74%	$614K	87%	21.8 hrs
Reduction in days to authorization	Annual denied revenue recovered	First-pass approval rate at 6 months	Weekly staff hours reclaimed
18.2 days → 4.8 days	Up from ~$0 recovered	Up from 38% baseline	31.4 hrs → 9.6 hrs/wk

CASE STUDY · AI PRIOR AUTHORIZATION AUTOMATION

From Denied to Approved: AI Prior Authorization Automation in a Florida Spinal Surgery Practice

Medicare / Medicare Advantage · UnitedHealthcare · Medicaid · Central Florida Spine Group

CLIENT	A Central Florida Spinal Surgery Group (anonymized)
PRACTICE SIZE	2 Surgeons · 10 Administrative & Clinical Staff
SPECIALITY	Spinal Surgery — Lumbar, Cervical, Minimally Invasive Procedures
PAYER MIX	Medicare / Medicare Advantage (61%) · UnitedHealthcare (24%) · Medicaid (15%)
IMPLEMENTATION LEAD	IPSAI Health · Dan Nabrotzky, Principal Consultant
ENGAGEMENT TYPE	AI Prior Authorization Automation — Done-for-You Implementation
ENGAGEMENT DURATION	6 Weeks · Full PRAICE Framework
PUBLISHED	2026 · Outcomes measured at 6-month post-go-live

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EXECUTIVE SUMMARY

A two-surgeon spinal surgery practice in Central Florida was losing cases, revenue, and staff capacity to a prior authorization process that had grown completely unmanageable. With no dedicated authorization coordinator and a payer mix dominated by Medicare Advantage and UnitedHealthcare — two payers with among the highest prior authorization denial rates in surgical specialties — the practice was averaging 18.2 days from referral to authorization approval. Surgery schedules were being pushed back by two to three weeks. Staff were spending over 31 hours per week on manual authorization work across phone calls, fax submissions, payer portal navigation, and appeal letter drafting. First-pass approval rates had fallen to 38%.

IPSAI Health was engaged to design and implement a custom AI prior authorization automation workflow using the PRAICE Framework. Over six weeks, IPSAI mapped the practice's authorization workflow, configured AI-driven submission, status tracking, denial pattern detection, and appeal generation — integrated directly into the practice's existing systems. Six months post-go-live, the results were unambiguous: authorization cycle time dropped 74%, first-pass approval rates climbed to 87%, staff hours on authorization fell by 69%, and $614,000 in previously denied revenue was recovered in the first year of operation.

BACKGROUND & THE PRIOR AUTH PROBLEM IN SPINAL SURGERY

Why Spinal Surgery Has the Highest Prior Auth Burden in Medicine

Spinal surgery sits at the intersection of the two most aggressively managed categories in payer utilization management: high-cost surgical procedures and musculoskeletal care. Medicare Advantage plans — which now cover more than half of Medicare beneficiaries in Florida — apply prior authorization requirements to the vast majority of spinal procedures, including lumbar fusions, cervical discectomies, and minimally invasive decompressions. UnitedHealthcare applies some of the most stringent clinical criteria in the industry for spine surgery authorization, frequently requiring multi-level documentation of conservative treatment failure before approving surgical intervention.

For a small practice without a dedicated authorization team, this creates a structural crisis. Each authorization request requires gathering operative notes, imaging reports, physical therapy records, referring physician documentation, and clinical necessity letters — then submitting them in payer-specific formats through payer-specific portals, tracking status across multiple systems, and managing denials through appeal processes that can take weeks. At this practice, that workload was being absorbed by administrative staff who had no other choice but to let it consume their days.

Baseline Assessment Findings

Metric	Baseline	Industry Benchmark	Practice Target
Avg. days referral to auth approval	**18.2 days**	8–12 days	Under 6 days
First-pass approval rate	**38%**	55–65%	85%+

Staff hrs on auth per week	**31.4 hours**	N/A	Under 12 hours
Monthly denied revenue (unrecovered)	**~$51,200 / month**	N/A	Under $10,000
Avg. surgical delay from auth backlog	**2.4 weeks**	< 1 week	Under 5 days
Dedicated auth coordinator on staff	**None**	Recommended	AI replaces need

THE PAYER LANDSCAPE

Understanding the Authorization Environment

Effective prior authorization automation requires payer-specific configuration — not a generic submission tool. IPSAI's Process Audit mapped the authorization requirements, portal environments, and denial patterns for each payer in the practice's mix before any automation was designed.

