

American Spine Registry



A partnership between

American Association of Neurological Surgeons

American Academy of Orthopaedic Surgeons

American Spine Registry

Data Opportunities with the American Spine Registry

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Our Speakers Today

- **Darrel S. Brodke, MD, FAAOS**
ASR Executive Committee Member
University of Utah
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ASR Executive Committee Member
University of Minnesota



Disclosures:

Darrel S. Brodke, MD, FAAOS

- CTL Amedica: IP royalties; Paid consultant
- Orthofix, Inc.: Paid consultant



Disclosures:

David W. Polly, Jr., MD, FAAOS

- Consultant
 - SI Bone
 - Globus
- Royalties
 - Springer Verlag
 - SI Bone
- Research Support
 - Mizuho OSI
 - Medtronic
 - AO Spine
- Professional Associations
 - Executive Committee, ASR
 - Board of Directors, SIMEG



Great Variability in Conditions and Treatment

- ‘Spine’ is lumped together as a single entity
- Great heterogeneity in
 - Pathology
 - Patient health status
 - Treatment options
 - Surgical technique
- How to measure quality?
 - Initial efforts antibiotic prophylaxis, surgical site confirmation, infection rates.....



A Partnership Based on the 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



A Need for Spine Data

SOCIETY COALITION TASK FORCE ON
LUMBAR FUSION

CMS: We need data that reflects spine care in standard clinical practice.



October 2007

ASR



A Need for Spine Data

- **Increased use of PROs**
- **Improved study quality (SPORT)**
- **Quality Outcomes Database (QOD)**



A Need for Spine Data

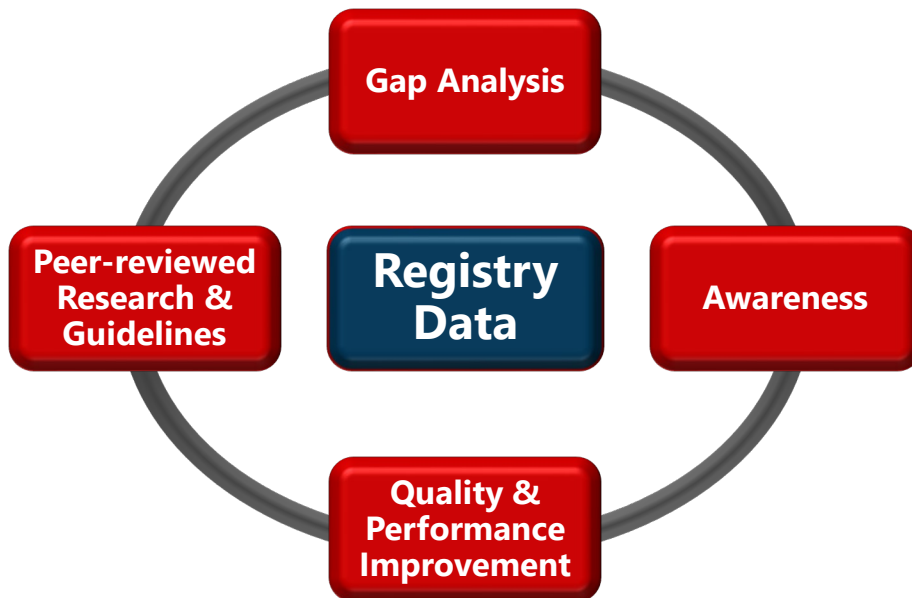
QOD Contribution

Registry Effort Goals

- ✓ Registry platform available across Neurosurgery (Ortho)
- ✓ Standardized collection of **PROs**
- ✓ Improved **diagnostic delineation**
- ✓ Facilitate national registry-driven **quality improvement** programs
- ✓ Support novel scientific **research**



The Core 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***

A Need for Spine Data

- **Potential for AANS/AAOS collaboration**
- **Spine Surgery: 50% Ortho/50% Neuro**
- **Complimentary resources**



