American Spine Registry

A partnership between

American Association of Neurological Surgeons
American Academy of Orthopaedic Surgeons

Introduction to the American Spine Registry

A collaboration between AANS and AAOS to improve quality and outcomes in spine care

A Need for Spine Data

- Degenerative spine disease is one of the ***most prevalent and costly disease states worldwide***
  - LBP is the most common cause of work-related disability in the U.S.
  - In the U.S. alone, the total direct costs for spine care exceed $100 billion annually
- Utilization of common spine procedures has increased 150-600% over the last decade
  - Lumbar spinal fusion surgeries, which range from $60,000 to $110,000 per procedure, have significantly increased in frequency
- Various estimates suggest that between 10 and 25% of spine care (diagnostic and therapeutic) is unnecessary and/or ineffective

ASR

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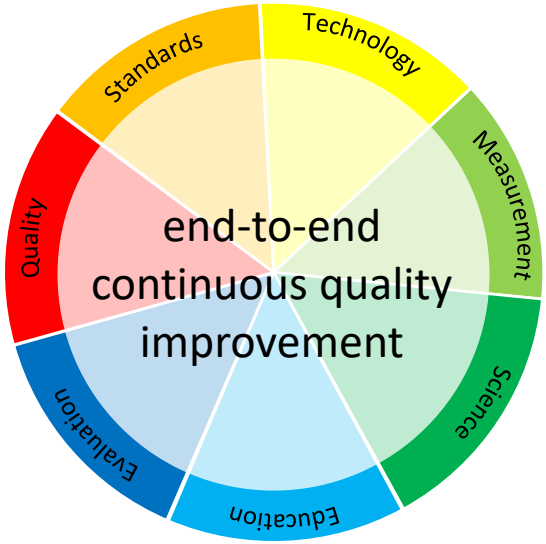

AANS/AAOS Shared Quality Vision

- **component of a larger quality vision for spine care**
- **provide data to inform AANS & AAOS guidelines and test performance measures**
- **provide feedback to providers to continuously improve their practice and healthcare outcomes**
- **allow AANS & AAOS to define what quality means in a value-based system**
- **reduce the reporting burdens on physicians**
- **help inform gaps in knowledge or areas for further research and education**

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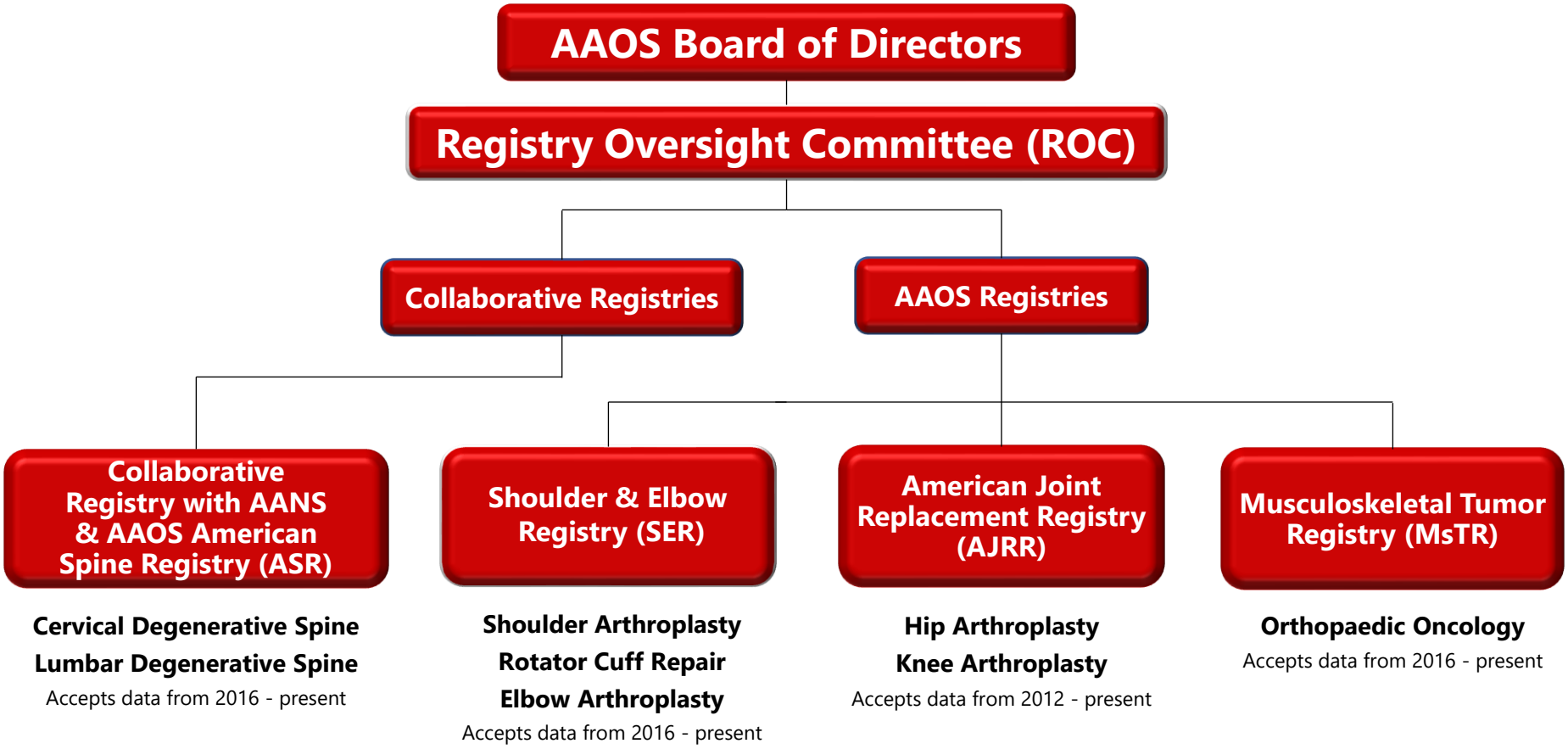
"If you can't measure it, you can't improve it" ~ Drucker

