

2026 MASTER DATA DICTIONARY

The background of the top half of the image is a dark blue gradient. It features a complex network of glowing blue and green lines, dots, and circles, resembling a digital or data visualization. The lines are mostly horizontal and vertical, with some curved paths. The dots are small and scattered throughout the network. The overall effect is that of a high-tech, data-driven environment.

AAOS
AMERICAN ACADEMY OF
ORTHOPAEDIC SURGEONS

**THE POWER OF REGISTRY DATA.
AAOS REGISTRIES**

Agenda

- Overview, Purpose, and Key Benefits
- New Features & Updates
- MDD Document Overview & Demo
- File Preparation and Submission
- Transition Timeline and Sunset Schedule

Objectives

- Understand MDD updates
- Understand how to utilize MDD documents
- Understand timeline for MDD 2026 ingestion and legacy spec sunset
- Understand new features in 2026 MDD








New Element or Feature for MDD 2026
(Not present in MDD 2025)

Submit questions in the Q&A Section.

We will answer questions during the webinar, and at the end.

THE MASTER DATA DICTIONARY (MDD)

- ▶ Consolidated data specification document 
- ▶ Eliminates inconsistencies between registries & modules 
- ▶ Supports advanced reporting, validation 
- ▶ Streamline data ingestion processes 
- ▶ Aligns with modern health data standards 

MDD 2026 IMPROVEMENTS

Expansion of Fracture Inclusion: Proximal Femur in AJRR. Proximal Humeral in SER



20
26

Unified Documentation: All registry and module data in one standardized file

Advanced Filtering: Ability to sort by registry, module, layout, element

Improved Data Quality: Standardized definitions and rules across registries

Cardinality Support: Multi-value fields eliminate fixed column limits (PX1, PX2 ... PX 10)

EHR-Agnostic Compatibility: Supports structured query extraction

Regulatory Alignment: HL7/FHIR, CPT, LOINC, SNOMED standard

DATA LAYOUTS OVERVIEW

AJRR, SER, ASR

Data layouts are organized files used to submit information to the registry. Each layout organizes different kinds of patient information based on when and how they are collected during the patient's care timeline.

Procedure Layout	PostOp Layout	PROMs Layout
<ul style="list-style-type: none">• Captures details of the initial surgical procedure• Including:<ul style="list-style-type: none">• Diagnosis codes (DX)• Procedure codes (PX)• Implant information• Laterality• Key identifiers (patient, provider, hospital)• Serves as the anchor for other data files (PostOp, PROMs)	<ul style="list-style-type: none">• Captures complication-related events following the index procedure• Focuses on unplanned readmissions and return to the operating room (OR)• Typically reflects a defined follow-up window (90 days or 1 year depending on registry)	<ul style="list-style-type: none">• Contains patient responses to Patient-Reported Outcome Measures• Includes preoperative and postoperative assessments to gauge pain, function, and recovery• Offers a patient-centered view of surgical outcomes

DATA COMPLETENESS LEVELS REFER TO THE TOOLKIT FOR MORE DETAILS

Registry	Minimum Dataset Participation	Enhanced Dataset Participation
AJRR	<ul style="list-style-type: none"> • Submissions composed primarily of Required data • Focuses on essential data elements: <ul style="list-style-type: none"> ○ Patient demographics ○ Procedure data ○ Basic assessments 	<ul style="list-style-type: none"> • Submissions also include Recommended/Optional data • Includes additional data elements <ul style="list-style-type: none"> ○ Follow-up data ○ Complications ○ Patient-reported outcomes (PROs)
SER		
ASR	<ul style="list-style-type: none"> • Predominantly uses EHR-abstracted data elements • Suitable for foundational benchmarking and participation 	<ul style="list-style-type: none"> • May incorporate provider-entered elements for richer insight • Supports: <ul style="list-style-type: none"> ○ Research Initiatives ○ Advanced dashboard elements ○ Quality/Payer initiatives

DATA LAYOUTS OVERVIEW: **MSTR**

Alternative Entry Pathway (AEP) Layout

- Simplified format for sites using manual data entry via Redcap
- Captures a targeted set of provider-entered data elements
- Includes:
 - Diagnosis
 - Tumor details
 - Treatment type
 - Select outcomes

