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

AAOS Board of Directors

Registry Oversight Committee (ROC)

Collaborative Registries

American Joint Replacement Registry (AJRR)

Shoulder & Elbow Registry (SER)

Musculoskeletal Tumor Registry (MsTR)

Fracture & Trauma Registry (FTR)

Collaborative Registry with AANS & AAOS American Spine Registry (ASR)

Cervical Degenerative Spine
Lumbar Degenerative Spine
Accepts data from 2016 - present

American Joint Replacement Registry (AJRR)

Hip Arthroplasty
Knee Arthroplasty
Hip Fracture*
Accepts data from 2012 - present

Shoulder & Elbow Registry (SER)

Shoulder Arthroplasty
Rotator Cuff Repair
Elbow Arthroplasty
Proximal Humerus*
Accepts data from 2016 - present

Musculoskeletal Tumor Registry (MsTR)

Sarcoma
Accepts data from 2016 - present

Fracture & Trauma Registry (FTR)

Hip Fracture*
Ankle Fracture*
Distal Radius Fracture*
Distal Femur Fracture*
Proximal Humerus*
Accepts data from 2016 - present

*Modules in development
Participation Across the Registries

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.
Musculoskeletal Tumor Registry

In collaboration with MSTS
Registry Timeline

Conception/Society support March 2016
- First subcommittees (data elements, vendors) formed

Six (6)-center pilot trial began March 2018

OREF/MSTS grant awarded July 2017
- Pause to wait for AAOS

Mar. 2016

July 2017

Mar. 2018

Mar. 2020

Officially approved by AAOS March 2020
- Steering Committee formed
Pilot Team

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MsTR Steering Committee

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▪ John Alexander Abraham, MD
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▪ Megan E. Anderson, MD
  Boston Children's Hospital
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▪ Adam Levin, MD
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▪ Nathan Mesko, MD
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▪ Peter Rose, MD
  Mayo Clinic
▪ Mark Scarborough, MD
  University of Florida
▪ Kristy L Weber, MD
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MsTR Pillars

• Collect **research quality** data
  o Patient, tumor, treatment details
  o Local recurrence, metastasis, complications
  o Functional outcomes and QoL

• **Minimize burden** of data entry on providers
  o 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

This page is a summary of the MsTR data elements and is not all inclusive.
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

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**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
  o Patient demographics, labs
  o Treatment dates, procedures

• Entered by practitioner
  o Tumor details
    - Location, size, histology, stage
  o Treatment details
    - Systemic therapy, radiation, reconstruction, complications

• Three (3) “SmartForms”
  o Patient level: tumor baseline and treatment summary
  o Encounter level: operative details (tied to op note) and complications
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
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
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
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  
  o Licensing fee  
  o 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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