Surgical Readiness Profiling to Support Preoperative Decision-Making and Value-Based Spine Care Under Mandatory Episode-Based Payment: An HEOR Framework with Illustrative Budget-Impact Scenarios

POSTER
CO87

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Economic Evaluation · Digital Health · Medical Devices · Real-World Data · Patient-Reported Outcomes · Spine Surgery · Value-Based Care

1 Background & unmet need

- Low-value spine surgery is a large, quantified burden: **>200,000** low-value procedures over 3 years and **>$1.9B** to Medicare (Lown Institute 2025), **≈$9,500** per procedure on average.
- **CMS TEAM** becomes a mandatory model from 2026: a 30-day episode with **spinal fusion included**.
- The gap: an **ex ante, patient-centered signal** of expected benefit, available before the surgical decision is fixed.

2 Intervention & methods

- **Intervention:** a **CE-marked Class IIa software as a medical device (SaMD)**. It outputs the individual probability of achieving the **composite MCID at 6 months**, a PROMs-based **surgical-readiness profile**.
- **Physician-in-the-loop:** a **low predicted benefit** signal triggers structured review and shared decision. It is **never an automatic surgical exclusion**.
- **Model:** decision tree over a TEAM 30-day episode, scenario cohort of **10,000** lumbar-fusion candidates.

0.816
AUC (DeepSurgery cohort)

0.81
Sensitivity (no-MCID)

0.59
Specificity (MCID)

0.70
Accuracy

DeepSurgery cohort, NCT05166018 (André et al., Front. Surg. 2026;12:1710512). No-MCID prevalence varied **30-50%**.

M Composite MCID endpoint (6 months)

1. **ODI** improvement (disability)
2. **Motor status**
3. **Opioid / NSAID** consumption

A patient-centered composite: the profile targets who is likely to reach a meaningful recovery, not a single score.

3 Results

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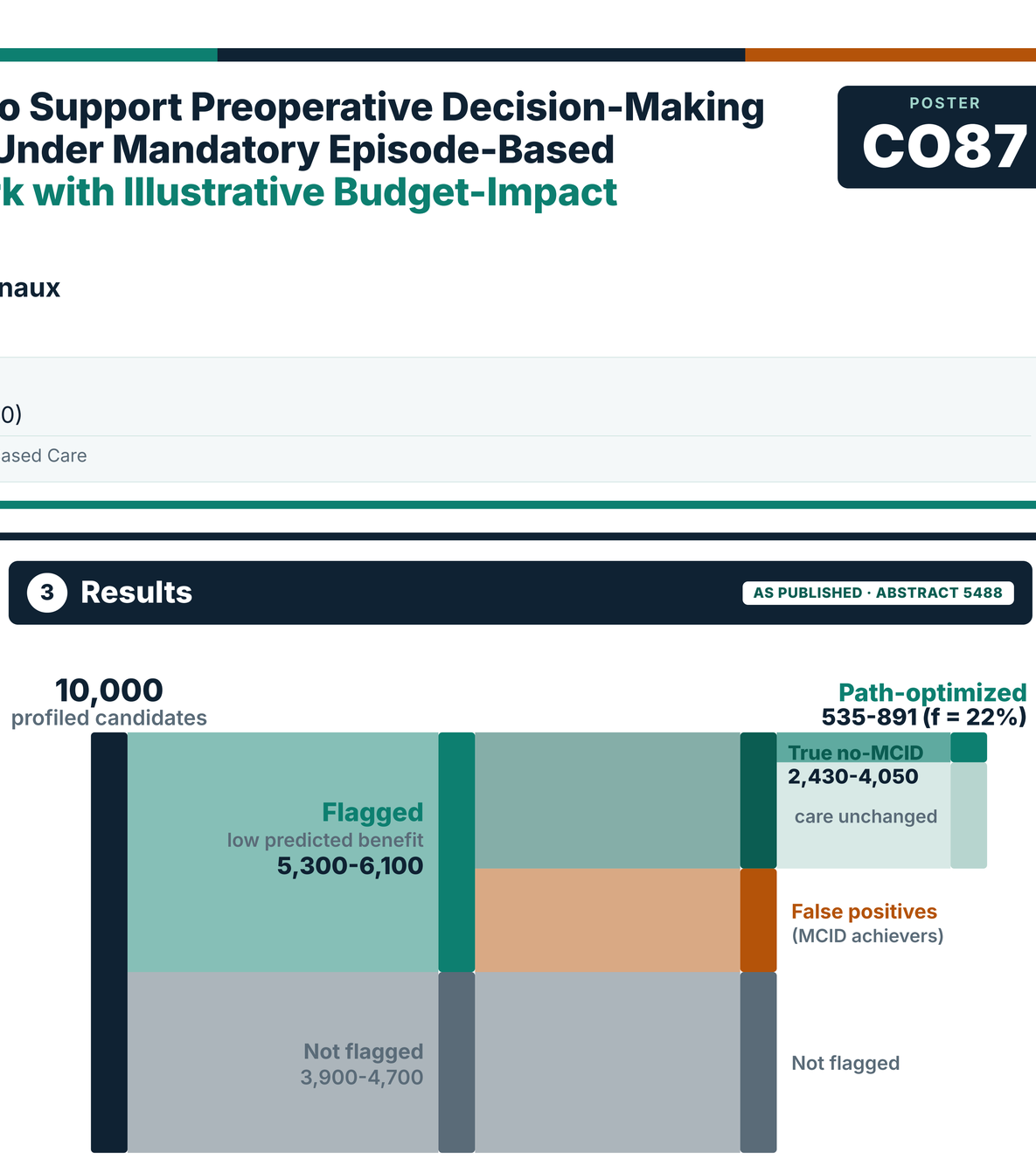


