Orchestrating the Future of Infusion Care: The End-to-End Playbook for Smarter Operations

LeanTaaS

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The Infusion Center at a Crossroads

Infusion centers sit at the heart of one of the most complex, resource-intensive, and rapidly evolving areas of healthcare. Demand is rising as cancer incidence grows and treatment protocols expand in volume and complexity. Yet resources — chairs, nurses, space, pharmacy, and budgets — cannot scale at the same pace.

Recent survey data show the operational pressure clearly: **62% of centers cite patient flow and scheduling as their top challenge, and 47% still experience persistent midday peaks** that strain staff and inflate patient wait times. Workforce shortages compound the problem, leaving clinical teams overstretched while operational bottlenecks delay care.

Despite these challenges, centers still using manual scheduling processes are relying on tools that were never built for the unpredictability and mathematical complexity of infusion care. This results in the same daily outcomes: morning underuse, midday gridlock, overtime, burnout, underproductive resources, and delayed access for patients.

The opportunity in front of infusion centers today is not incremental improvement — it's transformation. Applying data science, predictive analytics, and AI-powered decision support can convert infusion operations from reactive "Tetris management" into proactive orchestration. Instead of managing crises as they happen, leaders can anticipate constraints, smooth demand, and align staffing precisely to patient needs.

The Science of Infusion Optimization

Infusion scheduling is one of the hardest problems in healthcare. Each day requires balancing dozens of treatment types, varying durations, nurse qualifications, pharmacy coordination, and the unpredictable realities of clinic delays, late arrivals, and patient acuity. A typical center with 70 patients per day and five treatment types faces a scheduling problem with **a number of possible combinations that exceeds 10^{100}**. When nursing assignments are added, that number grows to an almost unimaginable 10^{280}, making it impossible for even the most experienced schedulers to solve with inferior tools.

Why Chair-Based Scheduling Doesn't Work

Most EHRs and legacy tools still rely on chair-based templates, which assume a perfect day — patients arriving on time, treatments running exactly as planned, and predictable staffing. But infusion centers operate in constant variability, and chair-based templates crumble the moment the day deviates from ideal conditions. This isn't about rare edge cases or "one-off" disruptions; according to LeanTaaS data, more than 65% of scheduled visits do not occur as scheduled across infusion centers. A late provider appointment, an unexpectedly long infusion, or any deviation from plan is enough to trigger a cascade of delays. What begins as a small disruption becomes a midday surge of waiting patients, overworked nurses, and hours of downstream congestion.

Chair-based scheduling, no matter how "enhanced," is ultimately a cardboard roof: adequate only when conditions are perfect.

The Math Behind Duration-Based, Pooled Scheduling

LeanTaaS pioneered a different approach with iQueue for Infusion Centers: **pooled, duration-based templates** built from thousands of variables unique to each infusion center. These AI-powered templates draw from historical data — incorporating patterns by time of day, day of week, season, clinical workflow, acuity, and typical operational "shocks" — to produce schedules that anticipate real-world behavior rather than hoping for it.

By flattening the midday peak, these templates create a far smoother, more predictable flow of patients and ensure that chairs, nurses, and pharmacy resources are available for the appointment and used optimally throughout the day. Every center has its own fingerprint, and duration-based scheduling respects that individuality, adjusting to each center's unique rhythms and constraints.

Data-Driven Scheduling and Capacity Optimization in 6 Steps

This six-step framework outlines a streamlined, predictive, and proactive operational model that infusion centers can use to align demand, capacity, and staffing across the day.

STEP 1:

Model and forecast demand

Use historical data to predict hourly, daily, and seasonal volume patterns so leaders can clearly see when demand will surge, slow, or strain resources.

STEP 2:

Understand your true capacity

Simulate operational scenarios by modeling capacity to define real world chair and staffing limits, uncover bottlenecks, and identify opportunities to increase throughput without adding resources.

