WHITEPAPER

The Future of Perioperative Care: Orchestrating Efficiency Across Every Role

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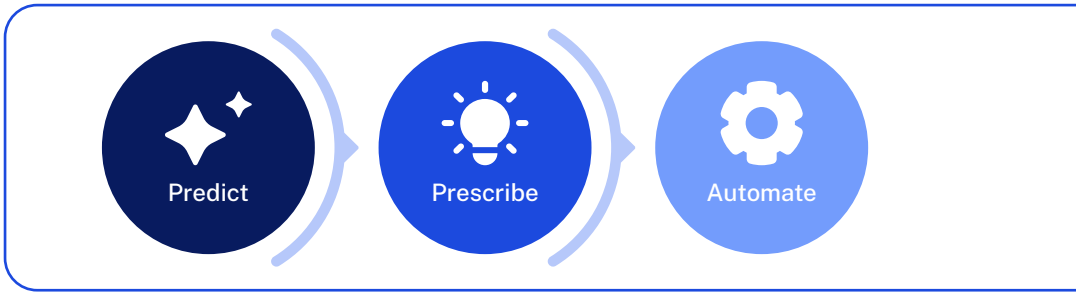
INTRODUCTION

Solving the OR Efficiency Paradox

Few areas of the hospital hold more potential — or more untapped performance — than the operating room (OR). Across the country, ORs represent nearly half of hospital costs and drive a disproportionate share of revenue. Yet even small inefficiencies create outsized impact: unused block time that goes unnoticed, robotics sitting idle for hours, cancellations that ripple across the schedule, and staffing gaps that erode both morale and margin.

What's striking is how little these problems have improved. Despite years of investment in electronic health records (EHRs), dashboards, and digital tools, most surgical services still struggle with the same operational friction. This is the OR Efficiency Paradox: hospitals have more data than ever, but continue to face underutilized rooms, unpredictable days, preventable delays, and burned-out teams. The issue isn't a lack of information. It's the absence of orchestration.

The solution is an intelligent operational model powered by data and artificial intelligence (AI): **Predict. Prescribe. Automate.** This end-to-end framework spans the entire surgical continuum — from clinic to the OR to PACU — continuously aligning staff, rooms, and cases so surgical services shift from reactive firefighting to proactive, coordinated orchestration.



Leading health systems that have broken this paradox are seeing meaningful gains:

7%
increase in case volume

5%
increase in block utilization

25%
reduction in overtime

16%
increase in robot utilization

Read on to learn how.

A Framework for Perioperative Orchestration Backed by Sophisticated Math

A new model of perioperative excellence requires operational intelligence that spans prediction, prescription, and automation — anchored in sophisticated mathematics, AI, and optimization science.

- **Predict:** Machine learning and queueing-theory models forecast case demand months in advance, staffing needs by hour of the day weeks in advance, and flow constraints. Network optimization continuously balances capacity across sites, identifies future bottlenecks, and predicts case lengths with high accuracy by using Natural Language Processing (NLP) to refine case duration estimates, reading the surgeon's case description and adjusting the expected time based on the specific details they provide.

- **Prescribe:** Advanced algorithms use objective rules and real-world behavior patterns to recommend when block time should shift to where it's most needed, how staffing should be adjusted, and which schedule changes will improve flow. The system also surfaces the actions most likely to drive impact — like identifying who is most likely to use released time and which complex patients need priority – so teams can make confident, data-driven decisions quickly.

- **Automate:** Embedded workflows and real-time orchestration engines execute prescribed actions, adjusting schedules, notifying staff, readying patients, and reallocating capacity dynamically. Closed-loop feedback continuously refines models, creating self-learning, adaptive operations.

Together, these capabilities unify fragmented processes with predictive precision and automated execution — reducing cancellations, increasing utilization, and building a resilient, data-driven perioperative ecosystem.

On the following pages, we explore how this Predict–Prescribe–Automate framework transforms the daily experience of every role across the surgical continuum — from physician leaders to clinic staff — illustrating the tangible impact of orchestration at every level.

ROLES

The Perioperative Leader – Driving OR Growth, Access, and Equity

Surgical and anesthesia leaders are responsible for expanding case volume, ensuring equitable access across service lines, and optimizing OR utilization without additional capital or staffing. But they often inherit outdated block assignments, reactive scheduling processes, and disconnected tools that create siloed wins at the expense of system-wide impact. Traditional systems digitize old workflows rather than modernize them, leaving leaders with fragmented data and limited visibility, especially when coordinating across anesthesia and surgical teams.