Baseline Layout

- Collects foundational information prior to surgical procedure
- Includes:
 - Demographic data
 - Primary diagnosis
 - Tumor size & grade
 - Presence of metastasis
 - Initial Treatments
 - Radiation
- Serves as the anchor for all other layouts

Procedure Layout

- Captures details of the initial surgical procedure
- Includes:
 - Diagnosis codes
 - Procedure codes
 - Resection margins
 - Implant data
 - Surgeon-reported outcomes

Follow-up Layout

- Tracks longitudinal care
- Includes:
 - Recurrence
 - Metastasis
 - Additional treatments
 - Reoperations
- Supports disease surveillance and outcome monitoring across time

PROMs Layout

- Contains patient responses to Outcome Measures
- Includes preoperative and postoperative assessments to gauge pain, function, and recovery
- Offers a patient-centered view of surgical outcomes

DATA COMPLETENESS LEVELS

REFER TO THE TOOLKIT FOR MORE DETAILS

Registry	Alternative Entry Pathway (AEP)	Full Participation
MsTR	<ul style="list-style-type: none">• Uses centralized REDCap platform for provider-entered short forms• Streamlined for institutions without the resources to implement full EHR/SmartForm workflows• Focused on capturing key data points directly from surgeons• Designed as an interim solution with reduced technical burden	<ul style="list-style-type: none">• Complete Sarcoma or Metastatic Bone Disease data set submitted from both EHR and provider-entered SmartForms• Supports longitudinal tracking, follow-up events, recurrence, surgical and treatment details• Requires institutional buildout of extraction and workflow integration• Enables comprehensive analysis

UPDATE: NOT REPORTED



9999 is the only acceptable value for "not reported"

NR and "not reported" are no longer acceptable data values for any field

9999 can be submitted for Recommended & Optional Fields

MsTR Only

5555 is the only acceptable value for "not applicable"

NA or "not applicable" are not acceptable data values

UPDATE: REQUIREMENT LEVELS



Required

Data element submission with appropriate valid value is **mandatory for processing**.
Records with any “Required” data field missing or inappropriately submitted will lead to a **rejection of that patient record**.
9999 for not reported is **not acceptable**
Blank/Null fields are **not allowed**.

Recommended

Data element submission is **not mandatory** but will enhance data quality for review, tracking and reporting purposes.
9999 for not reported is **acceptable**
Blank/Null fields are **not allowed**.

Optional

Data element submission is **not mandatory**.
9999 for not reported is **acceptable**
Blank/Null fields are **allowed**.

Conditionally Required

Data element submission is **required based on a specified element**.
9999 for not reported is **not acceptable**
Blanks/Null fields are **not allowed**.

Conditionally Optional

Data element submission is **encouraged** based on a specified element.
9999 for not reported is **acceptable**
Blanks/Null fields are **allowed**.

UPDATE: COMPONENT

Improve consistency and align with CMS standards for component submissions.

Component Data:

Procedures must have at least two components

Exceptions one component accepted:

- Hemiarthroplasty
- Patellofemoral arthroplasty
- Revision procedures
- Rotator Cuff Repair

- Component Name: **Required**
- Manufacturer Name: **Required**
- Catalog Number: **Required**

- Lot Number : **Recommended**

UPDATE: GROUPED ELEMENTS | AND ^

Groups can repeat if **elementCardinality = "many"**
(Diagnosis, Component Name, Comorbidity, Present on Admission, etc.)

Separate each **element or group** with a (|)
Z3A.20|I71.30|Z89.52

Separate each **element into a group** with a (^)
Device A^devcorp^A121^2788

Each element's position in a group is defined by **element_sortnum**.
Elements must follow this order
(0 = Component Name, 1 = Mfg, etc.)



A valid response is required for each element in a group:
Comorbidity^POA: ICD10^Y. ICD10^9999.
Component: ComponentName^Mfg^Cat^9999



UPDATE: GROUPED ELEMENTS

ELEMENT CARDINALITY = "MANY" ALLOWS MULTIPLE VALUES

(|) to separate records. Example: Diagnosis Codes (Dx)

Z3A.20|I71.30|Z89.52

(^) to separates fields in a grouped record
Example: Groups of Implant Data

Fisk-A^Smith-Klein^133-34^28893339|Fisk-B^Smith-Klein^13554^9999

UPDATE: BILATERAL PROCEDURE

1. Submit **two rows** (one for each side)
2. Submit identical **Procedure Date** on both rows
3. Submit identical **Surgeon NPI** on both rows