STEP 3:

Create an optimal template

Design appointment start-time patterns that align resources with predicted demand, smoothing peaks, improving flow, and reducing strain on nurses and pharmacists.

STEP 4:

Adapt in real time

Use 10-minute interval forecasts to anticipate bottlenecks, adjust to delays or staffing changes, and intervene early to keep the day on track.

STEP 5:

Groom the schedule in advance

Identify and fix future "bad days" weeks ahead by redistributing treatments, shifting volume, and aligning staffing to expected needs.

STEP 6:

Continuously learn and improve

Refresh the plan based on evolving patterns like changes in treatment mix, staffing, operating hours, and performance data to maintain long-term efficiency and resilience. Infusion centers are constantly evolving and the tools and services supporting that team need to walk side by side adapting as the center's needs change.

Customer Spotlight

Miami Cancer Institute
BAPTIST HEALTH SOUTH FLORIDA
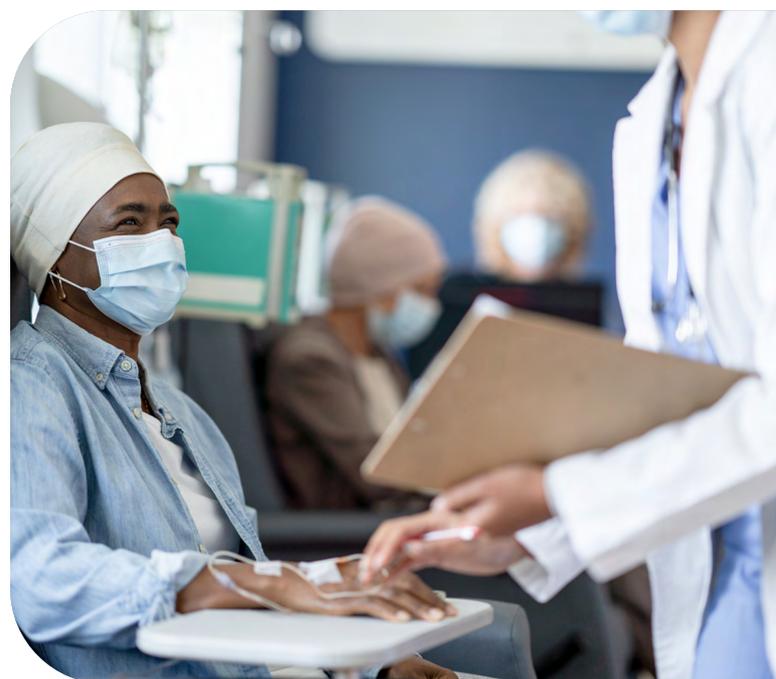
Scheduling Optimization

CHALLENGE

Baptist Health Miami Cancer Institute faced rising infusion demand, inconsistent wait times, and high operational load on nursing and pharmacy teams. Manual patient-to-nurse assignment and uneven scheduling practices created bottlenecks that intensified during peaks in acuity and volume.

SOLUTION

By adopting iQueue, Miami Cancer Institute transitioned away from manual, pre-assigned scheduling toward a predictive, data-driven model designed to better match patients, chairs, nurses, and pharmacy workflows throughout the day. Using optimized templates and pooled scheduling, leaders gained a clearer view of how infusion demand unfolded hour by hour, allowing them to smooth peaks, improve chair utilization, and reduce unnecessary strain on nursing teams.

In parallel, iQueue introduced real-time visibility into daily operations, enabling teams to identify emerging bottlenecks before they disrupted patient flow. Rather than reacting to late arrivals, long infusions, or pharmacy delays after the fact, leaders could intervene earlier — adjusting assignments, sequencing appointments more effectively, and coordinating across nursing and pharmacy to keep the day on track.

IMPACT

15%
increase in average daily completed volumes

35%
reduction in average daily drug wait times

$10.9M
ROI since go-live

Staffing Orchestration: From Planning to Real-Time Assignment

Infusion centers cannot achieve true operational excellence without aligning the workforce to demand. While scheduling optimization ensures the right patients are placed at the right times, staffing orchestration ensures the right professionals are available to deliver safe, timely care. Rather than functioning as a separate workflow, staffing becomes an integrated, demand-aligned system that connects long-range planning, even-handed schedule creation, and equitable real-time assignment.