AAOS Family of Registries



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AAOS
American Academy of Orthopaedic Surgeons

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The American Association of Neurological Surgeons and the American Academy of Orthopaedic Surgeons Join Forces to Create the American Spine Registry

Partnership unites practitioners with commitment to improving quality and delivery of patient care

ROSEMONT, Ill. (September 9, 2019)—The American Association of Neurological Surgeons (AANS) and the American Academy of Orthopaedic Surgeons (AAOS) today announced a new partnership, the American Spine Registry (ASR), which will be jointly owned and developed by both organizations. The ASR will transform the Quality Outcomes Database (QOD) Spine registry, currently the nation's largest spine registry, into a more far-reaching program that facilitates the participation of all North American spine surgeons in a shared, quality data-collection platform.

The ASR leverages the unique data science capabilities [illegible] expertise of the AAOS Registry [illegible] scalability [illegible]

[illegible] with the operational [illegible]izations to enhance the [illegible] data collection efforts and [illegible]olders in this joint [illegible]ll lead to an enhanced [illegible]dvance the science of [illegible]are delivery system.

ASR launched January 2020 with over 145 sites participating as of 9/30/20

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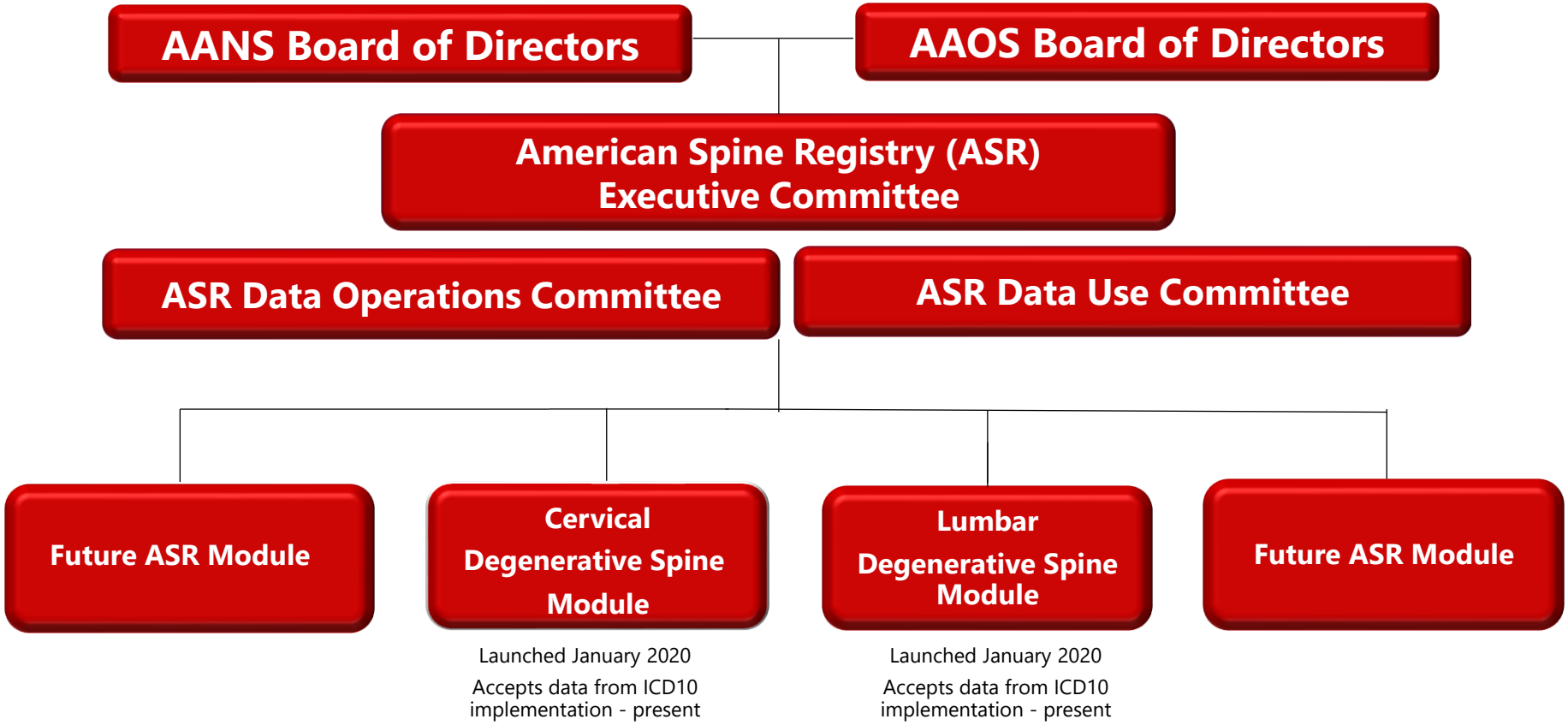
ASR Overview

ASR Governance & Development



ASR

ASR Surgeon Leadership

ASR Executive Committee (EC)

Neuro

- **Anthony Asher, MD, AANS Co-Chair**
  Carolina Neurosurgery & Spine Associates
- **Kevin Foley, MD**
  Semmes Murphey Clinic
- **Jack Knightly, MD**
  Atlantic Neurosurgical Specialists
- **Chris Shaffrey, MD**
  Duke University