CPT Code with Modifier (e.g. –50)

- DXLat must indicate laterality
- DxLat cannot be Bilateral

CPT Code without Modifier

- DXLat must indicate laterality
- DxLat cannot be Bilateral

ICD-10 must specify laterality

- DXLat must match code
- DXLat may also be Bilateral

MDD OVERVIEW

- **Info:** Registry summaries, versioning information
- **ChangeLog:** Timeline of specific changes
- **MDD:** Registry, Module, Layout, Data Elements, Valid Values, Business Rules, Max Length, etc.
- **Triggers:** ICD codes & CPT codes accepted for inclusion in registries
- **General Guidance:** Links to additional support documents

***AAOS Participation Toolkit:** Additional Detailed Resource for all 4 registries.



THE POWER OF REGISTRY DATA.
AAOS REGISTRIES

Overview

This new format replaces the old Registry and module specifications Excel files. Its main advantages are:

- (a) Consistency in data elements, allowable values, business rules, specifications, and other important fields
- (b) Consolidation of all registries into a common data model
- (c) Reduced complexity with respect to representing data elements that can accommodate multiple values

There are many other enhancements that are described in the AAOS Data Submission Participant Toolkit. Please reference the toolkit and the FAQs for additional details.

Instructions on Use

The **"Master Data Dictionary (MDD)"** tab is a filterable list of all data elements by "Registry," "module," and "layout." All registries are available and searchable in this tab.

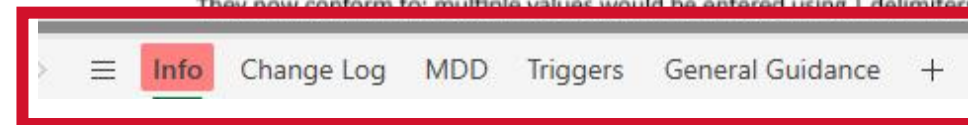
The **"Triggers"** tab is filterable by "Registry" and "module" and is a list of all the triggers for data elements such as procedures and conditions. The "General Guidance" tab with "dataSpecType" filtered to "Info" provides additional information regarding the triggers and their use for a specific Registry and module of interest.

The **"General Guidance"** tab provides additional guidance at the module level. The "dataSpecType" field can be used to filter to general information about a module, information about measures that it may support, and change control notes (all at the Registry and module level).

The **"Trigger Guidance"** tab contains trigger-related guidance, if applicable. For example, guidance on the use of supplemental codes is provided.

Special Note about the "MDD" Tab:

All data elements with "elementCardinality" = "many" are now renamed to remove all index numbers. They now conform to: multiple values would be entered using | delimiters. If simple single fields or |







MDD TAB

registr	module	layouts	data_element_name	description	required	field_name	Valid Values	Business Rules Inclusion criteria	data_type	max_length
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Registry	Indicator of which registry this submission is for	Required	Registry	AJRR	Provide the name of the registry the file submission is for.	Text	8
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Module	Indicator of which module this submission is for	Required	Module	Hip and Knee Arthroplasty	Provide the name of the registry module for this submission.	Text	128
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Version	Indicator of which MDD version this submission is for	Required	Version	2026	Identify the MDD version for this file submission.	AlphaNumeric	128
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Submission Type	Indicator of which file type this submission is	Required	SubmissionType	Procedure, PostOP, or PRO	Identify the file type for this submission by listing the Layout tab.	Text	128
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Registry Account ID	number specific to each institution and location.	Required	RegistryAccountID	##### (Registry assigned number)	Registry Customer Support. If null or not valid, the record will be rejected.	Numeric	12
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Submitting Institution Name	same as the Hospital_ASC_Name field.	Conditionally Optional	InstitutionName	Text name with spaces but no symbols; 9999	Hospital is not part of a Health System; 9999=Not reported	Text	600
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Submitting Institution National Provider Identifier	center, this information will be the same as the Hospital_ASC_NPI.	Conditionally Optional	InstitutionNPI	#####, 9999	9999=Not reported	Numeric	10
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Hospital or Surgery Center Name	This may be a full service hospital or an outpatient surgery center.	Required	Hospital_ASC_Name	Text name with spaces but no symbols	hospital or surgery center name where the procedure was performed.	Text	600
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Hospital or Surgery Center NPI	hospital or an outpatient surgery center.	Required	Hospital_ASC_NPI	#####	hospital or surgery center NPI where the procedure was performed.	Numeric	10
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Patient Identification Number	EHR/EMR that can or will be used to improve patient record matching.	Recommended	Patient_MRN	letters and numbers; no spaces or symbols; 9999	Vendor submitting data on behalf of participant); 9999=Not reported.	AlphaNumeric	25
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Patient Social Security Number	that may or may not occur at the same institution.	Recommended	PatSSN	xxxxx####: XXXXX####; 9999	spaces if submitting Last4; 9999=Not reported.	AlphaNumeric	11
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Patient First Name	The patient's legal first name (i.e., "given name")	Required	PatFirstName	"O'Connor", "Jean-Luc", "Jr.") accepted	database if it does not match an existing record based on Registry match logic	Text	64
AJRR	Hip and Knee Arthroplasty	Procedure Layout	Patient Middle Name	The patient's legal middle name or initial	Optional	PatMiddleName	"O'Connor", "Jean-Luc") accepted; 9999	Middle Name or Initial; 9999=Not reported; Supplemental patient identification value.	Text	64