Leaders gain the ability to plan weeks ahead, build balanced schedules rapidly and with confidence, retaining the ability to optimize assignments moment-to-moment as demand changes. With stronger visibility into workload, demand, and benchmarked performance, staffing becomes predictable, transparent, and fair, reducing burnout and strengthening nurse retention and satisfaction.

Plan Weeks Ahead with Nurse Planning

The Nurse Planning feature in iQueue allows leaders to see well beyond the upcoming schedule cycle, transforming workforce management from reactive to proactive.

- Compare upcoming nurse schedules against projected appointment volume.

- Surface days with staffing mismatches early, whether additional coverage is needed or existing staff can be released.

- Receive recommended staffing level changes or targeted appointment shifts based on target acuity per nurse or staffing ratio, to maintain balance before issues emerge.

This forward-looking visibility empowers leaders to adjust staffing intelligently, avoid unnecessary overtime, and protect both staff well-being and patient experience.

Build Balanced, Demand-Aligned Schedules with Workforce Optimization

Workforce Optimization blends predicted patient demand with real-world nurse availability, including PRN patterns, partial FTEs, and the fragmented staffing norms that have become common across infusion care.

The result is a smarter, more transparent scheduling process:

- Automatically generate optimal shift times and fair multi-week schedules that incorporate non-negotiable requirements, staff preferences, individual constraints, and PTO, reducing the time leaders spend building schedules by more than **60%**.

- Provide transparent fairness scoring so leaders and staff can clearly see how requests were honored, when exceptions were necessary, and why decisions support safe, balanced staffing — a level of transparency that has driven **100% positive nurse feedback** on schedule fairness, balance, and alignment with patient demand.

- Give leaders confidence that schedules meet patient coverage needs and align with evolving safe-staffing expectations, both the organization's priorities and the Joint Commission's new 2026 standards.

- Keep managers in control: iQueue recommends the strongest scheduling options, while leaders make the final decisions with better information and greater confidence.

This approach reduces administrative burden, increases fairness, and ensures staffing aligns with true patient needs, not historical patterns or guesswork.

Balance Workloads in Real Time with Patient Assignment

Even the best schedule can't anticipate every moment of the day. Patient Assignment provides a real-time, air-traffic-control view of nurse workloads, acuity levels, and recent assignments.

AI-driven recommendations help leaders:

- Ensure fair, safe, and balanced nurse-patient matching (while always keeping the clinicians in control of final decisions).

- Support multiple workflows, including pre-assignment, mobile real-time assignment, and both "push" and "pull" models. While Patient Assignment supports all models, the "pull" model is the most efficient model, giving nurses autonomy.

Infusion centers see measurable, validated improvements as a result of balanced, real-time assignment management. Many organizations experience more than a **10% reduction in workload imbalance**, as well as an **11% increase in nurse productivity**, reflecting a more even distribution of effort throughout the day. Centers also report a significant rise, often close to **90% in nurse satisfaction** related to maintaining safe and manageable workloads. With these gains, nurses experience more predictable days, fewer late shifts, and a meaningful improvement in overall morale.

Measure and Compare Performance with Comparative Metrics

Comparative Metrics unlock a new level of operational insight. Leaders can benchmark their staffing utilization, wait times, and productivity against data from more than 800 infusion centers nationwide.

This enables leaders to:

- Compare performance by region, center type, nurse count, size and patient population.

- Distinguish local challenges from systemic trends.

- Identify where staffing models excel or require refinement.

These insights inform strategic planning and continuous improvement, ensuring infusion centers evolve alongside patient needs, workforce expectations, and industry standards.

