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Discover the Northeast's leading orthopedic platform

We are a partner for market-leading orthopedic and spine physicians. We empower our practices to compete, grow and thrive in a changing healthcare landscape.

See Our Partners

Spire Orthopedics

Spire Affiliated Practices & locations

Physicians - 175

Locations - 11

Surgery Centers - 5

Annual Visits – 225,000

Total Employees – 1,500

Private Equity - Kohlberg

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Spire RCM Function – June 2023

Practice Management Systems - 8

- Modernizing Medicine
- Athena One
- Allscripts
- Care Cloud
- CPS
- SIS (ASC)
- HST

Vendors - 17

- Medical Coding
- Payment Posting
- Prior Authorization
- Accounts Receivable Follow-up
- Partial

RCM Operations

- Limited Standard Operating Procedures
- Non-Standard Scheduling
- Limited Time of Service Collections
- Prior Authorization
- Accounts Receivable Follow-up
- Multi-Touch Resolution
- Other

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RCM Goals

2025

Responsible AI Goal

Safe-guard enterprises from Generative AI risks

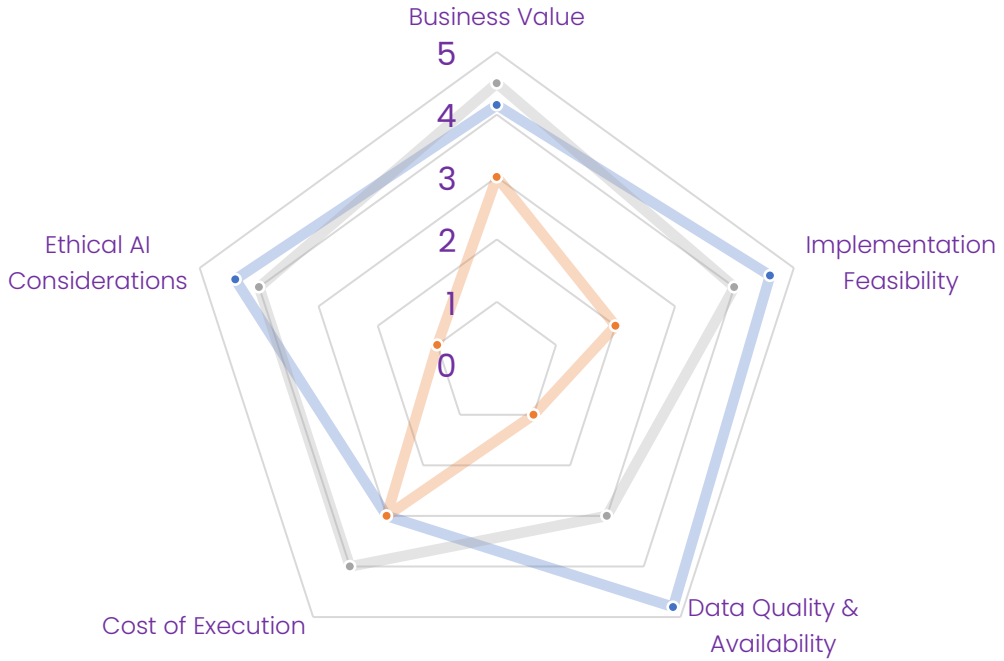
- In-House and Third-Party Services
- RAGs and LLM Agents
- Summarization, Q&A, Chatbots, …

- Correctness: Hallucination, …
- Reputation: Safety, Toxicity, Bias, …
- Security: PII, Jailbreak, etc.

writer.ai · Microsoft Copilot · Google Gemini · Google Vertex · AWS Bedrock · OpenAI · Anthropic Claude · (and more!)

Spire Orthopedics – Gen Ai Use Case Prioritization

Spire and it's partner have created a GenAI use case prioritization framework to assist financial enterprises methodically assess and prioritize the use case based on multiple dimensions mentioned below



1 **Business Value**

what are the Productivity Gains & Qualitative Value, New Revenue Generation Potential, Cost to Benefit Ratio/ROI

2 **Implementation Feasibility**

Evaluating enterprise current technical infrastructure capability considering factors such compatibility, scalability and resource requirement

3 **Data Quality & Availability**

Is there enough data available to train the model as needed, Is the data available and accessible

4 **Cost of Execution**

What will be one time and ongoing infrastructure cost, Cost of LLM subscription, Additional Maintenance cost of the process

5 **Ethical AI Considerations**

Each of the dimension comprised multiple questionnaire (8-10). Based on business response right prioritization of use cases can be achieved.