TRIGGERS TAB

This tab identifies the eligible codes for inclusion into each registry.

How to Use It:

-  Filter by **Registry** (AJRR, MsTR, ASR, SER)
-  Filter by **Module** (Hip & Knee, Shoulder Arthroplasty, Lumbar, etc.)
 -  Further filter by **CodeSetType** (Hip Fracture, Elbow, Prox Humeral Fracture) and **Code**
 -  Choose the appropriate **code_system** (SNOMEDCT, ICD10CM, LOINC)

**also refer to the official AAOS inclusion/supplemental code list.*

GENERAL GUIDANCE TAB

- **General Guidance Tab:** Detailed documents linked by registry and module.
 - File header specifications
 - Program participation details
 - PROMs and quality reporting document links
 - Filterable by registry

FILE SUBMISSION OVERVIEW

- **Validate formats, lengths, and cardinality** according to the Master Data Dictionary (MDD2026)
- **Review inclusion/exclusion business rules** prior to submission
- **Prepare data accordingly before upload**, using sample templates
- File submission types:
 - For SFTP submissions, AAOS will accept **.txt**, **.csv**, and **.xlsx** files
 - For RegistryInsights uploads, only **.xlsx** files will be accepted.
- **File Naming:** required for automated processing and validation.
 - File naming convention (note: not case sensitive)
<Registryname>_<Module>_<SubmissionType>_<Version>.
ajrr_hipandkneearthroplasty_pro_mdd2026 (IE hipandkneearthroplasty/elbowarthroplasty)
 - Full module name with no spaces: hipandkneearthroplasty, anklearthroplasty

MDD AND SQL INTEGRATION

- **Works with automated processes:** Can be used in ETL tools to prepare data
- **SQL-compatible:** You can use SQL queries to check and format your data before submitting
- **Sample SQL provided:** You don't need a specific EHR system; the example works with any source
- **Flexible validation:** Helps automate checks and corrections for each field based on registry rules

QC DASHBOARD

20
26

The QC dashboard offers a more in-depth review of MDD2026 file submissions.

Total Files 88	Successful 13	Partial Rejections 8	Fully Rejected 5	Full File Failure (Headers/Schema) 38	Flagged 5	In Progress 3	Legacy File Spec 16
File Sites 11	% of Total 14.77%	% of Total 9.09%	% of Total 5.68%	% of Total 43.18%	% of Total 5.68%	% of Total 3.41%	% of Total 18.18%
Record Sites 10							

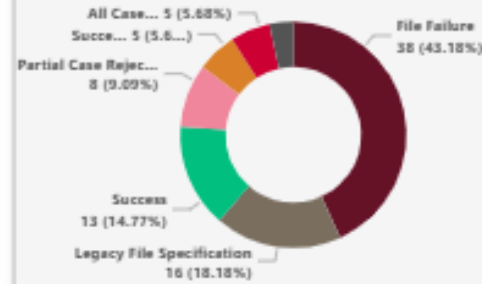
Validation Behavior

Details on how field level validation problems affect record statuses. Please note that:

- "Required" fields which fail validation will cause the entire record/line to be rejected, and will generate a rejection message.
- "Recommended" fields which fail validation will still allow the record/line to be ingested but will process that field's value as blank and generate a flag message.
- "Optional" fields which fail validation will still allow the record to be ingested but will process that field's value as blank and generate an informational message.
- "Conditional" fields fall into one of the above 3 buckets, depending on the conditions for each submitted record.