Ortho

- **Steven Glassman, MD, AAOS Co-Chair**
  Norton Leatherman Spine Center
- **Todd Albert, MD**
  Hospital for Special Surgery
- **Darrel Brodke, MD**
  University of Utah
- **David Polly Jr., MD**
  University of Minnesota

**EC provides leadership across the development and implementation of ASR, oversees committees formed, and ensures surgeon representation from AANS and AAOS*

ASR Surgeon Leadership

Data Operations Committee (DOC)*

Neuro

- **Mo Bydon, MD, AANS Co-Chair**
  Mayo Clinic
- **Erica Bisson, MD**
  University of Utah
- **Paul Park, MD**
  University of Michigan
- **John Ratliff, MD**
  Stanford University

Ortho

- **Clint Devin, MD, AAOS Co-Chair**
  UCHealth – Yampa Valley Medical Center
- **Leah Carreon, MD**
  Norton Leatherman Spine Center
- **Elizabeth Norheim, MD**
  Kaiser Permanente
- **Kris Radcliff, MD**
  Rothman Orthopaedics

**DOC oversees the development of the data specification and data dictionary, monitors data quality and provides strategic oversight on data element updates*

Data Use Committee (DUC)*

Neuro

- **Praveen Mummaneni, MD, AANS Co-Chair**
  University of California San Francisco
- **Dom Coric, MD**
  Carolina Neurosurgery & Spine Associates
- **Eric Potts, MD**
  Goodman Campbell Brain and Spine
- **Mike Wang, MD**
  University of Miami, TJC Expert Panel

Ortho

- **Doug Burton, MD, AAOS Co-Chair**
  University of Kansas Medical Center
- **Sheeraz Qureshi, MD**
  Hospital for Special Surgery
- **Raj Sethi, MD**
  Virginia Mason Medical Center
- **Frank Phillips, MD**
  Rush University Medical Center

**DUC oversees the data access policies, reviews submitted hypotheses, informs the platform dashboards and reports, and provides strategic oversight on data dissemination*

ASR™

ASR Surgeon Leadership

Key Opinion Leader Taskforce* & ASR Surgeon Champion(s)

Neuro

- **John Wilson, MD**
  Wake Forest, TJC Expert Panel
- **Adam Kanter, MD**
  University of Pittsburgh
- **Michael Steinmetz, MD**
  Cleveland Clinic, TJC Expert Panel
- **Michael Groff, MD**
  Brigham & Women's Hospital
- **Joseph Cheng, MD**
  University of Cincinnati
- **Justin Smith, MD**
  University of Virginia
- **Oren Gottfried, MD**
  Duke University

**KOL represents spine surgeon leaders from across the country to inform and provide guidance on ASR development and implementation*

Ortho

- **Jacob Buchowski, MD**
  Wash U in St. Louis, TJC Expert Panel
- **Rick Sasso, MD**
  University of Indiana, TJC Expert Panel
- **Paul Rubery, MD**
  University of Rochester
- **Scott Boden, MD**
  Emory University
- **Thomas Mroz, MD**
  Cleveland Clinic
- **Jason Savage, MD**
  Cleveland Clinic
- **Jeffrey Wang, MD**
  USC
- **Zeeshan Sardar, MD**
  Columbia University
- **Andrew Pugely, MD**
  University of Iowa
- **Eeric Truumees, MD**
  UT Austin

ASR™

ASR Clinical Data Elements

Two Modules Available: Cervical & Lumbar

Demographics

Patient

- Name (Last, First)
- Date of Birth
- Social Security Number
- Diagnosis (ICD-10)*
- Gender
- Race/Ethnicity
- Comorbidities (ICD-10)
- COVID-19 as prior diagnosis
- Height + Weight/Body Mass Index

Site of Service

- Name and Address (TIN/NPI)

Surgeon

- Name (NPI)

Procedure

- Type (ICD-10, CPT)*
- Date of Surgery
- Spinal Approach
- ***Implants and Grafts (manufacturer/lot#, UDI)***
- Length of Stay
- American Society of Anesthesiologists Score
- Anticoagulation

Post-Operative/Complications

- Operative and Post-operative Complications
- Secondary Surgical Procedures

**Vanguard sites utilize an operative form for additional procedural & diagnosis detail*

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ASR PRO Data Elements

Patient-reported Outcomes*

Recommended

- PROMIS-10 Global ***or*** VR-12
- PROMIS Physical Function ***or*** Oswestry Disability Index (ODI) 2.1/Neck Disability Index (NDI)
- Numeric Rating Scale (NRS)

Additional Options Accepted

- PROMIS CAT, PROMIS-29
- PROMIS Emotional Distress – Depression
- PROMIS Emotional Distress – Anxiety
- PROMIS Pain Interference
- EQ-5D

**Vanguard sites pursue longer PROMs post-operative follow-up (min 1 year) compared to standard sites (min 90 days)*

**Sites can utilize their existing PROMs collection mechanism or utilize ASR's no cost PROM tool*

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PROMs Intervals

Collection Interval	Definition
Baseline/Pre-operative	Within 90 days prior to the procedure
90 days/3 months	+/- 4 weeks
6 months	+/- 4 weeks
12 month	+/- 2 months

Updated intervals will apply across all registries for consistency. These intervals are expanded from the previous format for AJRR to provide a broad window for capturing this information.

