Fracture & Trauma Registry

Expanding Data Collection Across Musculoskeletal Care

www.aaos.org/registries
Speaker Introduction

Steven A. Olson, MD
Golder-Jones Distinguished Professor
Department of Orthopaedic Surgery
Division Chief - Orthopaedic Trauma
Duke University Health System
Durham, NC USA
Agenda

• AAOS Registry Program Overview
• Introduction to the Fracture and Trauma Registry (FTR)
• Module-Specific Elements
• AJRR & SER Crossover
• Data Reuse Opportunities
• Steps to Participate
• Q&A
AAOS Family of Registries

AAOS Board of Directors

Registry Oversight Committee (ROC)

Collaborative Registries

- Collaborative Registry with AANS & AAOS American Spine Registry (ASR)
- American Joint Replacement Registry (AJRR)

AAOS Registries

- Shoulder & Elbow Registry (SER)
- Musculoskeletal Tumor Registry (MsTR)
- Fracture & Trauma Registry (FTR)

Shoulder Arthroplasty
- Rotator Cuff Repair
- Elbow Arthroplasty

Hip Arthroplasty

Knee Arthroplasty

Orthopaedic Sarcoma

Cervical Degenerative Spine
- Lumbar Degenerative Spine

Hip Arthroplasty
- Knee Arthroplasty

Shoulder Arthroplasty
- Rotator Cuff Repair
- Elbow Arthroplasty

Musculoskeletal Tumor Registry (MsTR)

Hip Fracture
- Ankle Fracture
- Distal Radius Fracture
- Distal Femur Fracture
- Proximal Humerus
Five registries with over 1,400 participating sites contracted and 14,000 registered surgeons across all 50 states.

The AJRR has been shown to be representative of national trends and contains data representing over 2,700,000 procedures.
Agenda

• AAOS Registry Program Overview
• Introduction to the Fracture and Trauma Registry (FTR)
• Module-Specific Data
  ➢ AJRR & SER Crossover
• Data Reuse Opportunities
• Steps to Participate
• Q&A
Fracture & Trauma Registry Modules

Data Elements Summary

• Procedural
• Comorbidities & Complications
• Patient-reported Outcomes
• Bone Health Assessment
• Functional Assessment

- Hip Fracture
- Distal Radius Fracture
- Ankle Fracture
- Distal Femur Fracture
- Proximal Humerus Fracture
FTR Steering Committee

- Michael J. Gardner, MD, FAAOS – Chair
  Stanford University Surgery
- Jaimo Ahn, MD, PhD, FAAOS
  University of Michigan
- Kyle J. Jeray, MD, FAAOS
  Prisma Health
- Douglas W. Lundy, MD, MBA, FAAOS
  Resurgens Orthopaedics
- Saam Morshed, MD, FAAOS
  University of California, San Francisco
- William T. Obremskey, MD, MPH, FAAOS
  Vanderbilt Ortho Institute
- Steven A. Olson, MD, FAAOS
  Duke Hospital South
- Heather A. Vallier, MD, FAAOS
  MetroHealth Medical Center
- Philip R. Wolinsky, MD, FAAOS
  University of California at Davis Medical Center

Hand Lead – David Bozentka, MD
Ankle Lead – Ken Hunt, MD
SER Lead – Grant Garrigues, MD
**Mission:** To improve orthopaedic fracture care through the collection, analysis, reporting and research on traumatic fractures of the pelvis and extremities.

**Vision:** To be a National Registry that empowers quality improvement and research for orthopaedic trauma of the pelvis and extremities in order to optimize patient care.
Registry Data Collection: Core Data Elements

Procedure

Patient
- Name (Last, First), 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)

Procedure
- Type (ICD-10, CPT)
- Date of Surgery
- Implants (Manufacturer, Lot #)
- Anesthesia Type

Procedure, continued
- Length of Stay
- American Society of Anesthesiologists Score
- Charlson Comorbidity Index (CCI)

Comorbidities & Complications
- Comorbidities (ICD-10)
- COVID-19 as prior diagnosis
- Height + Weight/Body Mass Index
- Length of Stay
- American Society of Anesthesiologists Score
- Charlson Comorbidity Index (CCI)
- Operative and Post-operative Complications