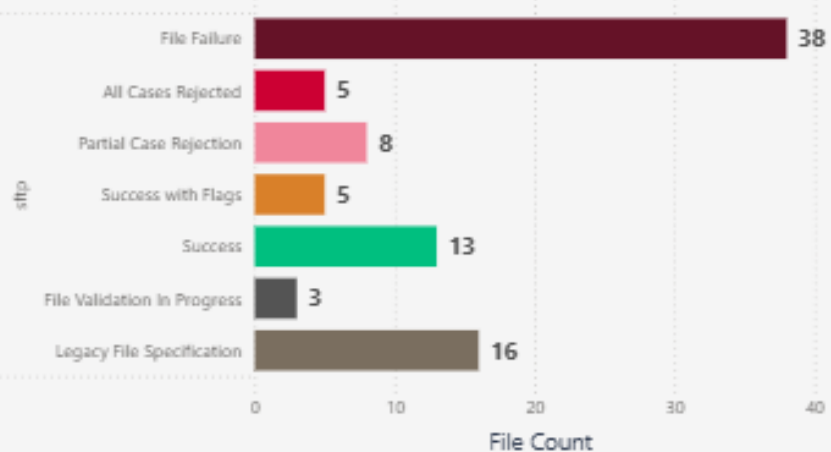
If a file fails initial validation (missing headers/incorrect schema), then it will show a full file failure. Otherwise, a file is considered processed. Processed files' statuses depend upon the record statuses within the file. Any rejected records in a file will generate a file status of All Cases Rejected or Partial Case Rejection (depending on if all records were rejected or only some of them). If no rejections in the file, then any records with flags will generate a file status of "Success with Flags". If some records are still processing, the file will show In Progress. Otherwise, the file will show a success status.

File Status Distribution



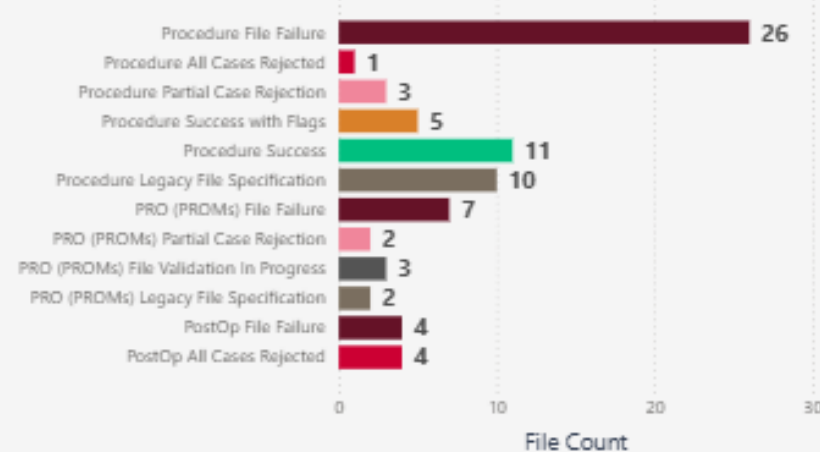
File Status by Submission Type

Click (or ctrl+click) to filter to specific submission/file-status combo(s)



File Status by Layout

Click (or ctrl+click) to filter to specific layout/file-status combo(s)





Data Submission Participant Toolkit:

An additional, detailed
resource for all
four registries.

AAOS DATA SUBMISSION PARTICIPANT TOOLKIT

This toolkit contains information for participants related to the modernized Registry Data Submission Platform. It includes an overview of the platform, current and future state workflows, data collection, technical implementation, and data submission support.

Version 2.0; Released May 2026

2026 MDD CHANGE LOG



Please consult the **MDD 2026 Change Logs** available in Registry Insights (under Tools & Resources) for a detailed record of updates made during the transition from the pre-2025, MDD 2025 specifications to the MDD 2026 specifications — including all changes; updates, additions, and deletions.