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9400 West Higgins Road
Rosemont, IL 60018-4975

847-292-0530 | ASR@aaos.org
www.AmericanSpineRegistry.org

Primary Symptoms (Check ALL that apply)	
Back Pain ☐	Cauda equina ☐
Leg Pain ☐ Right ☐ Left ☐ Both	Motor weakness ☐ Right ☐ Left ☐ Both
Neurogenic Claudication ☐	

Neural Compression (Check ALL that apply)		
None ☐	Foraminal ☐ Right ☐ Left ☐ Both	
Central ☐	Lateral recess ☐ Right ☐ Left ☐ Both	
Recurrent compression ☐	Far Lateral ☐ Right ☐ Left ☐ Both	

Structural Pathology (Check ALL that apply)		
None ☐	Pseudarthrosis ☐	Kyphosis / Flatback ☐
Disc Herniation ☐	Scoliosis ☐	Fracture ☐
Stenosis ☐	Adjacent Segment ☐	Tumor ☐
Disc space collapse ☐	Spondylolisthesis/Instability ☐	Infection ☐

Approach	Anterior/Oblique ☐	Transpsoas ☐	Posterior ☐	
Minimally Invasive	Tubular ☐	Endoscopic ☐	Mini-Open ☐	Percutaneous screw ☐
Supplemental Technique	Microscope	Navigated ☐	Robotic ☐	
This is part of a multi-stage procedure ☐				

Level	Decompression	Implants	Fusion	Revision Status
L1	Corpectomy ☐	Screw ☐		
L1-L2	Foraminotomy ☐ Laminectomy ☐ Discectomy ☐	Cage ☐ Plate ☐ Other ☐, sp	PLF ☐ TLIF ☐ ALIF ☐ LLIF ☐ Facet/Lamina ☐	Revision Decompression ☐ Revision Instrumentation ☐ Revision Fusion ☐
L2	Corpectomy ☐	Screw ☐		
L2-L3	Foraminotomy ☐ Laminectomy ☐ Discectomy ☐	Cage ☐ Plate ☐ Other ☐, sp	PLF ☐ TLIF ☐ ALIF ☐ LLIF ☐ Facet/Lamina ☐	Revision Decompression ☐ Revision Instrumentation ☐ Revision Fusion ☐
L3	Corpectomy ☐	Screw ☐		
L3-L4	Foraminotomy ☐ Laminectomy ☐ Discectomy ☐	Cage ☐ Plate ☐ Other ☐, sp	PLF ☐ TLIF ☐ ALIF ☐ LLIF ☐ Facet/Lamina ☐	Revision Decompression ☐ Revision Instrumentation ☐ Revision Fusion ☐
L4	Corpectomy ☐	Screw ☐		
L4-L5	Foraminotomy ☐ Laminectomy ☐ Discectomy ☐	Cage ☐ Plate ☐ Other ☐, sp	PLF ☐ TLIF ☐ ALIF ☐ LLIF ☐ Facet/Lamina ☐	Revision Decompression ☐ Revision Instrumentation ☐ Revision Fusion ☐
L5	Corpectomy ☐	Screw ☐		
L5-S1	Foraminotomy ☐ Laminectomy ☐ Discectomy ☐	Cage ☐ Plate ☐ Other ☐, sp	PLF ☐ TLIF ☐ ALIF ☐ LLIF ☐ Facet/Lamina ☐	Revision Decompression ☐ Revision Instrumentation ☐ Revision Fusion ☐
S1	Corpectomy ☐	Screw ☐		
Pelvis	S2AI ☐	Iliac Bolts ☐		Revision Instrumentation ☐ Revision Fusion ☐

Graft Material	Iliac Crest ☐ Cancellous Allograft ☐ BMP ☐	Local autograft ☐ Structural Allograft ☐ Stem cells ☐	Bone Marrow Aspirate ☐ DBM ☐ Other ☐, specify
Neuromonitoring	None ☐ EMG ☐ MEP ☐ SSEP ☐		
Complications	None ☐ Neurologic ☐	Durotomy ☐ Other ☐, specify	Implant-related ☐

ASR Operative Forms

- Optional operative forms used to capture information found in the brief op notes in discrete form
- Completed by the circulating nurse or surgeon during closure to populate op note and registry needs
- Being updated to populate as a smartform that contributes data to multiple areas
- Data will inform coding, valuation and advocacy in spine care by providing more detail than currently captured via CPT / ICD coding

IRB Information

- ASR maintains a centralized IRB through the Western IRB (WIRB) to cover all participants
  - ASR is a quality improvement registry which is exempt from IRB review under federal rule
  - We ***also*** maintain a centralized IRB with Western IRB (WIRB) to support sites, as some sites will still require IRB approval based on local IRB participation or practice guidelines
  - ASR IRB provides a waiver of patient consent for sites to participate in this quality improvement registry

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.

