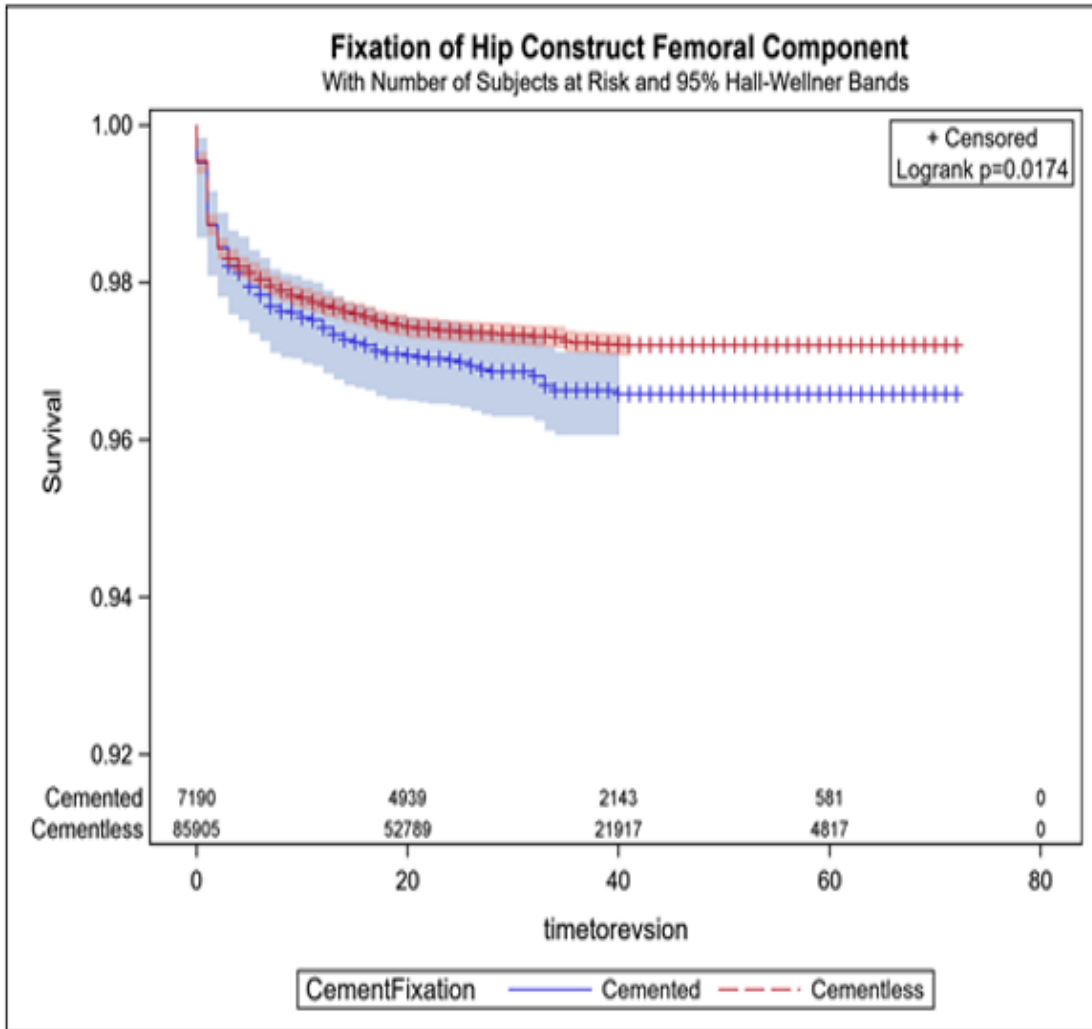
SmartForm



Musculoskeletal Tumor Registry
Improving Orthopaedic Care Through Data

Disease and Treatment Summary

Integration of Medicare Data



- Access to **Medicare claims** inclusive of inpatient (148 data elements), outpatient (122 data elements) & National Death Index
- Linked by full identifiers for longitudinal tracking
- 2012-2019 Medicare data for all patients represented in Registry with quarterly updates
 - Medicare files ~ 1 year delayed
 - National Death Index ~ 2 years delayed
 - National Inpatient Sample (NIS) integrated as reference data for representative analyses
 - NPPES dataset incorporated for NPI validation
- Access to custom reports that compare their site to the national Annual Report analyses, show migration trends, etc.