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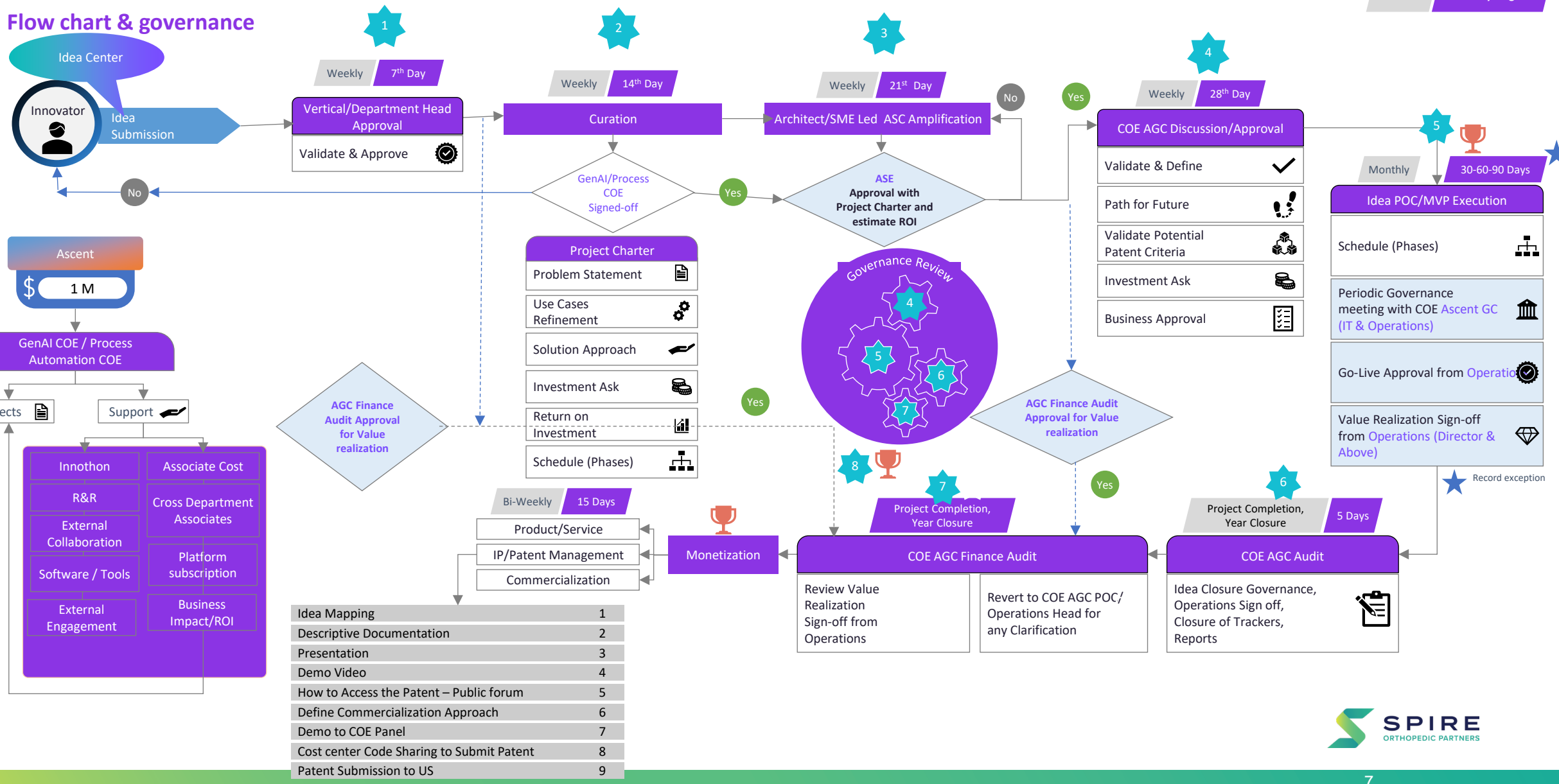
Spire Orthopedics - Global Competency Center

TAT | 135-Days Rigour

Flow chart & governance



Idea Mapping	1
Descriptive Documentation	2
Presentation	3
Demo Video	4
How to Access the Patent – Public forum	5
Define Commercialization Approach	6
Demo to COE Panel	7
Cost center Code Sharing to Submit Patent	8
Patent Submission to US	9

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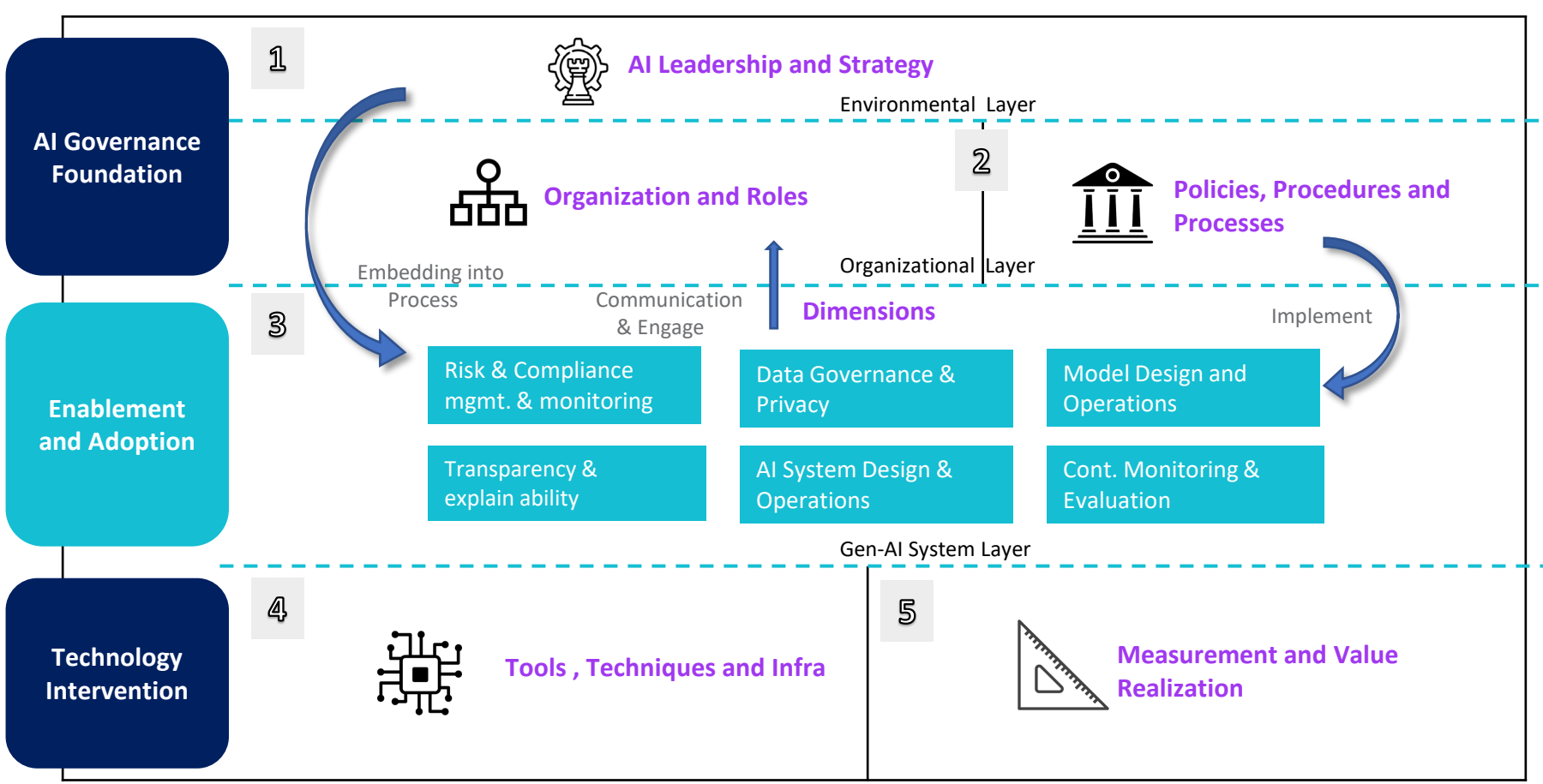
Spire AI Governance Framework Embedding fairness, transparency & accountability