These Core Data Elements are collected across all AAOS and Collaborative Registries.
FTR Common Data Elements

In addition to the Core Data Elements, FTR also collects the following:

Procedure

Patient
• Injury Date
• Regional Block
• Osteoporosis Screening
• Calcium/Vitamin D Supplementation
• Residential Setting
• Ambulatory Status
• Delirium Score
• Implants and Grafts

Fracture
• Fracture Type
• Fracture Classification

The Fracture & Trauma Registry includes the following modules:
• Hip Fracture
• Distal Femur Fracture
• Proximal Humerus Fracture
• Distal Radius Fracture
• Ankle Fracture
## FTR PROMs by Module

<table>
<thead>
<tr>
<th>Hip Fracture</th>
<th>Proximal Humerus Fracture</th>
<th>Distal Femur Fracture</th>
<th>Distal Radius Fracture</th>
<th>Ankle Fracture</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROMIS-10 or VR-12</td>
<td>PROMIS-10 or VR-12</td>
<td>PROMIS-10 or VR-12</td>
<td>PROMIS-10 or VR-12</td>
<td>PROMIS-10 or VR-12</td>
</tr>
<tr>
<td>PROMIS Physical Function</td>
<td>PROMIS Physical Function</td>
<td>PROMIS Physical Function</td>
<td>PROMIS Physical Function</td>
<td>PROMIS Physical Function</td>
</tr>
<tr>
<td>HOOS, Jr</td>
<td>ASES and SANE</td>
<td>KOOS, Jr</td>
<td>DASH or QuickDASH</td>
<td>PROMIS Pain Interference</td>
</tr>
</tbody>
</table>

**Also Accepts:**
- HOOS, PROMIS-29, PROMIS-CAT*, PROMIS Anxiety, PROMIS Depression, PROMIS Pain Interference

Additionally accepted PROMs may be used in combination with, or in place of, the above recommended PROMs.

*Accepting summary scores only*
## FTR PROMs Intervals

<table>
<thead>
<tr>
<th>Collection Interval</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-injury, 1 Month (SR)</td>
<td>Within 30 days prior to the injury</td>
</tr>
<tr>
<td>Post-operative, 6 Weeks (SR)</td>
<td>+/- 2 weeks</td>
</tr>
<tr>
<td>Post-operative, 3 Months (SR)</td>
<td>+/- 60 days</td>
</tr>
<tr>
<td>Post-operative, 6 months (O)</td>
<td>+/- 30 days</td>
</tr>
<tr>
<td>Post-operative, 12 month (O)</td>
<td>+/- 60 days</td>
</tr>
</tbody>
</table>

**Note:** SR = Strongly Recommend, O = Optional
Agenda

- AAOS Registry Program Overview
- Introduction to the Fracture and Trauma Registry (FTR)
- Module-Specific Data
  - AJRR & SER Crossover
- Data Reuse Opportunities
- Steps to Participate
- Q&A
Distal Radius Fracture

Procedural
Fracture
- Fracture Status
- Pre-operative Closed Reduction
- Angulation Type
- Shear Type
- Presence of Scaphoid Fracture
- Presence of Ipsilateral Ulnar Fracture

Procedure
- Fixation Type
- ORIF Fixation
- Pre-ORIF with Staged External Fixation
- TFCC Repair
- Distal Radioulnar Joint Stabilization

Post Operative / Complications
- Range of Motion
- Grip Strength
## Module-Specific Elements

### Ankle Fracture

**Procedural**

**Fracture**
- Dislocation Type
- Open/Closed
- Injury Mechanism
- Pre-operative Closed Reduction

**Procedure**
- External Fixation
- Syndesmotic Fixation
- Lateral, Posterior Malleolus, Medial Treatment
- Adjunct Treatments
- Associated Articular Impaction Details
- Stress Evaluation Method and Findings

### Distal Femur Fracture

**Procedural**

**Fracture**
- Presence of Bone Defect

**Procedure**
- Use of Bone Cement
- Planned Return to OR
**FTR & AJRR Crossover**

- Key difference is the triggering inclusion
  - AJRR is triggered by procedure codes
  - FTR is triggered by fracture diagnosis codes accompanied by a CPT/ICD-10 Procedure Code

