New Registry Updates to Provide Increased Transparency into Data Submission Quality and Status

April 19, 2023

Dr. Richard I. Illgen

AJRR Steering Committee

Mita De, PhD

Director of Research

I have something to disclose.

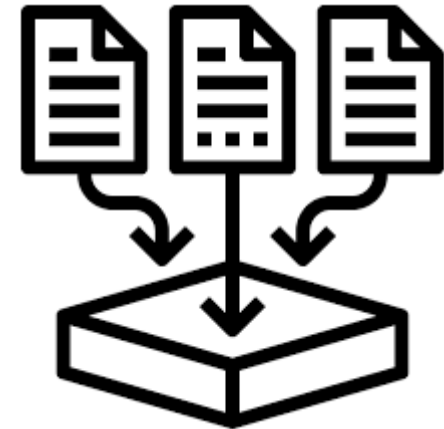## All relevant financial relationships have been mitigated.

Detailed disclosure information is available via:
AAOS Disclosure Program on the AAOS website at
http://www.aaos.org/disclosure

AJRR | Improve Site-Level Data Completeness

- Background
- Completeness Levels 1-3 Definition
- Site Completeness Requirements
- Site Completeness Mockups

Goals | Data Completeness

❑ ***Provide*** increased transparency for both AAOS Registry staff and individual participating sites to understand the quality and status of their data submission to the registry.

❑ ***Establish*** a foundation and increased awareness related to
  ✓ Frequency of submission
  ✓ Completeness of the submission.

➢ **Describe** Dr. Illgen's discovery of data completeness and creation of a champion team

How can we improve data transparency?

Creation of Reports to display data element quality coverage for each participating site and surgeon

Element	N Reported	% Reported	% NR	% Invalid	1-Year N Reported	1-Year % Reported	1-Year % NR	1-Year % Invalid	1-Year %Reported Change
AJRR Data 2012 - 2021Q2 (N=2,323,697) (1-Year N=407,722)									
Surgeon Information	2320584	99.87	0	0.13	407384	99.92	0	0.08	0.05
Principal Procedure Code	2318672	99.78	0	0.22	407722	100	0	0	0.22
Principal Diagnosis Code	2169835	93.38	0	6.62	405332	99.41	0	0.59	6.03
First Implant Catalog # Listed	2214516	95.3	0	4.7	353917	86.8	0	13.2	-8.5
Procedure Date	2323697	100	0	0	407722	100	0	0	0
Diagnosis Laterality	2319122	99.8	0	0.2	407709	100	0	0	0.2
Incision Start Time (Procedure Start Time)	1587878	68.33	30.24	1.43	360452	88.41	10.83	0.76	20.08
Skin Closure Time (Procedure End Time)	1585826	68.25	30.39	1.36	364166	89.32	9.97	0.72	21.07
Length Of Stay	592379	25.49	61.98	12.53	226065	55.45	28.37	16.19	29.96
Surgical Approach (Hip/Knee)	221723	9.54	86.3	4.16	71086	17.43	76.67	5.89	7.89
Surgical Technique Hip†	195	0.31	99.26	0.43	133	1.58	96.41	2.02	1.27
Surgical Technique Knee†	73	0.08	99.29	0.63	50	0.3	98.09	1.6	0.22
Surgical Technique (Hip/Knee) †	270	0.18	99.25	0.58	184	0.73	97.44	1.83	0.55
AJRR Data 2012 - 2021Q2 using updated specifications (N=1,149,951) (1-Year N=407,722)									
Admission Date	1127350	98.03	1.97	0	393598	96.54	3.46	0	-1.49
Discharge Date	1127556	98.05	1.95						
ADMSN/DSCHG LOS ‡	1127012	98.01	N/A						
Discharge Disposition Code	1064805	92.6	6.18						
Computer Navigation	393782	34.24	64.86						
Robotic Assisted	461179	40.1	59.76						
Anesthesia Type	749383	65.17	27.47						
Periarticular Injection	216304	18.81	80.82						
ASA Classification	271610	23.62	75.88						
AJRR Data 2012 - 2021Q2 u...									
Tourniquet Use*	25622	37.15	62.82						
Trainee	8604	7.01	92.82						

Element	N Reported	% Reported	% NR	% Invalid	1-Year N Reported	1-Year % Reported	1-Year % NR	1-Year % Invalid	1-Year %Reported Change
AJRR Data 2012 - 2021Q2 (N=2,323,697) (1-Year N=407,722)									
Ethnicity	1907371	82.08	17.12	0.8	360108	88.32	11.22	0.46	6.24
Race	1959513	84.33	14.83	0.84	369466	90.62	9.01	0.37	6.29
First Name	2323647	100	0	0	407722	100	0	0	0
Last Name	2322443	99.95	0.05	0	407722	100	0	0	0.05
Date of Birth	2323679	100	0	0	407722	100	0	0	0
Date of Death	17279	0.74	99.26	0	6925	1.7	98.3	0	0.96
Gender	2314490	99.6	0.4	0	399889	98.08	1.92	0	-1.52
Zip Code	2193117	94.38	0	5.62	407488	99.94	0	0.06	5.56
Zip Last Four	428504	18.44	81.56	0	109640	26.89	73.11	0	8.45
Email	1079476	46.46	53.54	0	258930	63.51	36.49	0	17.05
AJRR Data 2012 - 2021Q2 using updated specifications (N=1,149,951) (1-Year N=407,722)									
Comorbidity - at least one code reported	845894	73.56	25.24	1.2	277299	68.01	30.28	1.71	-5.55
Body Mass Index (BMI)	902623	78.49	21.15	0.36	289723	71.06	28.87	0.07	-7.43
Metric Patient Height	875583	76.14	23.77	0.08	304748	74.74	25.25	0.01	-1.4
Metric Patient Weight	902216	78.46	21.49	0.06	305806	75	24.99	0.01	-3.46
Standard Patient Height	374128	32.53	52.74	14.73	165518	40.6	48.29	11.12	8.07
Standard Patient Weight	540064	46.96	53.04	0	217265	53.29	46.71	0	6.33
Patient Height*	1004487	87.35	N/A	12.65	357662	87.72	N/A	12.28	0.37
Patient Weight*	1078611	93.8	N/A	6.2	376134	92.25	N/A	7.75	-1.55
Patient Height + Weight*	1000170	86.98	N/A	13.02	356582	87.46	N/A	12.54	0.48
ASA Classification	271610	23.62	75.88	0.5	106839	26.2	72.54	1.26	2.58
AJRR Data 2012 - 2021Q2 using 2020 specifications (N=122,691) (1-Year N=110,058)									
Payer Status	45333	36.95	62.68	0.38	37283	33.88	65.74	0.39	-3.07