1. Understand the applicable AI regulations in your industry and define your Strategic vision of AI.
2. Formalize AI Governance organization structures, roles, responsibilities and enterprise policies
3. Define, Design and Operationalize a trustworthy AI governance program
4. Execute and Deploy the Technology interventions
5. Track and monitor the implementation of AI Governance initiatives

AI governance is a system of rules, practices, processes, and technological tools that are employed to ensure an organization's use of AI technologies aligns with the organization's strategies, objectives, and values; fulfills legal requirements; and meets principles of ethical AI followed by the organization.

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Revenue Cycle

2025

Transforming Spire EV/BV/PA/Patient Collections

Problem statement / Opportunity

The RCM team was facing challenges with the time-intensive and cumbersome prior authorization verification process with unique processes by office and practice management system. Some locations were utilizing orders, others were utilizing tasking or messaging

Recognizing the urgency for change, the business searched for a solution that would streamline and fast-track the entire procedure.

Solution Approach

The Spire RCM team will be leveraging advanced AI (Artificial Intelligence) and IA (Intelligent Automation) technology, will implement an automated Auth Verification tool to pull out patient fields, medical necessity and payer rules from clinical notes and payer guidelines and check the medical necessity criteria against questionnaire from Millman care, Inter Qual guidelines or custom payer guidelines to see if they meet the sufficiency criteria and provides the auditing results.

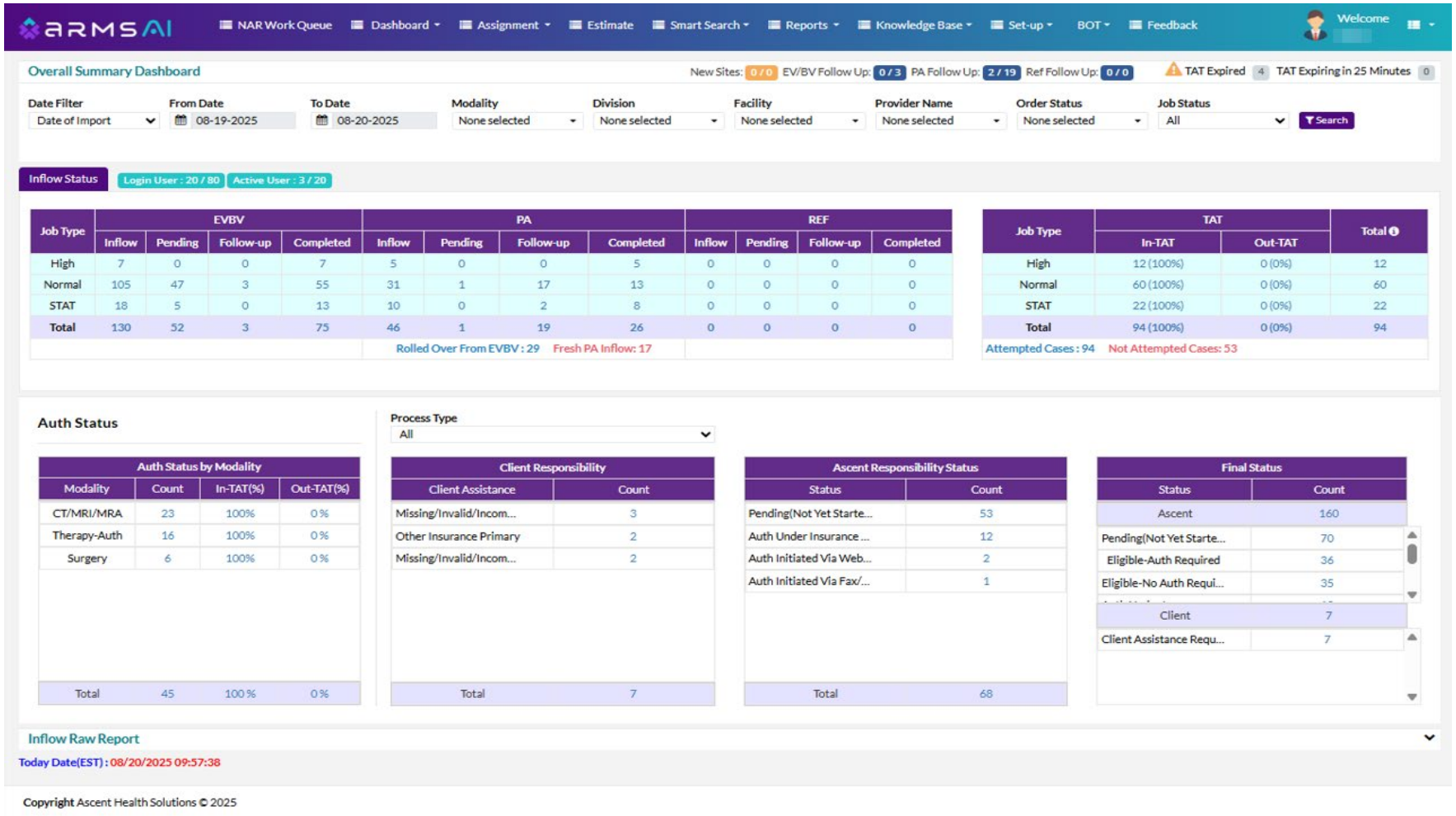
Furthermore, this tool reduces processing time and enhances accuracy by providing a unified view for efficient reviewer assessment, allowing supervisors and quality team to expedite the prior authorization process for surgical procedures. This tool will provide real time audit of surgical procedures (100% Audits) to supervisor and quality team and verify if the auth details and units approved for the respective patient at the time of EV BV PA Audit and Claims Submission Audit