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AAOS Registry Program

Authorized Vendor

American Joint Replacement Registry
Shoulder & Elbow Registry

American Spine Registry

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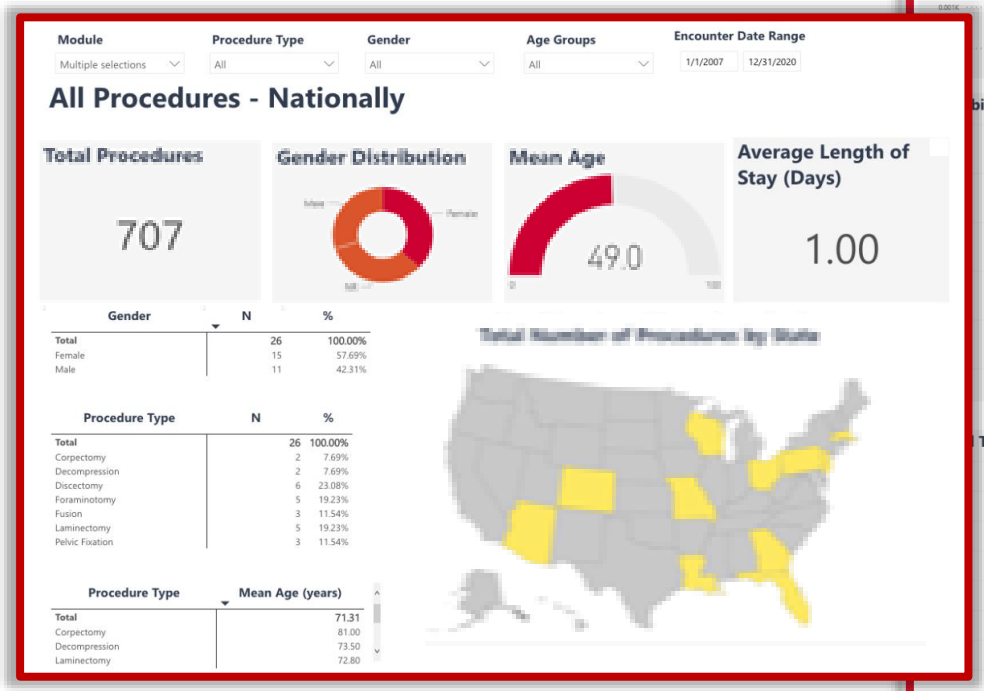
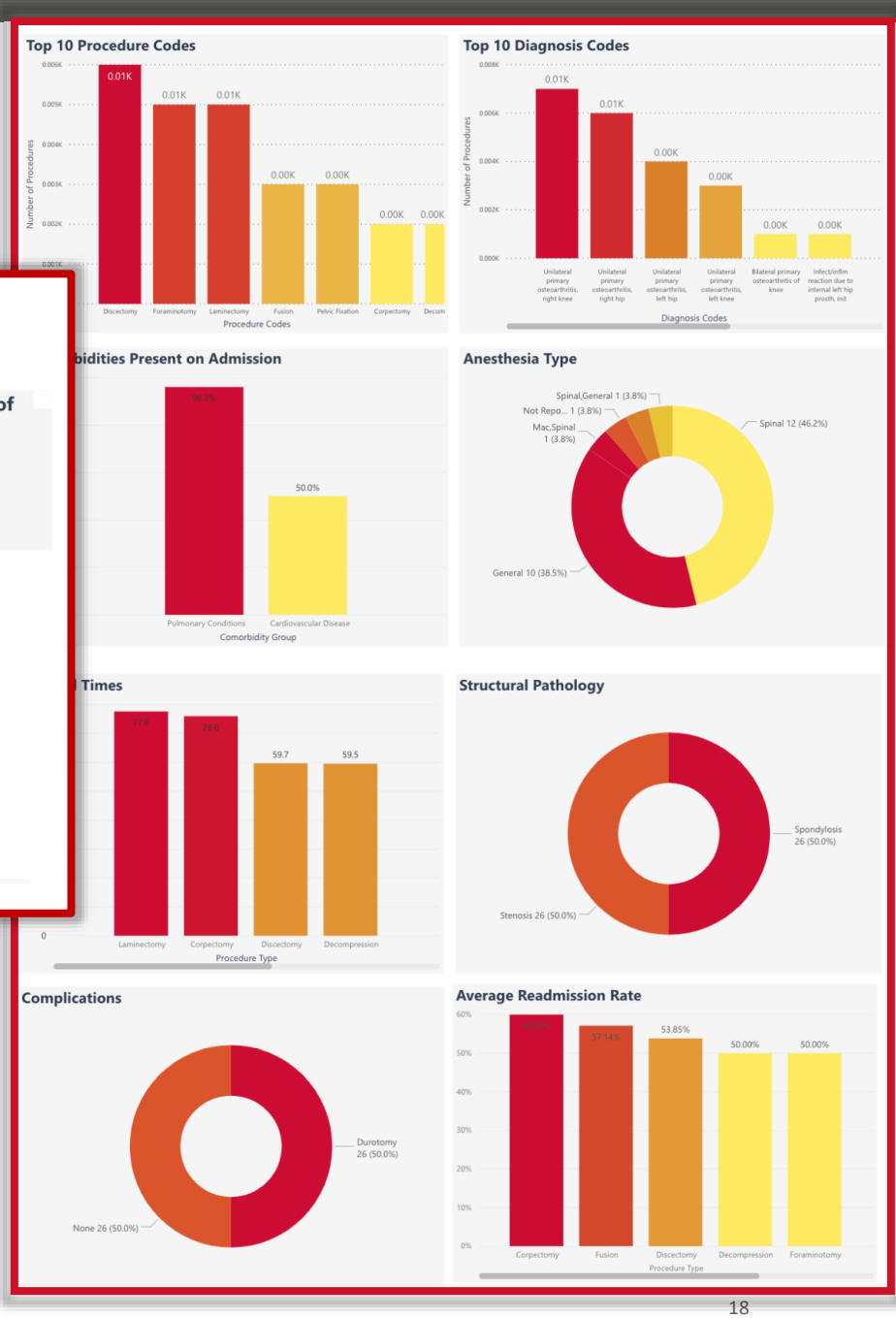
Simplify Data Collection

- ASR has partnered with over 45 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

ASR Dashboards





ASR Dashboards display procedural and post-operative data, including patient demographics, top procedure & diagnosis codes, anesthesia type, comorbidities and readmission rate.