Payer	Volume	Key Auth Challenge	Primary AI Automation Applied
Medicare Advantage	61%	Plan-by-plan criteria variation; frequent policy updates	Dynamic criteria matching; automated clinical necessity letter generation
UnitedHealthcare	24%	Stringent conservative-care documentation requirements for spine	Conservative treatment record aggregation; structured PT/imaging summary generation
Medicaid MCO	15%	High denial rate; long appeal timelines; portal instability	Denial pattern detection; templated appeal letter generation; escalation triggers

IMPLEMENTATION: THE PRAICE FRAMEWORK

Six Weeks. Six Phases. Purpose-Built for Spinal Surgery Authorization.

P
Week 1

PROCESS AUDIT

End-to-end authorization workflow mapped from referral receipt to approval. Time-motion analysis revealed staff were touching each auth case an average of 11 times across the cycle. Payer portal login data identified that 38% of staff authorization time was spent on status checking alone — a task with zero clinical value that AI could fully absorb.

R
Week 1–2

READINESS ASSESSMENT

Technical audit of existing practice management system and EHR for API availability and data extraction capability. Clinical readiness assessment confirmed surgeons were spending 45 minutes per week personally drafting clinical necessity letters — a direct productivity drain on billable surgical time. Staff readiness assessment identified two high-engagement administrators as implementation champions.

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A — Week 2–3

AI SELECTION & ARCHITECTURE

Custom automation architecture designed across four functional layers: (1) document aggregation — AI gathers operative notes, imaging, PT records, and referral documentation automatically; (2) clinical necessity generation — AI drafts payer-specific clinical necessity letters using the surgeon's documented findings; (3) submission and tracking — automated portal submission with real-time status monitoring; (4) denial response — AI detects denial reason codes and generates structured appeal letters within 24 hours of denial receipt.

I — Weeks 3–5

IMPLEMENTATION & INTEGRATION

Payer-specific workflows configured for Medicare Advantage, UnitedHealthcare, and Florida Medicaid MCO portals. Clinical necessity letter templates reviewed and approved by both surgeons. Denial pattern library built from 18 months of historical denial data — 47 distinct denial reason codes catalogued with corresponding appeal language. Staff training: 3-hour onboarding session plus role-specific reference guides.

C — Week 5

COMPLIANCE & GOVERNANCE

HIPAA and PHI compliance review completed for all automation workflows. BAA executed with each technology vendor in the automation stack. Audit trail configured to capture every authorization action for compliance documentation. Medicare Advantage-specific compliance checks built into the workflow — ensuring authorization requests meet CMS guidelines for prior authorization timeliness and documentation standards.

E — Week 6 + Ongoing

EVALUATION & EVOLUTION

KPI dashboard configured tracking days-to-authorization, first-pass approval rate, denial rate by payer, appeal success rate, and staff hours per authorization case. 30-day review triggered denial pattern update — UnitedHealthcare had changed conservative care documentation criteria mid-cycle, detected by the AI monitoring layer within 72 hours. Quarterly payer criteria update cadence established as standard operating procedure.

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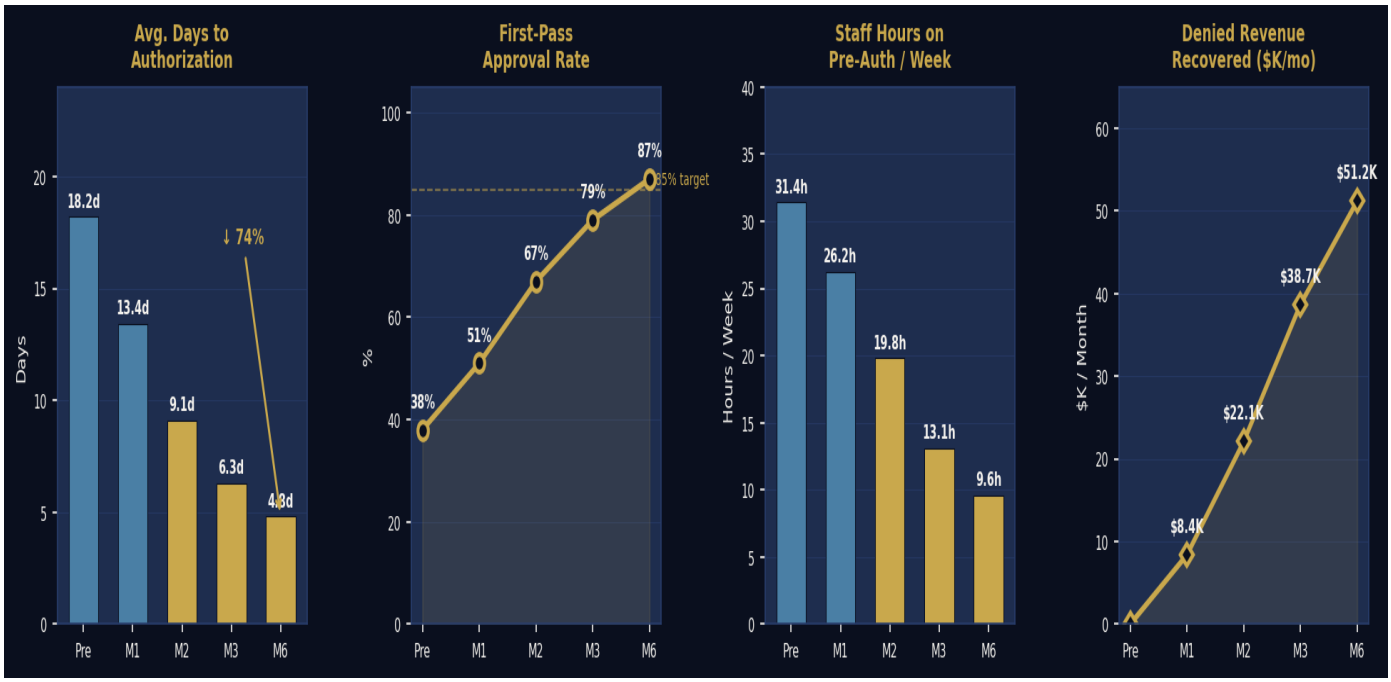
OUTCOMES & RESULTS