Additionally, RCM quality team can compare the original documents attached to the pre-authorization request with the LLM results generated by the model side by side for better comparison and validation results. To make the process even more user-friendly, the AI team will develop an intuitive UI that allows users to load test cases run by the Data Science and Platform Engineering team. This way, RCM quality team can easily review the test cases with readily available LLM model results, without having to worry about the complexity or format of the results generated at the backend.

Business Impact

- Automatically shares medical necessity information with supervisors and quality team, and quality team can provide instant feedback, reducing production time significantly
- Improved RCM quality team satisfaction
- Increased Turn Around Time (TAT) results for auditing purposes
- Improved administrative bandwidth for RCM quality team
- Reduced LLM results audit time
- Save ~ 60-70% on quality team' review time, translating into annual savings

Spire Orthopedics – Transformation of Front RCM



- Utilize the information on the Medical records to extract the content for auto approval and for generating consolidated view for the reviewer to expedite the authorization process.
- Solution will reduce all the wait time for the Authorization process that will help for faster patient care.
- Auto initiate & status prior authorization and track Diagnosis and Procedures that require an authorization via Agentic Ai & CDI

Transforming Medical Coding

Problem statement / Opportunity

•Text-only search misses contextual relationships between diagnoses and procedures
•Standard search can't capture hierarchical relationships between medical codes
•Coders struggle to find appropriate modifiers and code relationships
•This leads to inaccurate coding, denied claims, and revenue loss
•GraphRAG proposes a solution to augment both manual and automated medical coding with a comprehensive code-retrieval mechanism

Solution Approach

GraphRAG technology combines semantic search with graph database intelligence for transformative results:

- Dual-engine approach with OpenSearch for text retrieval and Neo4j for graph relationships
- Enhanced ranking algorithm weighs both text relevance (70%) and graph connectivity (30%)
- Captures hierarchical relationships (parent/child codes) and cross-code links (ICD-10 to CPT)
- Automatically identifies appropriate modifiers through graph traversal
- Single unified query interface with query-type auto-detection
- Implementation of NCCI PTP edits at the graph level

Business Impact

- Increased coding accuracy through combined text + graph intelligence
- Reduced denied claims by ensuring proper code relationships
- 25-40% reduction in coding time through intelligent code suggestion
- Improved revenue integrity with comprehensive code relationship validation
- Simplified integration with existing systems through standard APIs
- Low MTTR for technical issues with containerized deployment