A Need for Spine Data



A Shared Quality Vision

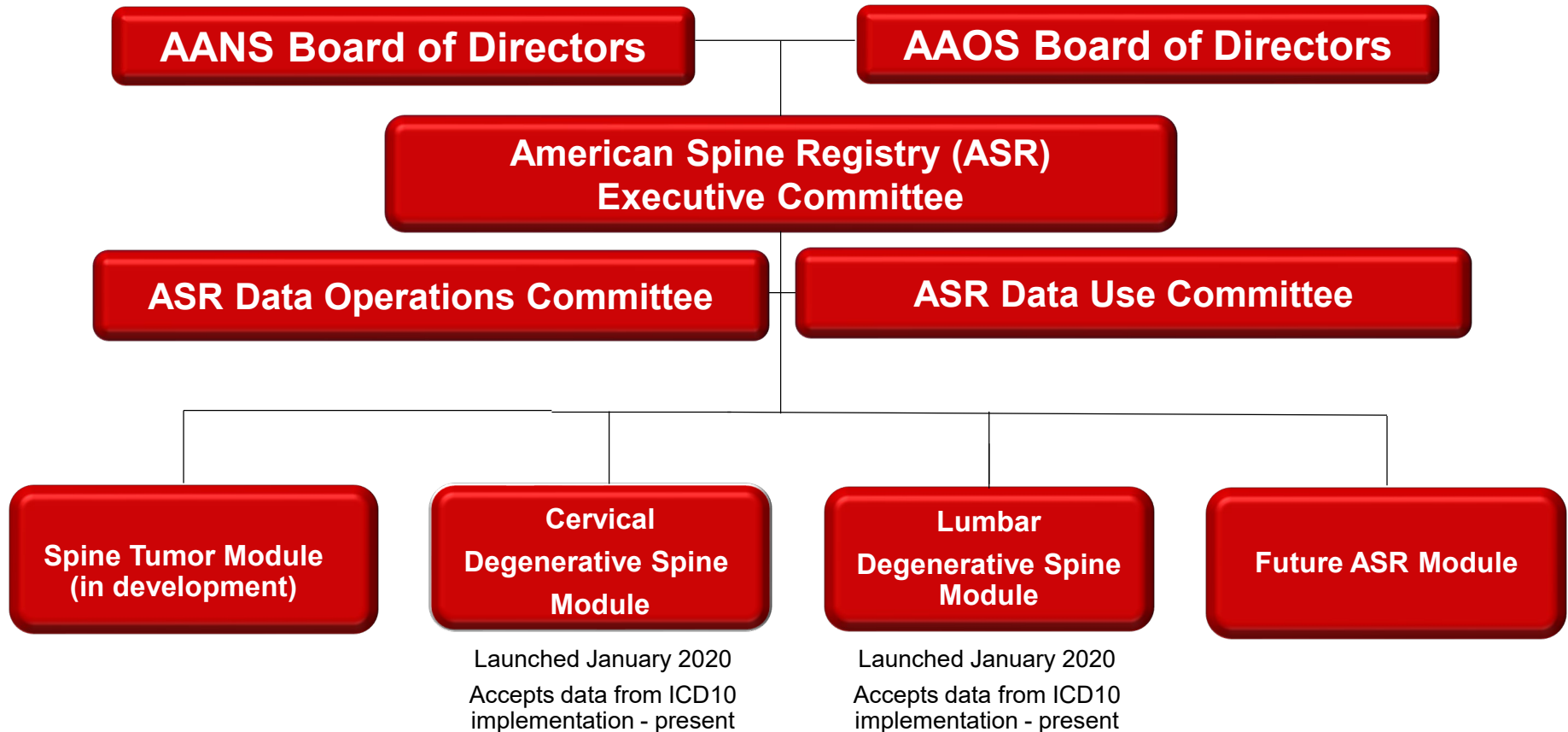
Registries



- **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 education**



ASR Governance & Development



Over 200 sites already participating since Jan 2020 launch



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*



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*



Primary Symptoms (Check ALL that apply)			
Back Pain <input type="checkbox"/>	Cauda equina <input type="checkbox"/>		
Leg Pain <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both	Motor weakness <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both		
Neurogenic Claudication <input type="checkbox"/>			
Neural Compression (Check ALL that apply)			
None <input type="checkbox"/>	Foraminal <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both		
Central <input type="checkbox"/>	Lateral recess <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both		
Recurrent compression <input type="checkbox"/>	Far Lateral <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both		
Structural Pathology (Check ALL that apply)			
None <input type="checkbox"/>	Pseudarthrosis <input type="checkbox"/>	Kyphosis / Flatback <input type="checkbox"/>	
Disc Herniation <input type="checkbox"/>	Scoliosis <input type="checkbox"/>	Fracture <input type="checkbox"/>	
Stenosis <input type="checkbox"/>	Adjacent Segment <input type="checkbox"/>	Tumor <input type="checkbox"/>	
Disc space collapse <input type="checkbox"/>	Spondylolisthesis/Instability <input type="checkbox"/>	Infection <input type="checkbox"/>	
Approach	Anterior/Oblique <input type="checkbox"/>	Transpsaos <input type="checkbox"/>	Posterior <input type="checkbox"/>
Minimally Invasive	Tubular <input type="checkbox"/>	Endoscopic <input type="checkbox"/>	Mini-Open <input type="checkbox"/> Percutaneous screw <input type="checkbox"/>
Supplemental Technique	Microscope <input type="checkbox"/>	Navigated <input type="checkbox"/>	Robotic <input type="checkbox"/>
This is part of a multi-stage procedure <input type="checkbox"/>			