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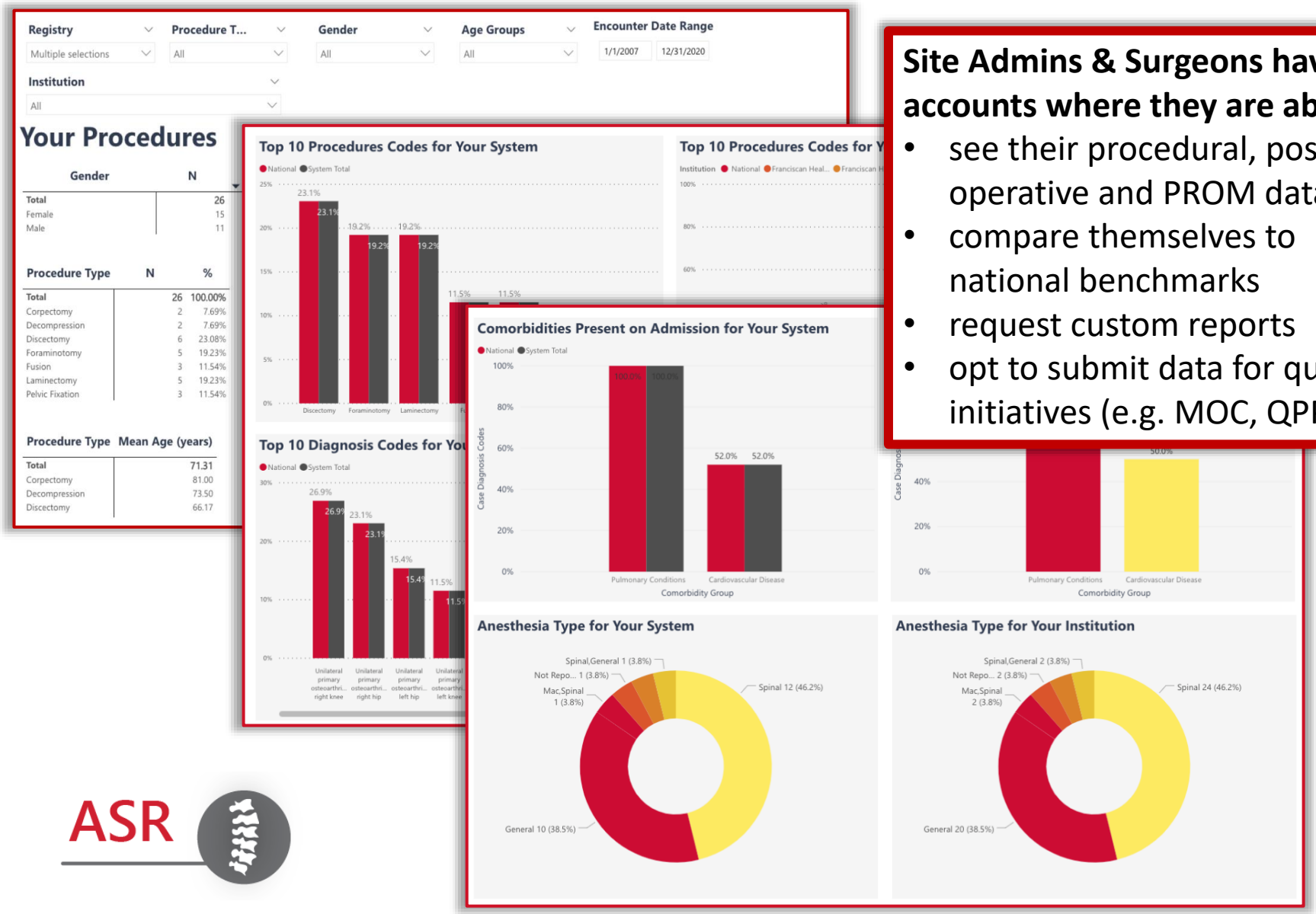
Site & Surgeon Feedback



Site Admins & Surgeons have accounts where they are able to:

- see their procedural, post-operative and PROM data
- compare themselves to national benchmarks
- request custom reports
- opt to submit data for quality initiatives (e.g. MOC, QPP)