- 183 common data elements

- AJRR contains 19 data element fields not in FTR that related to
  - Knee surgical technique
  - TJC elements
  - Other measure-related data elements

- FTR Hip Fracture Module contains the following 14 recommended or optional data fields in addition to the common core elements
# FTR Hip Fracture Module-Specific Elements

<table>
<thead>
<tr>
<th></th>
<th>Recommended</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pat_Residence</td>
<td></td>
<td>1-4 (1=Independent; 2=Assisted Living; 3=Skilled Nursing Facility (SNF); 4=Not Reported)</td>
</tr>
<tr>
<td>Pat_AmbulatoryStatus</td>
<td></td>
<td>1-5 (1=Independent; 2=Cane; 3=Walker; 4=Non-ambulatory; 5=Not Reported)</td>
</tr>
<tr>
<td>Delirium_Score</td>
<td></td>
<td>1-5 (1=Acute Onset and Fluctuating Course; 2=Inattention; 3=Disorganized Thinking; 4=Altered Level of Consciousness; 5=Not Reported) NOTE: A comma separation may be used if there is more than one technique administered (e.g., &quot;1, 2&quot; for general spinal).</td>
</tr>
<tr>
<td>MFI_5</td>
<td></td>
<td>Total; 0-5, Not reported or NR</td>
</tr>
<tr>
<td>INJURYDT</td>
<td></td>
<td>MM/DD/YYYY</td>
</tr>
</tbody>
</table>
# FTR Hip Fracture Module-Specific Elements

<table>
<thead>
<tr>
<th>Element</th>
<th>Data Type</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical Technique</td>
<td>Optional Data</td>
<td>1-4 (1=Hemiarthroplasty; 2=Total Joint Arthroplasty; 3=Fixation; 4=Not Reported or NR)</td>
</tr>
<tr>
<td>Fixation Type</td>
<td>Conditional Data</td>
<td>1-6 (1=ORIF; 2=External Fixation; 3=CR/pinning; 4=Not reported or NR; 5=IM Nail; 6=Screw-sideplate)</td>
</tr>
<tr>
<td>Fracture Type</td>
<td>Required Data</td>
<td>1-4 (1=Femoral Neck Fracture; 2=Intertrochanteric Fracture; 3=Subtrochanteric Fracture; 4=Not Reported)</td>
</tr>
<tr>
<td>Fracture Classification</td>
<td>Optional Data</td>
<td>1-3 (1=AO; 2=OTA; 3=Not Reported)</td>
</tr>
<tr>
<td>Fracture Stability</td>
<td>Optional Data</td>
<td>1-3 (1=Stable; 2=Unstable; 3=Not Reported)</td>
</tr>
</tbody>
</table>
# FTR Hip Fracture Module - Specific Elements

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>RegionalBlock</td>
<td>Conditional Data</td>
<td>1-5 (1=No, 2=Pre-op, 3=Intra-op; 4=Post-op, 5=Not Reported)</td>
</tr>
<tr>
<td>OsteoporosisScreening</td>
<td>Optional Data</td>
<td>1-3 (1=Yes; 2=No; 3=Not Reported)</td>
</tr>
<tr>
<td>DXA_Scan</td>
<td>Optional Data</td>
<td>1-2 (1=Yes; 2=No; 3=Not Reported)</td>
</tr>
<tr>
<td>Ca_VitD</td>
<td>Optional Data</td>
<td>1-3 (1=Yes; 2=No; 3=Not Reported)</td>
</tr>
</tbody>
</table>
FTR & AJRR Common Data Elements

PROMs
Recommended in FTR and available in AJRR
• PROMIS-10
• VR-12
• PROMIS Physical Function
• HOOS, Jr.
• Both Registries Also Accept:
  • HOOS,
  • PROMIS-29,
  • PROMIS-CAT*,
  • PROMIS Anxiety,
  • PROMIS Depression,
  • PROMIS Pain Interference
FTR & SER Crossover