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

Graft Material	Iliac Crest <input type="checkbox"/>	Local autograft <input type="checkbox"/>	Bone Marrow Aspirate <input type="checkbox"/>
	Cancellous Allograft <input type="checkbox"/>	Structural Allograft <input type="checkbox"/>	DBM <input type="checkbox"/>
	BMP <input type="checkbox"/>	Stem cells <input type="checkbox"/>	Other <input type="checkbox"/> , specify
Neuromonitoring	None <input type="checkbox"/>	EMG <input type="checkbox"/>	MEP <input type="checkbox"/> SSEP <input type="checkbox"/>
Complications	None <input type="checkbox"/>	Durotomy <input type="checkbox"/>	Implant-related <input type="checkbox"/>
	Neurologic <input type="checkbox"/>	Other <input type="checkbox"/> , specify	

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

2021 Data Specifications: Expanded Data Collection Capabilities

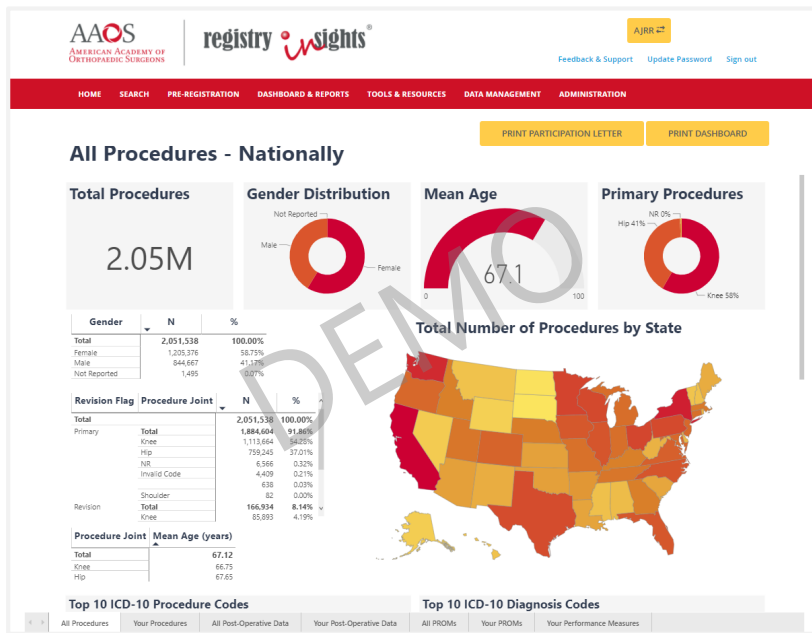
- The 2021 ASR Data Specifications and Data Dictionaries are now available for download in the Tools & Resources tab in RegistryInsights®.
- ASR will continue to support the older versions of the data specifications, allowing sites time to implement changes before “sunsetting” the oldest version in six months.
- All additions and updates are documented in the “Change Control” tab for reference.

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.