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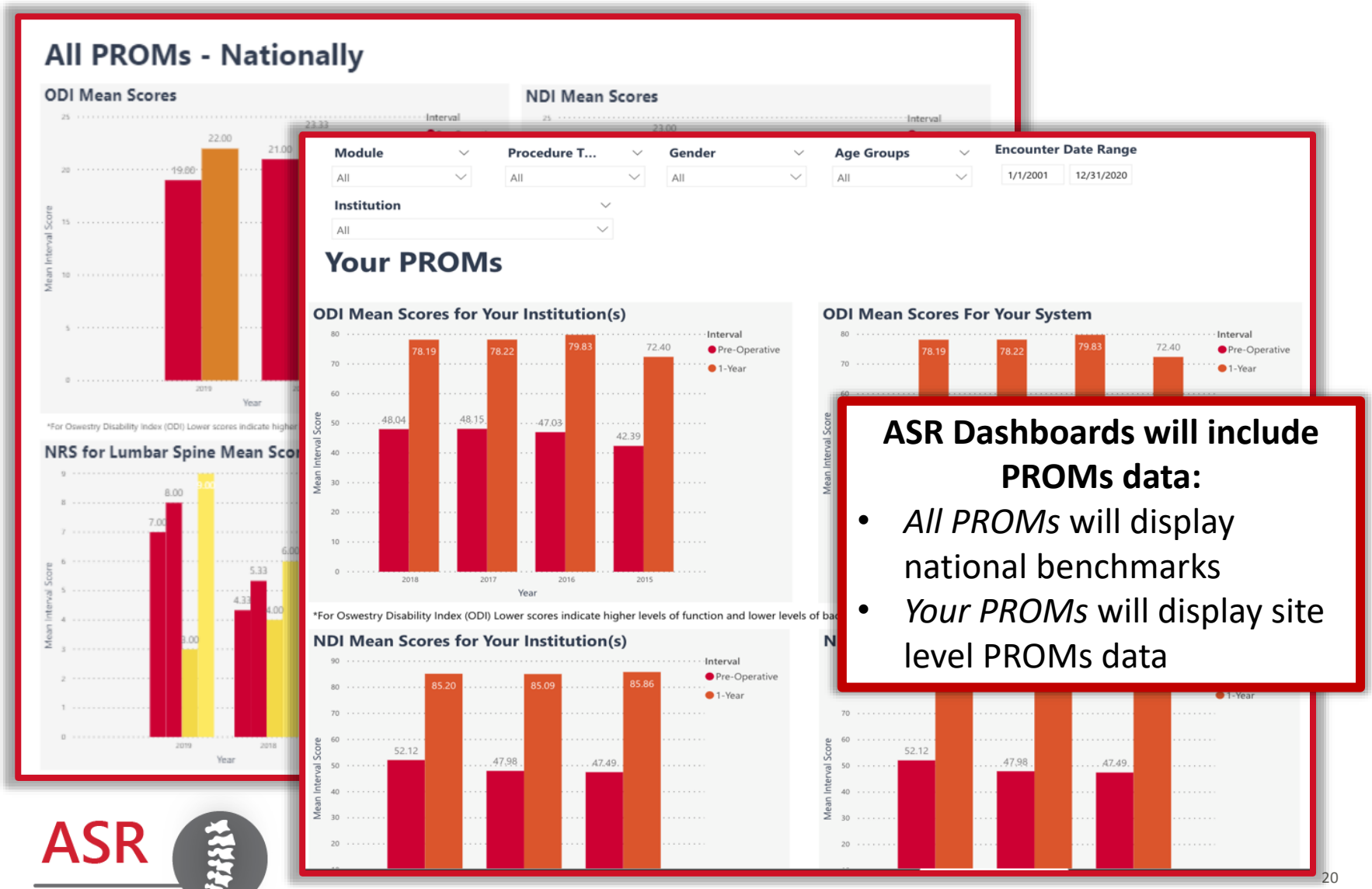
All PROMs



ASR Dashboards will include PROMs data:

- *All PROMs* will display national benchmarks
- *Your PROMs* will display site level PROMs data

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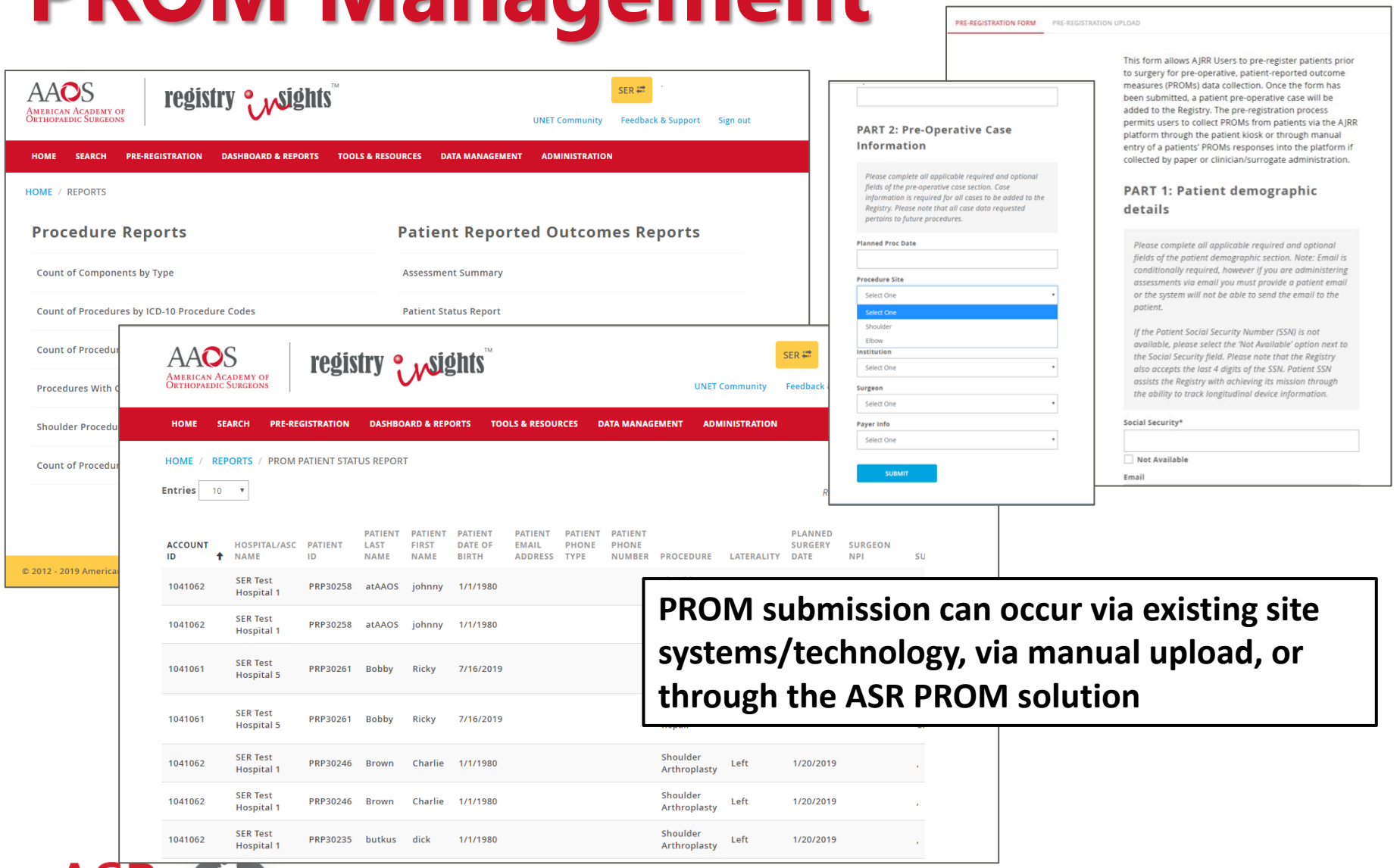
PROM Management