A Path Forward

- **Predict:** Anticipate idle time, staffing mismatches, and future demand with AI-powered analytics. By identifying trends months in advance, leaders can align surgical and anesthesia capacity before bottlenecks occur.
- **Prescribe:** Use objective data to support fair and transparent block reallocation across service lines. Shift conversations from politics to performance, ensuring nursing and anesthesia teams have visibility into case demand and staffing needs.
- **Automate:** Streamline notifications and block release workflows so valuable OR time is reused consistently and with enough lead time to staff appropriately.

Together, these capabilities help surgical and anesthesia leaders grow case volume, improve access, and foster collaboration grounded in transparency and trust.

Customer Spotlight

WakeMed

Get the full story
Watch Webinar

> “Our goal is to stay ahead of demand. We’re building a system that’s not only efficient today but resilient for the future.”
>
> Charles Harr, MD // Chief Medical Officer and Executive Healthcare Strategist at WakeMed Health & Hospital

CHALLENGE + SOLUTION

WakeMed Health & Hospitals faced mounting operational pressure as surgical and procedural volumes grew rapidly across its three-hospital system in one of the nation’s fastest-growing regions. With limited capacity for new construction, the organization struggled with inefficient manual scheduling, underutilized anesthesia resources, and uneven procedural demand that left rooms idle midday and overburdened late in the day. Partnering with LeanTaaS, WakeMed implemented iQueue for Operating Rooms to digitize and optimize scheduling and block management across the OR and procedural areas. The platform unified data from Epic® into a single, transparent system, enabling real-time visibility, smarter anesthesia alignment, and equitable access to procedural time across surgical, interventional, and endoscopy services.

IMPACT

11%
increase in prime time OR case minutes

21%
increase in prime time procedural case minutes

13.5%
increase in proactively released block minutes

*Epic is a registered trademark of Epic Systems Corporation.

The Surgeon – Shifting from Reactive to Proactive

Surgeons want fair access to their allocated block time. But just as importantly, they want clear visibility into additional time that becomes available and an easy way to secure it. They also want minimal administrative burden and confidence that every case will start and finish as scheduled. Yet they often face last-minute cancellations, limited visibility into open out-of-block time, and manual coordination across multiple teams, all compounded by delays from missing authorizations or incomplete documentation. These disruptions not only impact productivity but also patient experience and professional satisfaction.

A Path Forward

- **Predict:** Anticipate which surgeons will have unused block time weeks in advance and which surgeons are most likely to need that time by forecasting demand, identifying latent open time, and surfacing readiness risks early. With predictive visibility into case progression, staffing, and patient prep workflows, surgeons gain the foresight to act before delays occur and secure additional time when they need it.

- **Prescribe:** Provide timely nudges that prompt surgeons to release time they won't use and highlight out-of-block opportunities that match their actual practice patterns. Recommendations for longer-term block adjustments are made by analyzing how surgeons use time both inside and outside their assigned blocks, ensuring capacity is aligned with true demand.

- **Automate:** Enable smart scheduling, coding validation, and status updates that reduce manual communication and keep surgeries on track.

This proactive orchestration allows surgeons to focus on their patients, complete more cases within existing time, and generate additional revenue while improving patient satisfaction and reducing burnout.

Customer Spotlight

LEE HEALTH

Get the full story
Watch Webinar

> “Being a surgeon, we have this love-hate relationship with data. It’s great when it’s for us [...] but the accountability only works when the data is transparent, consistent, and believable.”
>
> Thomas Hunt, MD // Vice President and Chief Physician Executive, Lee Health

CHALLENGE + SOLUTION

Lee Health, one of Florida’s largest health systems, faced significant challenges uniting employed and private surgeons under a single, transparent OR governance model. Surgeons lacked consistent visibility into data and scheduling decisions, fueling skepticism and resistance around block time changes. Partnering with LeanTaaS, Lee Health implemented iQueue for Operating Rooms to make OR data accessible, reliable, and actionable, empowering surgeons to release time proactively and participate in data-driven governance. The system’s AI-powered insights and clear accountability framework built trust across the surgical community, fostering a culture of shared ownership and collaboration.

IMPACT

840K
OR minutes released proactively by surgeons

6%
increase in case volume

5%
increase staffed room utilization

The Charge Nurse & Anesthesia Board Runner – Balancing Staffing, Safety, and Satisfaction

Charge nurses and anesthesia board runners sit at the center of daily operational stability, responsible for keeping rooms staffed safely while supporting clinical teams through constant change. Yet most scheduling tools provide only static templates and outdated snapshots of demand, leaving both nursing and anesthesia teams to react to shortages, skill mismatches, and late-breaking updates. Without reliable forecasts of staffing needs by role, day, and hour — or real-time visibility into how cases are unfolding — leaders are forced into last-minute reshuffling that drives overtime, stress, and avoidable chaos.