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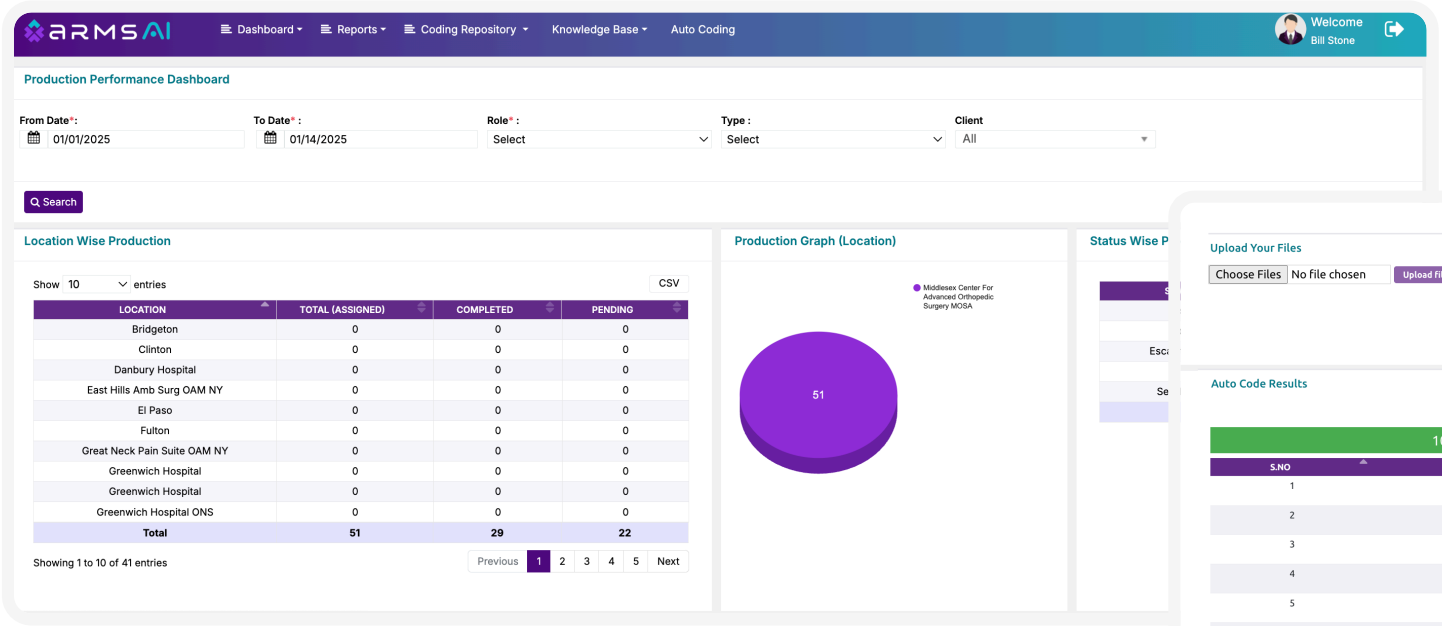
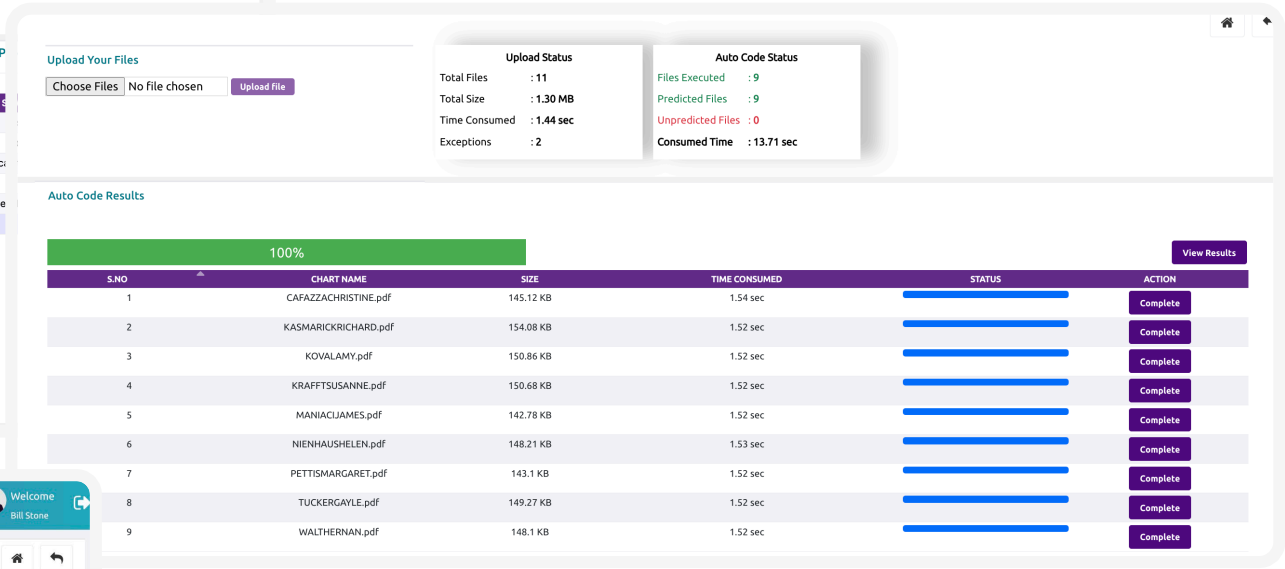
Spire Gen Ai Medical Coding