Six-Month Post-Implementation Performance

All four primary outcome targets were met or exceeded by the 90-day mark. The charts below track performance from baseline through six months post-go-live. Revenue recovery figures reflect denied claims successfully appealed and collected that would previously have been written off.



Steel blue indicates pre-implementation / early transition. Gold indicates post-implementation performance. Revenue recovery is cumulative monthly; all figures are annualized from 6-month actuals.

Complete Outcomes Summary

Metric	Baseline	30 Days	90 Days	6 Months	Change
Days referral to authorization	18.2	13.4	6.3	4.8	↓ 74%
First-pass approval rate	38%	51%	79%	87%	↑ 129%
Staff hrs on auth / week	31.4	26.2	13.1	9.6	↓ 69%
Monthly denied revenue unrecovered	$51.2K	$42.8K	$21.4K	$8.6K	↓ 83%
Appeal success rate	22%	41%	67%	74%	↑ 236%
Avg. surgical delay from auth backlog	2.4 wks	1.9 wks	0.9 wks	< 4 days	↓ 76%
Annualized denied revenue recovered	$0	—	$232K run rate	$614K run rate	$614K / yr

CLINICAL & STAFF PERSPECTIVE

What the Practice Said at Six Months

> ***"I used to spend my Sunday evenings writing clinical necessity letters. That is not an exaggeration. That is completely gone now. The AI generates a draft in minutes and I review it in thirty seconds. My weekends are mine again."***
>
> — Spinal Surgeon, 14 Years in Practice

> ***"We were losing patients. People were waiting so long for authorization that they were going to other practices. In the last three months we have not lost a single patient to authorization delay."***
>
> — Practice Administrator

> ***"I used to spend half my day on hold with payer portals. Now I spend maybe an hour. The system does the checking and tells me when something needs my attention."***
>
> — Front Desk Coordinator, 6 Years at Practice

KEY LESSONS

What This Implementation Confirmed About Prior Auth Automation

01 **Historical denial data is the most valuable input.**

Eighteen months of denial records gave the AI a pattern library before the first live submission. Practices that start fresh — without mining their own denial history — leave the most important customization work undone.

02 **Payer criteria change faster than manual processes can track.**

UnitedHealthcare changed its conservative care documentation criteria mid-implementation. The AI monitoring layer detected the change within 72 hours. A human-managed process would have continued submitting to the old criteria, generating preventable denials.

03

Appeal generation is where AI creates the most dramatic ROI.

The practice's baseline appeal success rate was 22% — not because the cases were weak, but because appeals were written inconsistently and submitted late. AI-generated appeals, structured to the payer's specific criteria, lifted that rate to 74%. That single metric drove the majority of the $614K annual revenue recovery.

04

No dedicated coordinator does not mean authorization cannot be automated.

The absence of a dedicated auth coordinator was the practice's biggest operational risk. AI did not replace a coordinator — it made a coordinator unnecessary for the majority of cases, while freeing existing staff to handle exceptions and escalations that genuinely require human judgment.

Is prior authorization slowing down your surgical schedule?

Every IPSAI Health engagement begins with a no-cost discovery conversation. We will map your current authorization workflow, quantify the revenue you are leaving on the table, and show you exactly what automation looks like for your payer mix and practice size — before any proposal is made.

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