A Path Forward

- **Predict:** Forecast the number and duration of cases by day weeks in advance, then translate those forecasts into the nursing and anesthesia staffing required by role, day, and hour. By comparing predicted needs to the scheduled staff, leaders can spot over-or under-staffing early and adjust before issues impact safety or flow.

- **Prescribe:** Identify the best-fit nurse and anesthesia team members for each OR by matching staff to the specific cases scheduled there, using dozens of data parameters such as skills, experience, certifications, case complexity, and service-line patterns. This ensures every room has the right team for both safety and efficiency.

- **Automate:** Continuously adjust the day-of-surgery staff roster as call-outs, add-ons, cancellations, and other last-minute changes occur. Updates to assignments are made in real time, alerting the right nursing and anesthesia team members automatically, reducing manual coordination and preventing burnout.

By shifting from reactive adjustments to predictive planning, charge nurses and anesthesia leaders can stabilize daily operations, reduce premium pay costs, and create a culture of trust and balance within their teams.

Customer Spotlight

Get the full story
Case Study

> “Charge nurses are saving several hours a week. We no longer have to copy the assignments from paper into the EHR, and spend less time revising initial assignments since service line coordinators have the information they need to support decisions around optimal assignments from the beginning.”
>
> Nurse Manager // Oregon Health & Science University

CHALLENGE + SOLUTION

Oregon Health & Science University (OHSU) struggled with a manual, time-intensive OR staffing process that required 45 hours a week of coordination and limited visibility into staff capabilities. OHSU needed to shift its entire mindset around staffing, workflows, and resource utilization to sustain growing surgical volumes and rebuild morale without overburdening its workforce. OHSU, a longtime partner of LeanTaaS, embraced the new AI-powered Daily Staff Roster feature within iQueue for Operating Rooms to streamline OR staffing. The solution fully digitized and automated the staffing process, replacing manual, paper-based assignments with a best-fit engine that matches nurses and anesthesia staff to cases and updates assignments in real time. With a single source of truth, leaders gained immediate visibility into staffing needs, skill alignment, and last-minute changes. The result was a more transparent, predictable staffing model that boosted morale, reduced burnout, and strengthened team trust and performance.

IMPACT

30%
improvement in optimal staff allocation

25 hours/week
saved in staffing coordination

5 minutes
average reduction in case duration

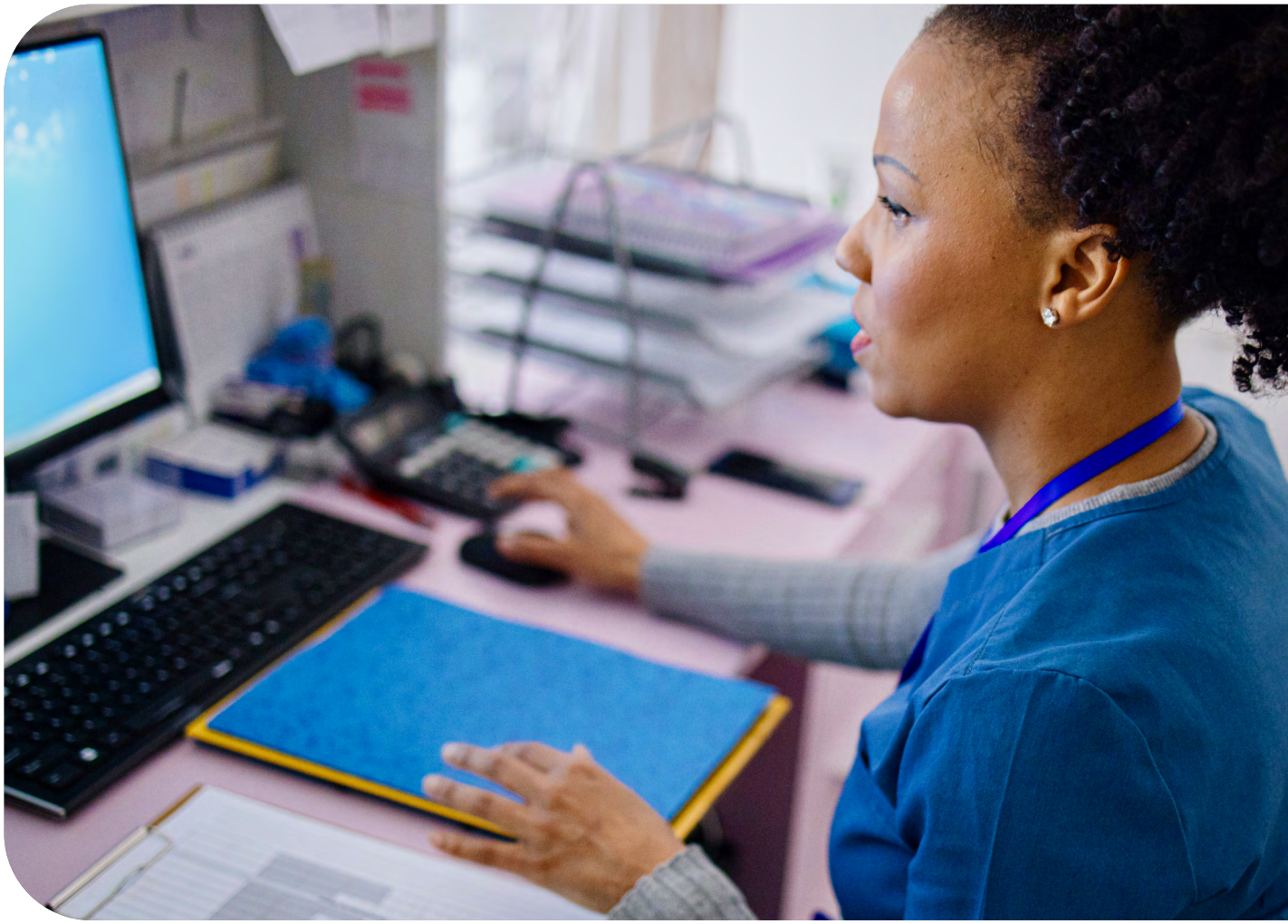
The OR Scheduler – Coordinating Chaos into Clarity