Fig 1. Patient flow per 10,000 profiled candidates. Ranges reflect no-MCID prevalence 30-50%.

535-891
Path-optimized patients (f = 22% of true no-MCID; short-term range 20-25%)

$6,400
Composite value / optimized patient = $3,000 TEAM (overrun $6,000 × 50%) + $3,400 downstream

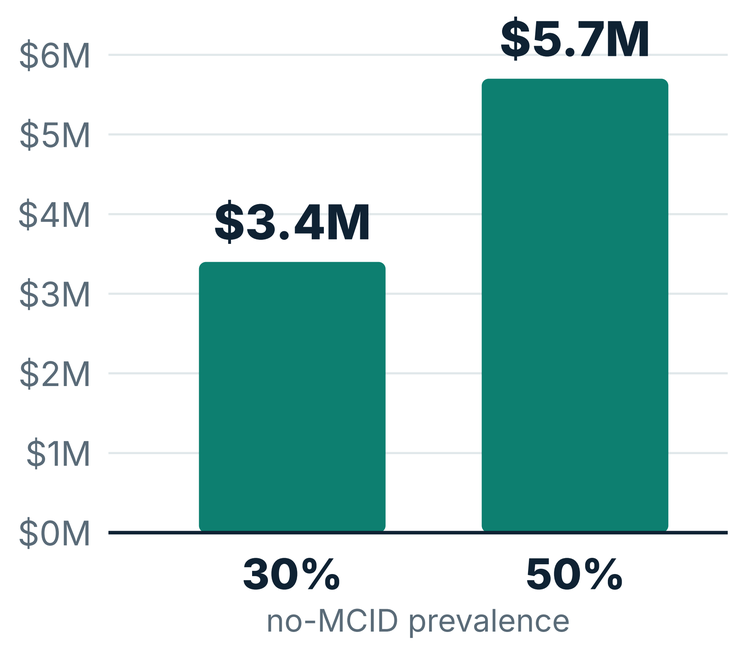


Fig 2. Expected gross value ≈ **$3.4-5.7M** per 10,000 candidates.

These estimates reflect physician-mediated pathway optimization, not automatic surgical exclusion.

4 Conclusions

- Under TEAM, readiness profiling generates an **implementation-dependent** budget impact, via physician-mediated pathway optimization in patients at risk of insufficient benefit.
- Economic value depends on the **path-modification rate** and the **PPV**, not on model discrimination alone.
- **Prospective validation** (linked claims + PROMs + continuous activity endpoints) is required to quantify realized savings.

! What this is, and is not

- The tool **supports, not replaces,** clinical judgment.
- Every signal is **physician-mediated**; no automatic surgical exclusion.
- Figures are **illustrative scenarios** that **may** vary with implementation; not predicted episode costs or guaranteed savings.

✦ At a glance

535-891
Patients whose surgical pathway is reviewed and optimized, per **10,000** profiled candidates

$6,400
Composite value created per optimized patient (hospital episode + downstream care)

$3.4-5.7M
Gross value to the health system, per 10,000 candidates (hospital + payer)

DISCLOSURES
All authors are affiliated with Cortexx Medical Intelligence, developer of the software evaluated. Study funded by Cortexx Medical Intelligence.

SELECTED REFERENCES
André et al. Front Surg 2026;12:1710512 · CMS TEAM 2024 · Lown Institute 2025 · Schoenfeld et al. Spine J 2014 · Husereau et al., CHEERS 2022, BMJ 2022.

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