Two Ways to Access Data

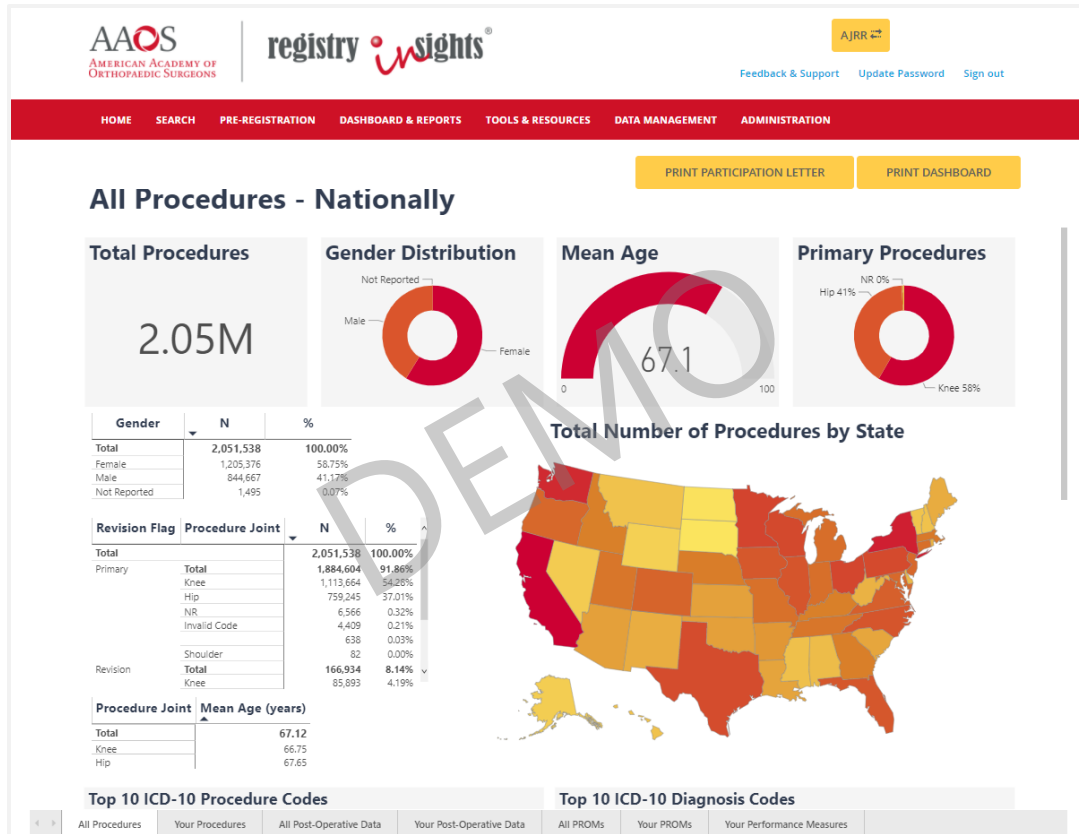


RegistryInsights® Dashboards



Custom Reports

RegistryInsights® Dashboards



On-demand practice specific dashboards



Compare your practice to national performance benchmarks



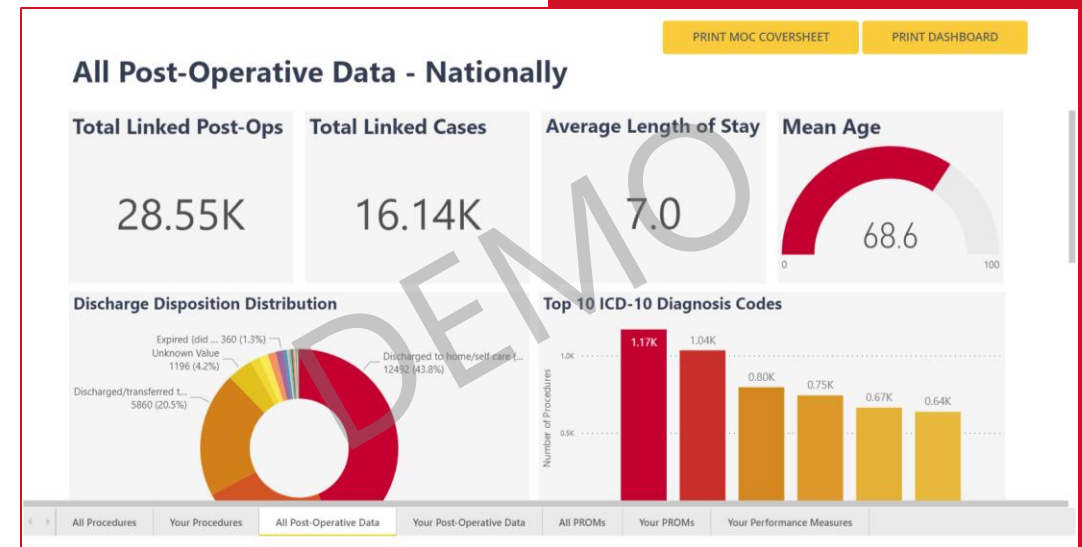
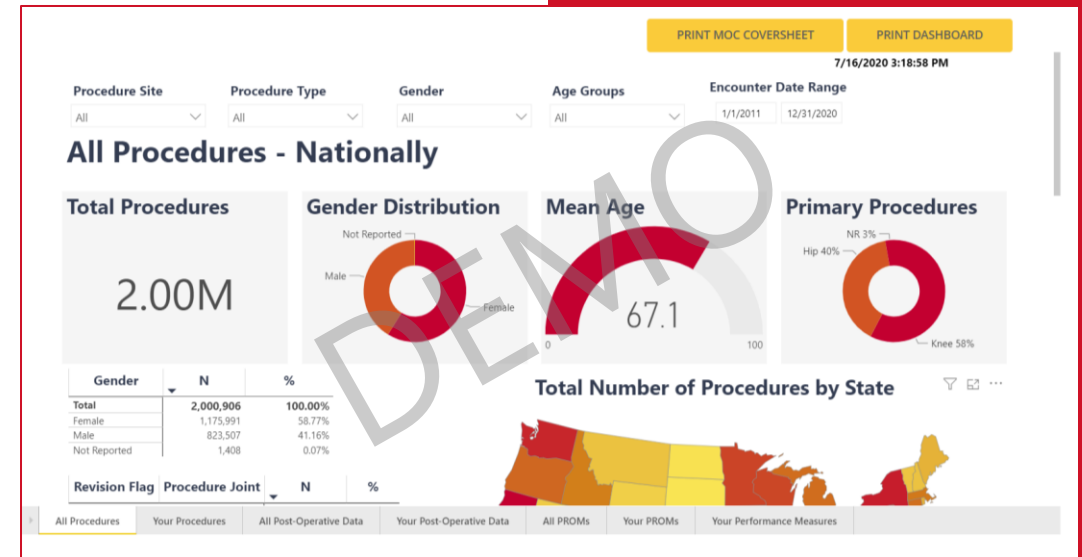
Unlimited surgeon accounts with access to system, site, and surgeon level dashboards



Surgeon Dashboards

Authorized Surgeon Users

- View their procedural, post-operative and PROM data
- National benchmarks for comparison measures
- Request custom reports
- Submit data for quality initiatives (e.g. ABOS MOC, QPP, BPCI-A)



PROM Management

AAOS AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS registry insights

UNET Community Feedback & Support Sign out

HOME SEARCH PRE-REGISTRATION DASHBOARD & REPORTS TOOLS & RESOURCES DATA MANAGEMENT ADMINISTRATION

HOME / REPORTS

Procedure Reports

Count of Components by Type

Count of Procedures by ICD-10 Procedure Codes

Count of Procedures by CPT Procedure Codes

Procedures With Component Information (ICD-10)

Shoulder Procedures Submitted to SER (ICD-10)

Count of Procedures By Surgeon

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AAOS AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS registry insights

UNET Community Feedback & Support Sign out

HOME SEARCH PRE-REGISTRATION DASHBOARD & REPORTS TOOLS & RESOURCES DATA MANAGEMENT ADMINISTRATION

HOME / REPORTS / PROM PATIENT STATUS REPORT