PROM submission can occur via existing site systems/technology, via manual upload, or through the ASR PROM solution

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Data Reuse Opportunities

Confirmed ROI for participants include:

- ABOS Maintenance of Certification (MOC) and ABNS Continuous Certification (CC) Programs
- Aetna Institutes of Quality (IOQ) Orthopaedic Surgery
- BlueCross BlueShield Blue Distinction Specialty Care
- Centers for Medicare & Medicaid Services (CMS) Merit-based Incentive Payment System (MIPS) Quality Payment Program (QPP)
- CMS Bundled Payments for Care Improvement Advanced (BPCI-A)
- CMS MIPS Promoting Interoperability (PI)
- DNV GL Orthopaedic Center of Excellence

For more information visit: www.americanspineregistry.org/data-reuse-opportunities/

ASR™

Unique Capabilities

- ASR provides the first ever national database to longitudinally track **implant survivorship** in spine patients, focused on:
  - Using data to inform spine practice through **actionable feedback** to care teams
  - Accepting historical **data back to ICD-10** implementation (late 2015, early 2016)
  - Learning from **patient reported outcomes** alongside clinical outcomes and implant survivorship
  - **Improving coding** and documentation for spine procedures
  - Providing a resource for **device surveillance** and monitoring for early implant failures

ASR™

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

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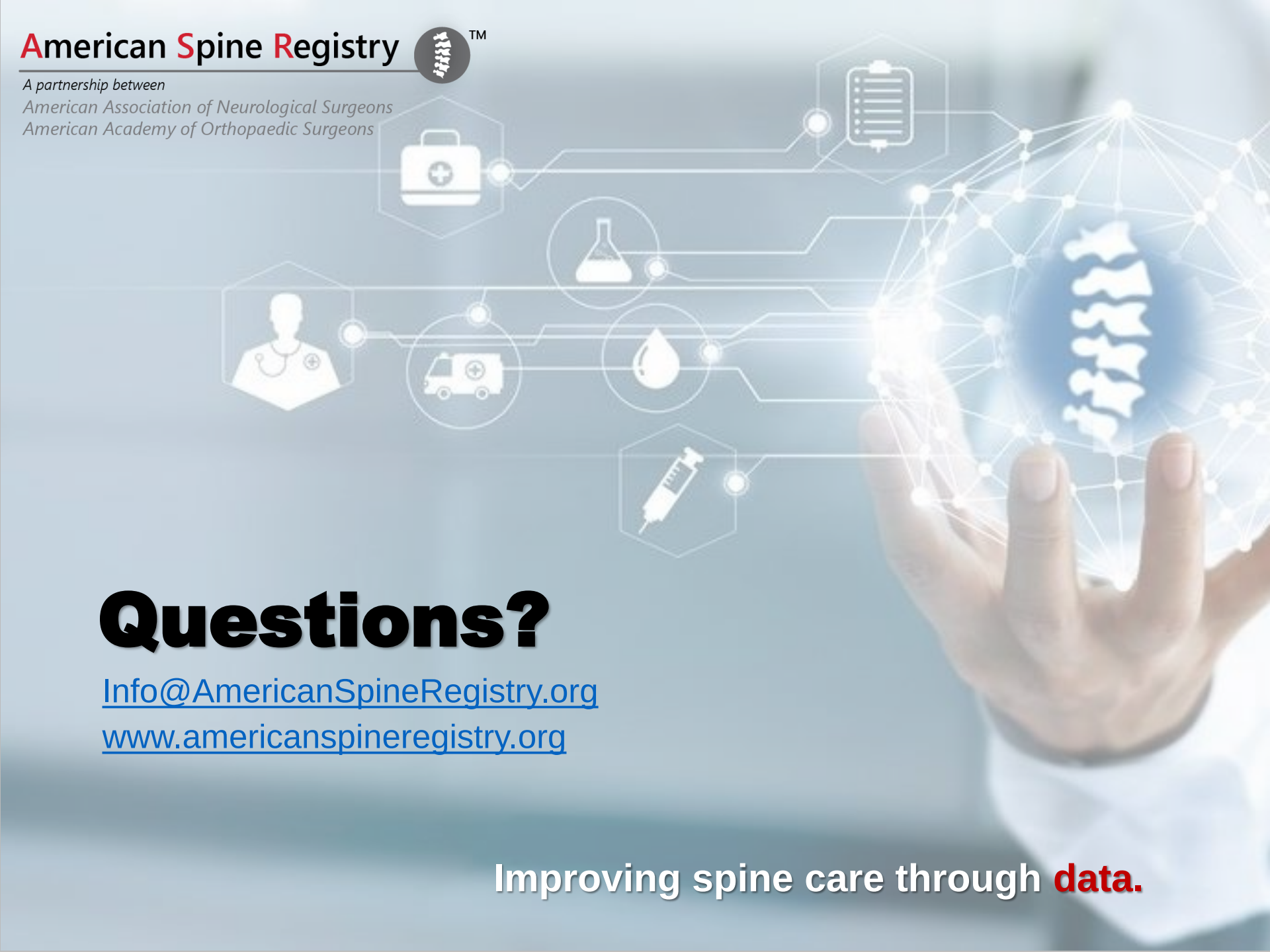

Questions?

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www.americanspineregistry.org

Improving spine care through data.