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



ASR



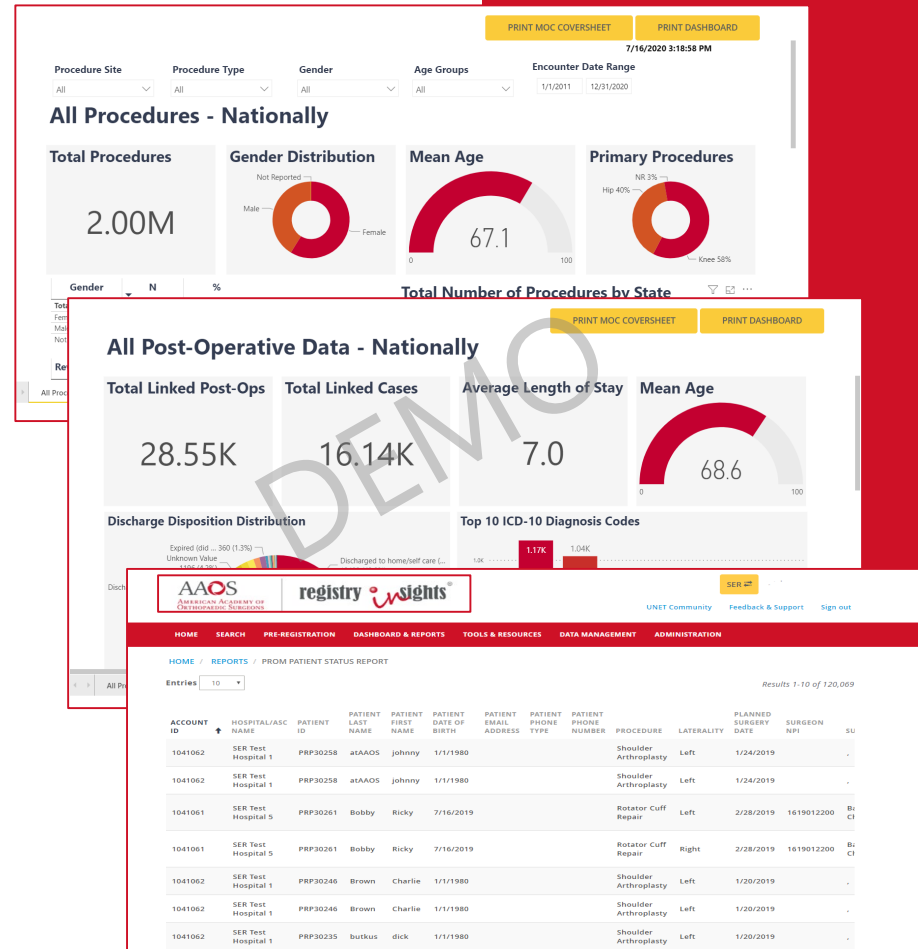
Clinical Management

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

- Pre-register patients for PROM protocols
- Select PROM assessments to be delivered via email
- Utilize platform in kiosk mode in clinic
- Monitor completion, linked PROMs, and patients reaching MCID



The Value of Data

ASR is primarily a Quality Improvement effort

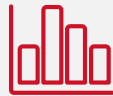
- Sites access and **export their own data** via the portal
- ASR serves as a **backbone** for advanced research efforts
- Sites (other partners) request **ASR analysis** of their data
- Access is tiered based on **site contribution**
- ASR may undertake internal **Registry driven projects**



Delivering Value for AANS & AAOS Spine Surgeons



On-demand practice and surgeon specific dashboards



Comparison to national performance benchmarks



Monitor longitudinal patient outcomes
(Medicare data)



Maintenance of Certification credit
(ABOS and ABNS)



Qualify for national distinction programs
(Aetna, AAAHC, Blue Distinction, DNV, **TJC**)



CMS quality improvement programs
(MIPS & BPCI-A)



Improve the **value of care** delivered to patients

ASR



ACSS Performance Measures

Measure Name	Description	Denominator	Numerator
Surgical Site Infection Rates	Patients with a post-operative surgical site infection identified within 90 days after the primary procedure.	All primary cervical and lumbar degenerative spine cases submitted to ASR.	Spine cases with documented surgical site infection within 90 days of the primary procedure.
New Neurological Deficits	Patients with new neurological deficits present within 90 days after the primary procedure.	All primary cervical and lumbar degenerative spine cases submitted to ASR.	Spine cases with new unexpected neurologic deficit with focus motor strength that is a 3/5 or worse.
Unplanned Return Visit to the OR	Patients who had an unplanned return to the OR within 90 days of the primary procedure.	All primary cervical and lumbar degenerative spine cases submitted to ASR that are not multi-stage procedures.	Spine cases that are not multi-stage procedures, with unplanned return visits to the operating room.

ACSS Performance Measures, continued

Measure Name	Description
Pre-operative and Post-operative Patient Reported Outcomes (PROs)	<p>Proportion of patients submitted to ASR who completed the general health and spine specific functional status assessments: 90 days prior to surgery and 90 days post-operatively.</p> <p>ASR accepts the following assessments: <i>General Health Assessments: PROMIS-10, VR-12, PROMIS Physical Function, PROMIS-CAT, PROMIS-29, PROMIS Pain Interference, PROMIS Emotional Distress - Depression, PROMIS Emotional Distress - Anxiety, EQ-5D</i> <i>Spine Specific Functional Assessments: ODI, NDI, Numeric Rating Scale</i></p>



ASR Progress

ASR is a work in progress:

Areas of Strong Early Achievement

- Engagement with Regulators and Payers
- Buy-in from major Health Systems
- Capability to collect granular data at scale



ASR Progress

ASR is a work in progress:

Challenges of Spine Registry Development

- Complexity of Spine Data at all levels
- Need for focused IT involvement to build data feed
- We don't know what we don't know



American Spine Registry ™

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Thank You

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Improving spine care through **data.**