Entries 10 Results 1-10 of 120

ACCOUNT ID	HOSPITAL/ASC NAME	PATIENT ID	PATIENT LAST NAME	PATIENT FIRST NAME	PATIENT DATE OF BIRTH	PATIENT EMAIL ADDRESS	PATIENT PHONE TYPE	PATIENT PHONE NUMBER	PROCEDURE	LATERALITY	PLANNED SURGERY DATE	SURGEON NPI
1041062	SER Test Hospital 1	PRP30258	ataAOS	johnny	1/1/1980				Shoulder Arthroplasty	Left	1/24/2019	
1041062	SER Test Hospital 1	PRP30258	ataAOS	johnny	1/1/1980				Shoulder Arthroplasty	Left	1/24/2019	
1041061	SER Test Hospital 5	PRP30261	Bobby	Ricky	7/16/2019				Rotator Cuff Repair	Left	2/28/2019	1619012200
1041061	SER Test Hospital 5	PRP30261	Bobby	Ricky	7/16/2019				Rotator Cuff Repair	Right	2/28/2019	1619012200
1041062	SER Test Hospital 1	PRP30246	Brown	Charlie	1/1/1980				Shoulder Arthroplasty	Left	1/20/2019	
1041062	SER Test Hospital 1	PRP30246	Brown	Charlie	1/1/1980				Shoulder Arthroplasty	Left	1/20/2019	
1041062	SER Test Hospital 1	PRP30235	butkus	dick	1/1/1980				Shoulder Arthroplasty	Left	1/20/2019	

PRE-REGISTRATION FORM PRE-REGISTRATION UPLOAD

This form allows AJRR Users to pre-register patients prior to surgery for pre-operative, patient-reported outcome measures (PROMs) data collection. Once the form has been submitted, a patient pre-operative case will be added to the Registry. The pre-registration process permits users to collect PROMs from patients via the AJRR platform through the patient kiosk or through manual entry of a patients' PROMs responses into the platform if collected by paper or clinician/surrogate administration.