	A	B	C	D	E	F	G	H	I
1	registry	module	data_element_name	field_name [Pre-MDD 2026]	field_name [MDD 2026]	Requirement [Pre-MDD 2026]	Requirement [MDD 2026]	Business Rule [Pre-MDD 2026]	Business Rule [MDD 2026]
2	AJRR	Hip and Knee Arthroplasty	Registry	Registry	Registry	Required for Processing	Required	Required field. Provide the name of the registry the file submission is for.	Provide the name of the registry the file submission is for.
3	AJRR	Hip and Knee Arthroplasty	Module	Module	Module	Required	Required	Required field. Provide the name of the registry module for this submission.	Provide the name of the registry module for this submission.
4	AJRR	Hip and Knee Arthroplasty	Version	Version	Version	Required for Processing	Required	Required field. Identify the data specification version for this file submission	Identify the MDD version for this file submission.
5	AJRR	Hip and Knee Arthroplasty	Submission Type	SubmissionType	SubmissionType	Required for Processing	Required	Required Field. Identify the file type for this submission by listing the Layout tab.	Identify the file type for this submission by listing the Layout tab.
6	AJRR	Hip and Knee Arthroplasty	Registry Account ID	RegistryAccountID	RegistryAccountID	Required for Processing	Required	Required field; This unique number will be provided by Registry Customer Support. If null or not valid, the record will be rejected.	This unique number will be provided by Registry Customer Support. If null or not valid, the record will be rejected.
7	AJRR	Hip and Knee Arthroplasty	Submitting Institution Name	InstitutionName	InstitutionName	Required for Processing	Conditionally Optional	data to the registry. If not a health system or private practice, then required value is Not Reported or NR.	the registry. Conditionally Optional if the Hospital is not part of a Health System; 9999=Not reported

2026 MDD CHANGE LOG



Please consult the **MDD 2026 Change Logs** available in Registry Insights (under Tools & Resources) for a detailed record of updates made during the transition from the pre-2025, MDD 2025 specifications to the MDD 2026 specifications — including all changes; updates, additions, and deletions.

registry	module	data_element_name	Length [MDD 2026]	Valid Values [MDD 2025]	Valid Values [MDD 2026]	Field Name Change	Requirement Change	Business Rule Change	Data Type Change	Max Length Change	Valid Values Change	Procedure Layout	PostOp Layout	PROMs Layout
AJRR	Hip and Knee Arthroplasty	Registry	8			No	No	No	Yes	Yes	No	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Module				No	No	No	Yes	No	No	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Version		2025	2026	No	No	No	No	No	Yes	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Submission Type				No	No	No	Yes	No	No	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Registry Account ID	12			No	No	No	No	Yes	No	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Submitting Institution Name				No	No	No	No	No	No	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Submitting Institution National Provider Identifier	10			No	No	No	No	Yes	No	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Hospital or Surgery Center Name				No	No	No	No	No	No	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Hospital or Surgery Center NPI	10			No	No	No	No	Yes	No	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Patient Identification Number	25			Yes	No	No	No	Yes	No	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Patient Social Security Number	11	##### ; ###-##-####, 9999=Not reported	####; xxxxx####; XXXXX####; 9999	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
AJRR	Hip and Knee Arthroplasty	Patient First Name				No	No	Yes	No	No	No	Yes	Yes	Yes



	AJRR	SER	MsTR	ASR
MDD 2026 Ingestion Launch	July 2, 2026	Summer 2026	Fall 2026	Winter 2026
Legacy Spec Sunset	July 2027	Summer 2027	Fall 2027	Winter 2027
Legacy Spec Versions	2017, 2020 2021, 2024	2021	2021, 2022	2020, 2021

UPCOMING REGISTRY INSIGHTS DOWNTIME

JUNE 30 – JULY 2

Impacted Features:

- All 4 AAOS Registries
- Impacted:
 - Dashboard Data
 - File upload through SFTP or Registry Insights
 - PROMs Portal.

MDD Sandbox Will Remain Functional for testing of AJRR MDD 2026 Files

QUESTIONS?

The background of the slide is a complex digital graphic. It features a dark blue gradient with numerous glowing blue and green lines, dots, and circular patterns. The lines are mostly horizontal and vertical, creating a grid-like structure, but there are also several prominent, flowing, wavy lines that sweep across the middle of the image. The overall effect is that of a high-tech, data-driven environment.

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