Medical Coding Enterprise Status



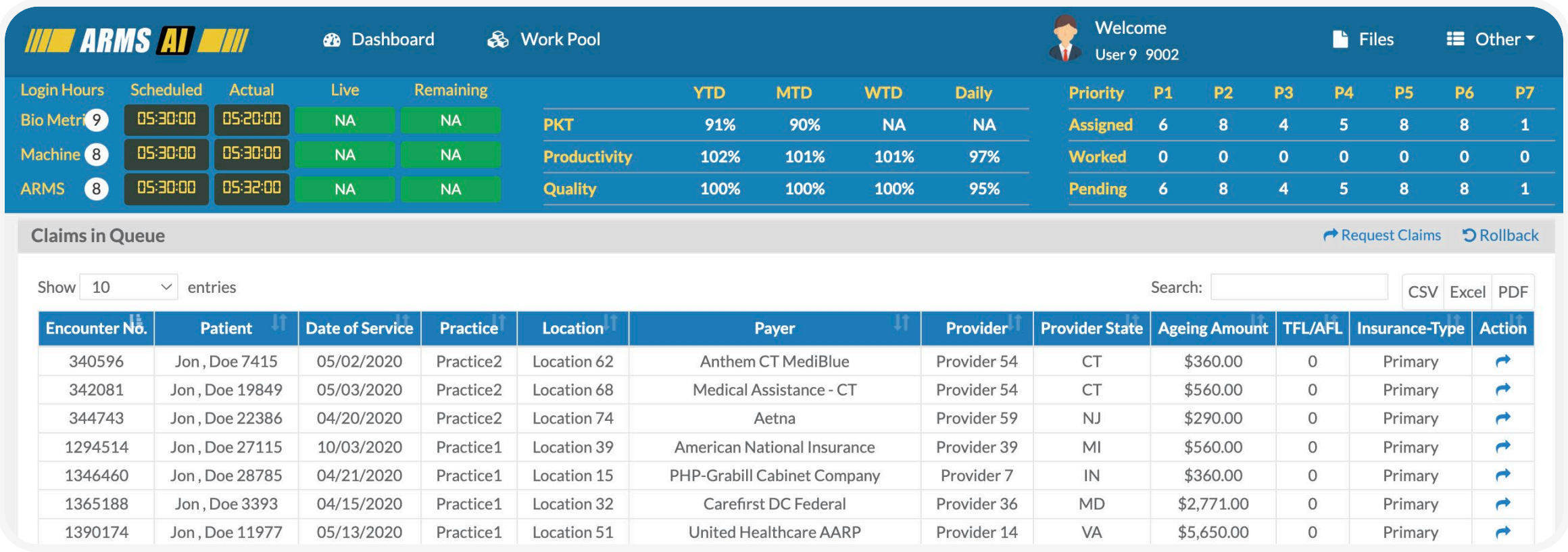
Extracted Reporting - API



Generated Diagnosis and Procedure Codes Specific to Payer Requirements via the utilization of Generative Ai

Spire Ai – Claims Allocation – Modernizing Medicine & Athena

Prioritization of Claims by Payer Rules, SLAs, etc.



Login Hours	Scheduled	Actual	Live	Remaining
Bio Metri 9	05:30:00	05:20:00	NA	NA
Machine 8	05:30:00	05:30:00	NA	NA
ARMS 8	05:30:00	05:32:00	NA	NA

	YTD	MTD	WTD	Daily
PKT	91%	90%	NA	NA
Productivity	102%	101%	101%	97%
Quality	100%	100%	100%	95%

Priority	P1	P2	P3	P4	P5	P6	P7
Assigned	6	8	4	5	8	8	1
Worked	0	0	0	0	0	0	0
Pending	6	8	4	5	8	8	1

Claims in Queue — Request Claims — Rollback

Show 10 entries — Search: — CSV Excel PDF

Encounter No.	Patient	Date of Service	Practice	Location	Payer	Provider	Provider State	Ageing Amount	TFL/AFL	Insurance-Type	Action
340596	Jon , Doe 7415	05/02/2020	Practice2	Location 62	Anthem CT MediBlue	Provider 54	CT	$360.00	0	Primary	
342081	Jon , Doe 19849	05/03/2020	Practice2	Location 68	Medical Assistance - CT	Provider 54	CT	$560.00	0	Primary	
344743	Jon , Doe 22386	04/20/2020	Practice2	Location 74	Aetna	Provider 59	NJ	$290.00	0	Primary	
1294514	Jon , Doe 27115	10/03/2020	Practice1	Location 39	American National Insurance	Provider 39	MI	$560.00	0	Primary	
1346460	Jon , Doe 28785	04/21/2020	Practice1	Location 15	PHP-Grabill Cabinet Company	Provider 7	IN	$360.00	0	Primary	
1365188	Jon , Doe 3393	04/15/2020	Practice1	Location 32	Carefirst DC Federal	Provider 36	MD	$2,771.00	0	Primary	
1390174	Jon , Doe 11977	05/13/2020	Practice1	Location 51	United Healthcare AARP	Provider 14	VA	$5,650.00	0	Primary	

Allocation of claims to either Digital Assistants or Teams members based on Best Resolution Type

Spire Payer Integration

United Healthcare Integration

Background

United Healthcare is one of the top 5 payer in US portal used across RCM processes in AR.

8-12 % of our overall volume are from UHC payer plans for the top 4 clients.

Structure

- AR | Capturing Claim Status Response for No Response/Follow up processes covering multiple states.
- Multiple Practice Management Systems.
- Automation Platform - Integrated API Architecture
- Portals Used - UHC

Market Challenges

- Manual intensive claim status exploration on UHC portal
- Inefficient process
- Delayed processing of claim