These reports will be accessible on the Registry Insights platform for all registry participants and surgeons

----

Visual indicators will denote lack of coverage for data elements – resources will be available to correct and improve submissions

----

Registry staff will have access to reports to inform outreach to sites with low scores

Completeness Levels | Definition

AJRR has identified 3 'Levels' of datasets to improve completeness and data element coverage
to inform outcome analysis and enhance the overall quality of registry data

Level 1- Required to be considered an acceptable submission (Minimum data set)

Proposed minimum data set for primary TKA and primary THA	AOA	UK
1) First and Last name (100% capture)		x
2) DOB (100% capture)		x
3) Gender (99.6% capture)		x
4) Facility (hospital or ASC) NPI- 98% capture rate	x	x
5) Surgeon NPI- 99% capture rate	x	x
6) Operative date- 100% capture rate	x	x
7) Laterality- 99.8% capture rate	x	x
8) Diagnosis code- ICD9/10- 93.4% capture rate	x	x
9) Procedure code- CPT- 99.8%	x	x
10) Implant information- catalog and lot numbers – 95.3% capture rate	x	x
11) Length of Stay (calculated by admit date-discharge date)-98% capture rate		
12) Zip Code- 94% capture rate		
13) Discharge disposition- 92% capture rate		

Level 2- Enhanced data set- 11 additional fields- reporting 10 out of 11 fields required for official designation and recognition by the AJRR as an enhanced reporting site (Recognize in annual report, possibly to payers for centers of excellence designations, possibly be required for individuals to receive credit for ABOS CME applied to MOC process)
1) BMI- 78% capture rate
2) ASA- 23% capture rate
3) Anesthesia type- 65% capture rate
4) Surgical approach- 9% capture rate
5) Navigation- 34% capture rate
6) Robotic use- 40% capture rate
7) Race- 84% capture rate
8) SSN- high capture rate (93%) but problem for some institutions- Mayo
9) Duration of procedure- 68% capture rate
10) Payer status – 37% capture rate
11) Co-Morbidity-74% capture rate

Level 3- PROMs- current 10-20% capture rate
1) Accepted general health scores- SF-12, VR-12, or PROMIS
2) Accepted joint specific scores- KOOS-JR, HOOS-JR
3) Supported by not required- HHS, UCLA activity, forgotten joint score, WOMAC

Additional recognition for centers consistently submitting PROMS

AAOS
AMERICAN ACADEMY OF
ORTHOPAEDIC SURGEONS

Registry Program
Improving Orthopaedic Care Through Data

Completeness Levels| Requirements

The Data Element Quality & Coverage Report will contain the following categories of scoring and will be implemented in a phased approach. Planned report launch times are noted for each category.

Procedure Layout

- Level 1 Global and Individual Scores
- Level 2 Global and Individual Score
- Elements Remaining Global and Individual Score
- TJC Global and Individual Score

Post-Op/Discharge Layout

- Level 1 Global and Individual Scores
- Level 2 Global and Individual Score
- Elements Remaining Global and Individual Score

PROMs

- Benchmarked Global and Individual Score
- Non-Benchmarked Global and Individual Score

Submission Metrics

- Global Score
- Submission Frequency
- Submission Volume

Completeness | Rollout Approach

Phase 1

Who:
All sites

What:
- Level 1: Minimum Data Set
- Level 2: Enhanced Data Set

Outcome(s):
- Ensure elements that are *Required* are submitted
- Ensure elements that are valuable in research are submitted

Phase 2

Who:
All Sites

What:
- Level 3: PROMs

Outcome(s):
- Ensure benchmarked PROMs are adopted
- Ensure that both a *preop* & *postop* PROM is submitted

Phase 3:

Who:
All Sites

What:
- Remaining Elements
- Submission Metrics

Outcome(s):
- Assess completeness of elements that are *optional and conditional*
- Determine if submission frequency and volume is sufficient

Completeness | Dashboard Integration

Level 1 and Level 2 layout is vey similar.

Data Elements Quality Coverage

Next Steps | Data Completeness

❑ **_Access_** your dashboards to view your completeness and coverage

❑ **_Establish_** a team to tackle poor completeness areas:
- ✓ EMR Contact
- ✓ Site IT Staff
- ✓ Data Submission Staff
- ✓ **Surgeon Champion**

❑ **Monitor** progress and engage with AAOS Registry Staff for guidance and support: registrysupport@aaos.org