OR schedulers serve as the air traffic controllers of surgery, managing constant changes while ensuring alignment among surgeons, rooms, and staff. With fragmented communication tools and limited visibility, even minor changes can cascade into major delays or cancellations.

A Path Forward

- **Predict:** Detect idle blocks and open time early using real-time analytics that surface availability and potential conflicts before they impact the schedule.
- **Prescribe:** Match surgeons, rooms, and staff optimally using data that balances demand and availability across the entire system.
- **Automate:** Synchronize communication and scheduling updates across all stakeholders to reduce errors, eliminate bottlenecks, and maintain a smooth daily flow.

Schedulers gain control and visibility, transforming a reactive process into a proactive system that saves hours daily, minimizes errors, and ensures every scheduled case runs smoothly from start to finish.



Customer Spotlight

Inova™

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Watch Webinar

> “It’s helped organize our scheduling team to work efficiently and be held accountable. Everything was in our EMR system. Things were tracked – and not tracked – from phone calls and emails, but now having everything tracked within iQueue [...] It’s not a guessing game anymore. That’s really working smarter, not harder.”
>
> Caity Butler, MSN, RN, CNOR // Manager of Centralized Scheduling, Inova Health System

CHALLENGE + SOLUTION

Inova Health System, with nearly 100 ORs across five hospitals, faced mounting frustration from surgeons and schedulers over a slow, fragmented, and opaque scheduling process. Manual workflows, inconsistent block release timelines, and limited data visibility left staff struggling to fill open time efficiently and often discovering unused blocks only on the day of surgery. Inova implemented iQueue for Operating Rooms to standardize scheduling workflows, automate block release windows, and consolidate case documentation into a single digital platform. The unified system gave schedulers real-time visibility into available OR time, streamlined coordination across hospitals, and transformed a culture of “holding time” into one of proactive utilization and transparency.

IMPACT

3%
increase in prime time utilization

20%
increase in released OR minutes

46%
of released OR/Endo time filled

The Clinic Manager – Turning Consults into Completed Surgeries

Surgical clinics are the critical starting point of the surgical journey, responsible for converting patient consults into completed surgeries. Yet, administrative bottlenecks like authorization delays, missing documentation, and poor coordination can cause up to one-third of cases to fall through the cracks.

A Path Forward

- **Predict:** Identify missing documentation, prior-auth and clearance readiness gaps, and bottlenecks in real time so clinic teams can intervene before cases are delayed or dropped.
- **Prescribe:** Recommend next steps and surface key actions to accelerate case progression, from completing authorizations to initiating pre-op readiness.
- **Automate:** Streamline communication and coordination by sending SMS updates to patients, emailing PCPs and specialists for required clearances, retrieving records automatically, and synchronizing scheduling workflows across systems. This ensures a seamless, timely handoff from clinic to OR.