- Inclusion Criteria
  - SER is triggered by procedure codes
  - Proximal humerus is triggered by fracture diagnosis codes accompanied by a CPT/ICD-10 Procedure Code

- 183 common data elements

- SER contains 4 data element fields not in FTR that relate to
  - Shoulder surgical approach and technique
  - Patient-specific instrumentation

- FTR Proximal Humerus Fracture Module contains the following 17 recommended or optional data fields in addition to the common core elements
## FTR Proximal Humerus Fracture Module-Specific Elements

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pat_Residence</td>
<td>Recommended Required</td>
<td>1-4 (1=Independent; 2=Assisted Living; 3=Skilled Nursing Facility (SNF); 4=Not Reported)</td>
</tr>
<tr>
<td>Pat_AmbulatoryStatus</td>
<td>Recommended Required</td>
<td>1-5 (1=Independent; 2=Cane; 3=Walker; 4=Non-ambulatory; 5=Not Reported)</td>
</tr>
<tr>
<td>Delirium_Score</td>
<td>Recommended Required</td>
<td>1-5 (1=Acute Onset and Fluctuating Course; 2=Inattention; 3=Disorganized Thinking; 4=Altered Level of Consciousness; 5=Not Reported) NOTE: A comma separation may be used if there is more than one technique administered (e.g., &quot;1, 2&quot; for general spinal).</td>
</tr>
<tr>
<td>PreOp_Imaging</td>
<td>Optional Data</td>
<td>1-4 (1=CT Scan, 2=MRI, 3=Not obtained, 4=Not Reported or NR)</td>
</tr>
<tr>
<td>INJURYDT</td>
<td>Recommended Required</td>
<td>MM/DD/YYYY</td>
</tr>
</tbody>
</table>
## FTR Proximal Humerus Fracture Module-Specific Elements

<table>
<thead>
<tr>
<th>Surgical Approach</th>
<th>Recommended Required</th>
<th>1-5 (1=Deltopectoral; 2=Deltoid Split/Anterolateral; 3=Percutaneous; 4=other; 5=Not reported or NR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical Technique</td>
<td>Optional Data</td>
<td>1-7 (1=Hemiarthroplasty; 2=Total Shoulder Arthroplasty; 3=Reverse Shoulder Arthroplasty; 4=IM Nailing; 5=Lock Plating; 6=Percutaneous Pin Fixation; 7= Not Reported or NR)</td>
</tr>
<tr>
<td>Fracture Type</td>
<td>Recommended Required</td>
<td>1-7 (1=Anatomical neck fracture; 2=surgical neck fracture, 3=Geater tuberosity fracture; 4=Lesser tuberosity fracture; 5=Displaced fracture; 6=Nondisplaced; 7=Not Reported or NR) NOTE: a comma separation may be used if to indicate more than one (e.g., &quot;1, 6&quot; for nondisplaced anatomical neck fracture).</td>
</tr>
<tr>
<td>Fracture Classification</td>
<td>Optional Data</td>
<td>1-3 (1=NEER, 2=AO, 3=OTA, 4=Not reported or NR)</td>
</tr>
</tbody>
</table>
# FTR Proximal Humerus Fracture Module-Specific Elements

<table>
<thead>
<tr>
<th>Module</th>
<th>Data Type</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>GH_Dislocation</td>
<td>Optional Data</td>
<td>1-3 (1=Yes; 2=No; 3=Not Reported or NR)</td>
</tr>
<tr>
<td>Full_RCT</td>
<td>Optional Data</td>
<td>1-3 (1=Yes; 2=No; 3=Not Reported or NR)</td>
</tr>
<tr>
<td>Shld_Osteoarthritis</td>
<td>Optional Data</td>
<td>1-3 (1=Yes; 2=No; 3=Not Reported or NR)</td>
</tr>
<tr>
<td>Inflammatory_arthritis</td>
<td>Optional Data</td>
<td>1-3 (1=Yes; 2=No; 3=Not Reported or NR)</td>
</tr>
<tr>
<td>RegionalBlock</td>
<td>Conditional Data</td>
<td>1-5 (1=No, 2=Pre-op, 3=Intra-op; 4=Post-op, 5=Not Reported)</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------</td>
<td>-----------------------------------------------------------</td>
</tr>
<tr>
<td>OsteoporosisScreening</td>
<td>Optional Data</td>
<td>1-3 (1=Yes; 2=No; 3=Not Reported)</td>
</tr>
<tr>
<td>DXA_Scan</td>
<td>Optional Data</td>
<td>1-2 (1=Yes; 2=No; 3=Not Reported)</td>
</tr>
<tr>
<td>Ca_VitD</td>
<td>Optional Data</td>
<td>1-3 (1=Yes; 2=No; 3=Not Reported)</td>
</tr>
</tbody>
</table>
PROMs
Recommended in FTR and available in SER
- PROMIS-10
- VR-12
- PROMIS Physical Function
- ASES and SANE
- Both Registries Also Accept:
  - PROMIS-29
  - PROMIS-CAT*
  - PROMIS Anxiety
  - PROMIS Depression
  - PROMIS Pain Interference