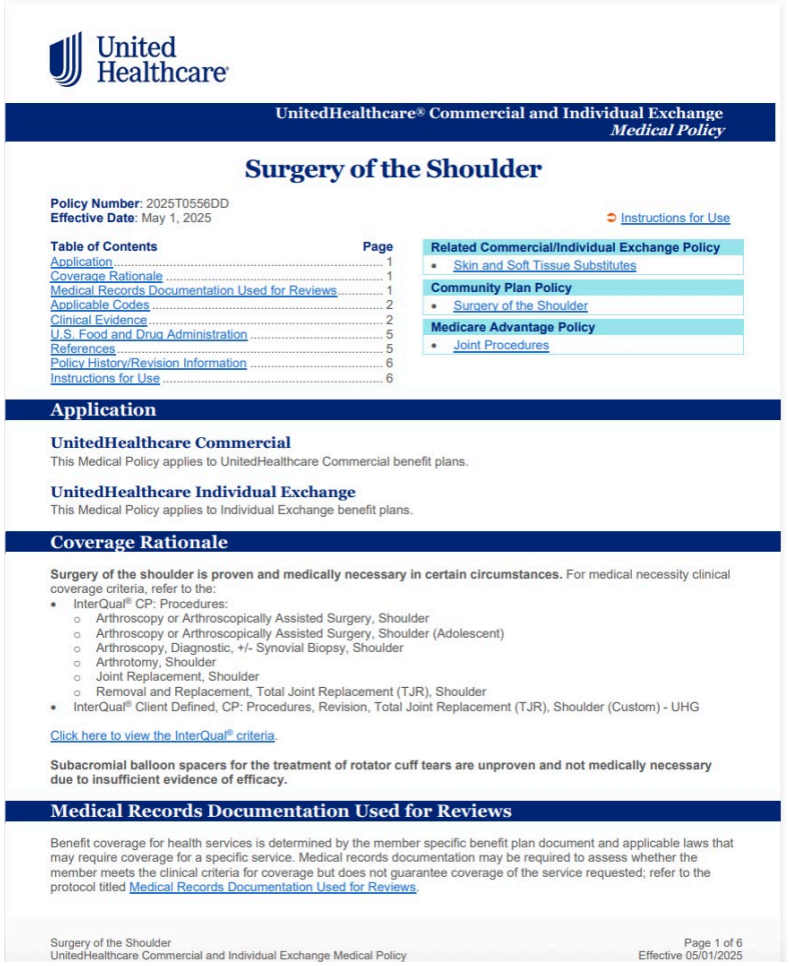
Solution Levers

- API Architecture
- Platform Integration
- Automation

Benefits

- Real-time claim status, Remittance advice & Eligibility verifications
- Claim response follow up for multiple clients
- Accelerated AR follow up
- **Automated No Response/Follow up account identification** with complex business rules embedded in ARMS.

Spire CDI Initiative – Fall 2025



United Healthcare

UnitedHealthcare® Commercial and Individual Exchange
Medical Policy

Surgery of the Shoulder

Policy Number: 2025T0556DD
Effective Date: May 1, 2025

Instructions for Use

Table of Contents **Page**

Related Commercial/Individual Exchange Policy
- Skin and Soft Tissue Substitutes

Community Plan Policy
- Surgery of the Shoulder

Medicare Advantage Policy
- Joint Procedures

Application

UnitedHealthcare Commercial
This Medical Policy applies to UnitedHealthcare Commercial benefit plans.

UnitedHealthcare Individual Exchange
This Medical Policy applies to Individual Exchange benefit plans.

Coverage Rationale

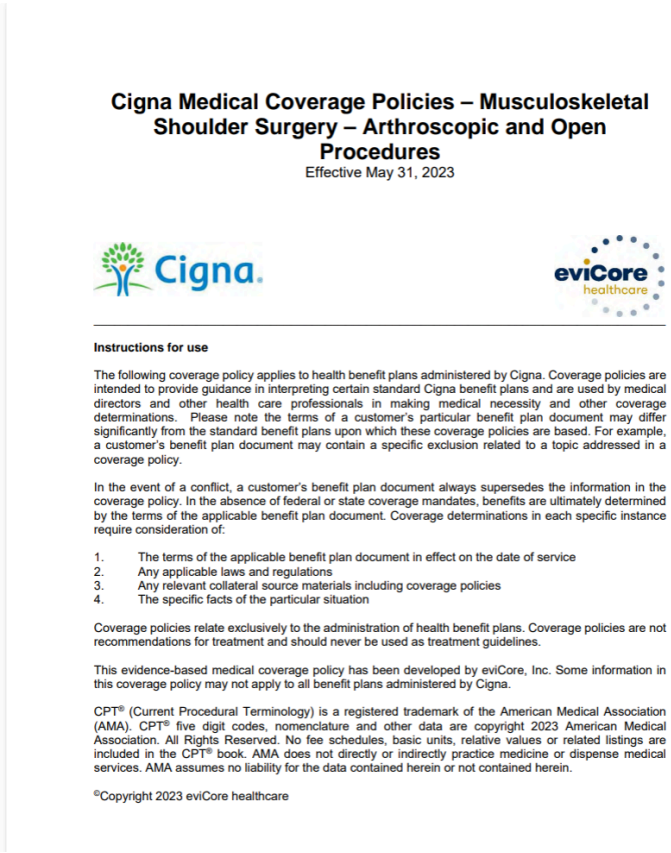
Surgery of the shoulder is proven and medically necessary in certain circumstances. For medical necessity clinical coverage criteria, refer to the:
- InterQual® CP: Procedures:
  - Arthroscopy or Arthroscopically Assisted Surgery, Shoulder
  - Arthroscopy or Arthroscopically Assisted Surgery, Shoulder (Adolescent)
  - Arthroscopy, Diagnostic, +/- Synovial Biopsy, Shoulder
  - Arthrotomy, Shoulder
  - Joint Replacement, Shoulder
  - Removal and Replacement, Total Joint Replacement (TJR), Shoulder
- InterQual® Client Defined, CP: Procedures, Revision, Total Joint Replacement (TJR), Shoulder (Custom) - UHG

Click here to view the InterQual® criteria.

Subacromial balloon spacers for the treatment of rotator cuff tears are unproven and not medically necessary due to insufficient evidence of efficacy.

Medical Records Documentation Used for Reviews

Benefit coverage for health services is determined by the member specific benefit plan document and applicable laws that may require coverage for a specific service. Medical records documentation may be required to assess whether the member meets the clinical criteria for coverage but does not guarantee coverage of the service requested; refer to the protocol titled Medical Records Documentation Used for Reviews.



Cigna Medical Coverage Policies – Musculoskeletal
Shoulder Surgery – Arthroscopic and Open Procedures
Effective May 31, 2023

Cigna. eviCore healthcare

Instructions for use

The following coverage policy applies to health benefit plans administered by Cigna. Coverage policies are intended to provide guidance in interpreting certain standard Cigna benefit plans and are used by medical directors and other health care professionals in making medical necessity and other coverage determinations. Please note the terms of a customer's particular benefit plan document may differ significantly from the standard benefit plans upon which these coverage policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a coverage policy.

In the event of a conflict, a customer's benefit plan document always supersedes the information in the coverage policy. In the absence of federal or state coverage mandates, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of:

1. The terms of the applicable benefit plan document in effect on the date of service
2. Any applicable laws and regulations
3. Any relevant collateral source materials including coverage policies
4. The specific facts of the particular situation

Coverage policies relate exclusively to the administration of health benefit plans. Coverage policies are not recommendations for treatment and should never be used as treatment guidelines.