PART 1: Patient demographic details

Please complete all applicable required and optional fields of the patient demographic section. Note: Email is conditionally required, however if you are administering assessments via email you must provide a patient email or the system will not be able to send the email to the patient.

If the Patient Social Security Number (SSN) is not available, please select the 'Not Available' option next to the Social Security field. Please note that the Registry also accepts the last 4 digits of the SSN. Patient SSN assists the Registry with achieving its mission through the ability to track longitudinal device information.

Not Available

Email

PART 2: Pre-Operative Case Information

Please complete all applicable required and optional fields of the pre-operative case section. Case information is required for all cases to be added to the Registry. Please note that all case data requested pertains to future procedures.

Planned Proc Date

Procedure Site

Shoulder

Elbow

Institution

Surgeon

Payer Info

SUBMIT

Custom Reports



Custom reports created by our analytics team to help understand and package your site data in an actionable format


Custom reports can include site specific metrics and shape continuous improvements to the canned dashboards provided

Aggregated reports and national benchmarks for every metric across all data submitted including procedural, post-operative and PROMs data can be provided at your site level

Data Reuse Opportunities

Participation in the American Academy of Orthopaedic Surgeons (AAOS) Registry Program offers a wide variety of data reuse opportunities including requirements for quality initiatives and state collaboratives.

- **AAOS RegistryInsights® Platform Standard Reports and personalized dashboards**
- **AAOS RegistryInsights National Benchmarks**
- Accreditation Association for Ambulatory Health Care (AAAHC) Advanced Orthopaedic Certification
- Aetna Institutes of Quality (IOQ) Orthopaedic Surgery
- American Board of Neurological Surgery (ABNS) Continuous Certification (CC)
- **American Board of Orthopaedic Surgeons (ABOS) Maintenance of Certification (MOC) Program**
- BlueCross BlueShield Blue Distinction Specialty Care
- Blue Shield of California waiver of prior authorization
- Bree Collaborative
- **CMS Merit-based Incentive Payment System (MIPS) Promoting Interoperability (PI) and Quality Payment Program (QPP)**
- **Centers for Medicare & Medicaid Services (CMS) Bundled Payments for Care Improvement Advanced (BPCI-A)**
- CMS Comprehensive Care for Joint Replacement (CJR) Model
- Cigna Surgical Treatment Support Program
- DNV GL Orthopaedic Center of Excellence
- The Alliance QualityPath
- The Joint Commission Advanced Certification for Total Hip & Knee Replacement



Why Do Surgeons Participate

- Participating surgeons receive their data in personalized procedure, post-op, and PROMs dashboards that provide **national benchmarking**
- Surgeons can obtain **MOC credit** for utilizing the dashboards
- As Qualified Clinical Data Registry (QCDR) MsTR qualifies for many **quality payment programs** such as MIPS and APMs (including BPCI-A)
- The Registry Program, in collaboration with the Musculoskeletal Tumor Society, **advocates for your specialty** through supporting and contributing to available information on musculoskeletal tumor procedures
- Utilize the data submitted to the registry for **your own institutional database**

Lessons & Barriers

- Consistent institutional concerns
 - Patient confidentiality
 - Data ownership
 - Informed consent
- Contracting and onboarding can take 60-90 days
- Involvement with other AAOS registries makes it easier

Immediate (1 Year) Goals



Increase
Participation



Initial Look at
Data



Meeting Abstract
Submissions



Add SmartForms
to Additional
EHRs

Future Concentrations

- Financial sustainability
 - Licensing fee
 - Industry support
- Host clinical trials/grant funding
- Use as individual database
- Module 2: Metastatic Disease of Bone
- Spine tumors – collaboration with ASR*

**American Spine Registry is a collaboration between the American Association of Neurological Surgeons and the AAOS*

Annual Membership Cost

- \$3,500 per site
 - One-time \$750 set up fee per site
- Participation in multiple AAOS registries will allow for additional discounts

AAOS Team

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Q&A

- Will each site's Institutional Review Board (IRB) need to review this project and/or obtain informed consent from patients?
- Will other sites be able to see my data?
- Do you have any plans to share the registry data with regulatory bodies?
- Have any participating sites been reluctant to share patient social security number information? If so, how has that been handled?



Questions?

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