This streamlined coordination transforms the clinic–OR connection, reducing leakage, accelerating case conversion, and strengthening the patient experience from consultation to recovery.

Customer Spotlight

ANKLE & FOOT SPECIALISTS OF PUGET SOUND

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> “Centralizing everything was huge for us. Before it was sticky notes and emails and chasing people down. So now that we’re all on the same page and everything is done in real time, it’s made a lot of things easier to handle.”
>
> Amber Hollis // Clinic Manager, Ankle & Foot Specialists of Puget Sound

CHALLENGE + SOLUTION

Ankle & Foot Specialists of Puget Sound, a six-site surgical clinic, struggled with paper-based scheduling workflows that relied on tribal knowledge, creating frequent delays, lost cases, and frustrated patients and staff. Manual handoffs and limited visibility left schedulers chasing information, surgeons unaware of missing details, and patients facing last-minute cancellations. The clinic adopted iQueue for Surgical Clinics to digitize scheduling, automate checklists, and centralize case tracking from authorization to billing. The platform created a single source of truth for the team, reducing denials and cancellations, streamlining patient communication, and empowering staff to coordinate cases seamlessly across locations.

IMPACT

24%
relative increase in case volume

3.2x
scheduler efficiency gain

73%
relative reduction in hold and cancellation rates

The Patient – Seamless Scheduling, Confident Care

For patients, the surgical journey often begins with uncertainty: missed calls, unclear instructions, and last-minute changes that heighten anxiety. When scheduling processes are streamlined, patients experience greater clarity and confidence. Consistent communication, timely reminders, and proactive updates ensure that authorizations, assessments, and instructions are completed well in advance, minimizing confusion and delays.

By reducing manual handoffs and coordinating tasks across teams and systems, clinics and hospitals can prevent preventable cancellations and improve timely access to care. The result is a smoother, more reliable patient experience where individuals arrive prepared, informed, and assured that every detail of their surgical journey is on track.

Unlocking Capacity, Systemness, and ROI

iQueue for Operating Rooms strengthens the operational backbone of perioperative services by creating cohesion across the many teams, systems, and decisions that shape each surgical day. Rather than relying on isolated updates or role-specific workflows, leaders gain a unified operational rhythm that keeps case demand, staffing, and patient readiness aligned. This elevated level of coordination enables organizations to make the most of existing resources and sustain performance even as volumes grow and schedules shift.

By extending this coordination across hospitals, ASCs, and clinics, iQueue helps health systems establish a consistent model for managing surgical care at scale. Standardized practices, objective decision pathways, and continuous insight ensure that every site benefits from the same disciplined approach, raising the floor on performance while supporting local flexibility. The result is a more connected, predictable surgical enterprise where gains achieved in one location propagate across the system.

Across 550+ hospitals and 5,600 ORs, iQueue for Operating Rooms delivers proven, quantifiable results:

7%
increase in case volume

25%
reduction in overtime

5%
increase in block utilization

9%
increase in staffed room utilization

16%
increase in robot utilization

5-8x
guaranteed ROI in the first year

CONCLUSION

The Future of Surgical Orchestration

The urgency of today is unmistakable. Every unused block, idle robot, late staffing adjustment, and preventable cancellation represents capacity the organization already owns but cannot fully access. In an era of rising demand, constrained labor, and tighter margins, hospitals can no longer afford to treat these losses as the inevitable cost of doing business. The opportunity cost is both significant and accumulating.

With advanced prediction, prescription, and automation, health systems now have an unprecedented opportunity to elevate their perioperative ecosystem into a single, intelligent operational rhythm, one where every role thrives. Surgical and anesthesia leaders gain the visibility needed to shape equitable access and long-term growth. Surgeons experience predictable schedules and reliable access. Charge nurses and anesthesia teams benefit from proactive staffing alignment rather than last-minute reshuffling. Schedulers move from managing chaos to coordinating with confidence. Clinics convert more consults into completed surgeries through seamless readiness workflows. Patients receive clearer communication, fewer surprises, and a smoother care journey.

Orchestration elevates each of these roles simultaneously, making the entire perioperative continuum more than the sum of its parts — reclaiming capacity, strengthening systemness, improving staff and surgeon satisfaction, and delivering measurable financial returns. With this model, perioperative services are positioned not only to meet the pressures of today, but to flourish, with greater efficiency, stronger margins, and a more resilient workforce well into the future.

Explore more: Case studies, webinars, and personalized ROI assessments available through LeanTaaS.

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