This evidence-based medical coverage policy has been developed by eviCore, Inc. Some information in this coverage policy may not apply to all benefit plans administered by Cigna.

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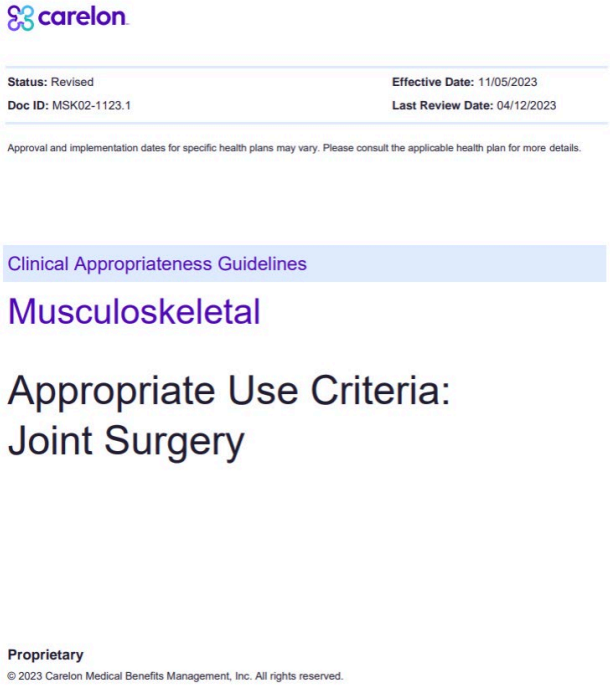

carelon

Status: Revised **Effective Date:** 11/05/2023
Doc ID: MSK02-1123.1 **Last Review Date:** 04/12/2023

Approval and implementation dates for specific health plans may vary. Please consult the applicable health plan for more details.

Clinical Appropriateness Guidelines

Musculoskeletal

Appropriate Use Criteria: Joint Surgery

Proprietary

Medical Record Details and Processing

```
L1 OPERATIVE REPORT – PERFORMED AT [LOCATION]
L2 Patient Name: [NAME]
L3 STAMFORD ASC DOB: 07/25/1963
L4 [ADDRESS] Acct#:
L5 [LOCATION], CT 06902 ONS Chart#: [NUMBER]
L6 DOS: 06/25/2025
L7 Dict MD: [NAME], MD
L8 _____
L9 PREOPERATIVE DIAGNOSIS: Right shoulder chronic rotator cuff tear.
L10
L11 PROCEDURES PERFORMED:
L12 1. Right shoulder rotator cuff repair.
L13 2. Right shoulder subacromial decompression.
L14 3. Right shoulder debridement of biceps tendon, root of biceps, anterior labrum,
L15 chondroplasty, anterior-inferior glenoid, and debridement of articular capsule.
L16
L17 SURGEON: [NAME], MD
L18
L19 ASSISTANT: [NAME], PA-C. An assistant surgeon was both necessary and
L20 indicated for the surgery given the level of complexity. The assistant surgeon was critical
L21 in helping and identifying and place anatomic position of the implants so that I could
L22 ensure an excellent outcome.
L23
L24 PROCEDURE: Triplicate scrub and drape were confirmed. Surgical and antibiotic
L25 timeout were confirmed.
L26
L27 Diagnostic arthroscopy was carried out which revealed fraying and abnormality of the
L28 anterior and the posterior labrum. These were debrided. He also had chondrosis of the
L29 anterior-inferior glenoid, which I debrided and did a chondroplasty on. The biceps
L30 tendon itself had a rupture and there was a stump of tendon and the tendon needed to be
L31 debrided and I did this as well. Finally, I debrided the articular capsule in the rotator
```

- **Pre-processed Op note with PHI redacted**
- **Labelled with line codes/span codes (eg, L11, 12) for easier context capture**
- **Processed against Anthem, Cigna, and UHC's CDI standards for shoulder debridement**

Comparison of Different Payers - Demo

Procedure:
CPT 29823: Right shoulder debridement of biceps tendon, root of biceps, anterior labrum, chondroplasty, anterior-inferior glenoid, and debridement of articular capsule.

Anthem Results

Results

Decision: Insufficient

Subprocedure: Other procedures (AC arthritis, adhesive capsulitis, capsulorrhaphy, synovectomy, debridement, biceps tenodesis/tenotomy)

Primary reasons:

- Insufficient documentation of conservative management
- Missing severity reporting (pain scale and ADL/IADL limitations)
- No imaging report details provided

Requirement checklist:

- ⚠️ general_imaging · single
- ❌ conservative_management · any_of
- ❌ severity_reporting · single
- ✅ debridement_indication · single

Cigna Results

Results

Decision: Insufficient

Subprocedure: Debridement (Limited or Extensive)

Primary reasons:

- No documentation of conservative management
- No documentation of function-limiting pain or ROM/strength limitations
- No documentation of positive signs/tests
- No advanced imaging (MRI/CT) report documented

Requirement checklist:

- ❌ function_limiting_pain · single
- ❌ rom_or_strength_limitation · single
- ❌ positive_signs_tests · single
- ⚠️ exclusion_other_causes · single
- ✅ debridement_performed · single

UHC Results

Results

Decision: Sufficient

Subprocedure: Extensive arthroscopic debridement

Primary reasons:

- Debridement of 3+ discrete structures documented
- Detailed operative report provided

Requirement checklist:

- ✅ structures_debrided · single
- ✅ operative_report · single

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Questions

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