*Accepting summary scores only
Why Participate?
Delivering Value for AAOS Fracture & Trauma Surgeons

- Compare your practice to national performance benchmarks
- Access to on-demand surgeon specific reports and dashboards
- Monitor longitudinal patient outcomes (Medicare data)

- Attain certification credits for ABOS MOC
- Facilitate site, practice-specific, payer-incentivized performance improvement programs such as Aetna IOQ & Blue Distinction
- Use for reporting to quality improvement programs such as the QPP Merit-based Incentive Payment System (MIPS)
- Inform orthopaedic practice & contribute to orthopaedic advocacy
- Improve the value of care delivered to Patients
Qualified Clinical Data Registry

- AAOS maintains a QCDR designation
  - Specialty society driven participation in the Quality Payment Program (QPP) Merit-incentive Based Payment System (MIPS)

- Benefits of QCDR participation:
  - Qualify for MIPS Promoting Interoperability (PI) and Improvement Activities
  - Performance feedback available via the RegistryInsights® dashboards
  - Assistance with MIPS quality measure data submission
Integration of Medicare Data

- Access to Medicare claims linked by full identifiers for longitudinal tracking
- Follow outcomes of Registry patients occurring at non-Registry participating institutions
- 2012-2020 Medicare data for all patients represented in Registry
  - Inpatient claims (148 data elements)
  - Outpatient claims (122 data elements)
IRB Information

• The AAOS registry program is a **quality improvement registry** which is exempt from IRB review under federal rule

• All data elements are retrospectively collected from data documented during the provision of care

• We maintain a centralized IRB protocol with WCG IRB services (previously Western IRB) to confirm a waiver of patient consent
  
  • Even if new clinical workflows are created (PROMs surveys), the data we capture does not require patient consent
Steps to Participation
# Steps to a Successful Start

## Contract & Welcome
- Execute contract
- Schedule a welcome call to identify your site's key contacts and roles with the Registry

## Data Collection & File Build
- Walk through file development and file build
- File submission (SFTP/HTTPS) account creation

## Test File Submission
- Two rounds of test file submissions

## Live File Submission
- Final production set up and first live data submission

## RegistryInsights® Walkthrough
- Once data has been submitted, sites will have a walkthrough with staff to review dashboards, reports, PROMs, and other platform functionality
Authorized Vendor Program

Decrease Data Collection Burden

- AAOS has partnered with technology vendors to facilitate the data submission process
- Re-use data that already exists in medical record, practice management and PRO systems
- Direct data submission and management can be handled by a technology provider with sites able to fix rejected files
Fracture & Trauma Registry
Improving Orthopaedic Care Through Data

Questions?

RegistryInfo@aaos.org

www.aaos.org/registries/ser
Contact the AAOS Registry Program

General: RegistryInfo@aaos.org

Technical Support: RegistrySupport@aaos.org

Contracts, Invoicing, & Onboarding: RegistryEngagement@aaos.org

Custom Analytics: RegistryAnalytics@aaos.org

Registry Analytics Institute: RegistryAnalyticsInstitute@aaos.org

Phone: (847) 292-0530

Business Hours: Monday through Friday, 8 a.m. to 4 p.m. Central Time
Thank You!

RegistryInfo@aaos.org
www.aaos.org/registries/ser