Customer Spotlight

Penn Medicine

Workforce Optimization

CHALLENGE

Penn Medicine's 16-center infusion network relied on manual, spreadsheet-driven scheduling that created a heavy administrative burden for nurse leaders. Increasing patient volumes, complex shift patterns, and high seasonal PTO demand made it difficult to maintain fairness, ensure safe staffing, or keep schedules aligned with rapidly changing operational needs.

SOLUTION

Penn implemented iQueue's Workforce Optimization capabilities at its Radnor and Cherry Hill sites to replace manual, time-intensive scheduling with a data-driven, demand-aligned approach. By incorporating predictive demand patterns alongside nurse availability, shift preferences, PTO, and local staffing constraints, the solution automatically generated balanced, multi-week schedules tailored to each site's operational realities.

Beyond automating schedule creation, Workforce Optimization gave nurse leaders new visibility into coverage needs and tradeoffs across weeks and months. Leaders could proactively test staffing scenarios, simplify shift structures, and ensure equitable distribution of workload, reducing scheduling complexity while creating a more transparent, consistent process for aligning nurse coverage with patient demand.

IMPACT

29%
reduction in shift types

97%
higher PTO fulfillment during peak summer months

50%
reduction in time spent building schedules

Positive
staff feedback on fairness and work-life balance

Orchestrating End-to-End Infusion Operations

With the foundations of scheduling and staffing in place, infusion centers can unlock the next stage: true operational orchestration.

This means integrating tool and process improvements, including nurse staffing, pharmacy readiness, chair flow, patient arrivals, acuity signals, and EHR and workforce systems into a single operational picture. Tools like Ask iQueue, staffing insights, and hour-by-hour predictions give leaders a mission-control view of their environment. Combined with Transformation as a Service (TaaS), centers gain embedded experts who support configuration, rollout, and long-term optimization.

TaaS for infusion centers provides the operational and change-management engine that brings this orchestration to life. It includes:

Structured operational redesign

TaaS guides teams through workflow transformation — such as shifting from static, pre-assigned schedules to real-time, demand-driven models, creating predictable flow, reducing bottlenecks, and improving workload equity. This support helps centers confidently adopt new processes that stabilize the day and reduce the burden on nurses. Tools paired with process unlocks excellence.

Configuration and launch support

TaaS teams collaborate with leaders to model capacity needs, design optimized templates, integrate new units or settings into existing systems, and ensure consistent performance from day one. This includes aligning staffing, chair counts, appointment mix, and most importantly workflows so centers can operate at full throughput immediately after go-live.

Real-time and retrospective performance coaching

Ongoing partnership ensures that teams understand emerging patterns, refine workflows, and adjust processes proactively. This includes stabilizing arrival patterns, reinforcing guardrails, using the power of the nudge, minimizing contributors to wait times, improving communication across roles, and reducing manual workload for charge and resource nurses.

Continuous improvement and strategic guidance

TaaS provides a sustained feedback loop — monitoring performance, identifying when approaches need updates, supporting expansion planning, and ensuring operational decisions are grounded in clean predictive data. Centers maintain gains over time and can scale growth without adding hours or staff until absolutely necessary as supported by the math.

The result is a fully connected operational network that strengthens flow, elevates staff experience, enhances patient access, and supports long-term strategic growth.

Customer Spotlight

◐ RUSH

Capacity Planning & Flow Coordination

CHALLENGE

As Rush University Medical Center prepared to launch a new 7th-floor infusion unit, leaders needed a precise, scalable operational model to avoid delays, underutilization, and staffing misalignment during the transition. Forecasting demand and integrating data from a new space posed additional challenges.

SOLUTION

Rush first partnered with LeanTaaS to optimize infusion operations at two sites. To ensure the successful launch of its new 7th floor and lay the groundwork for future expansions, they turned again to their longtime partner. LeanTaaS conducted detailed capacity modeling ahead of the new unit's launch, using historical data to forecast how patient volume would shift across floors and throughout the day. These forecasts informed AI-generated scheduling templates that balanced appointment distribution, aligned chair utilization with staffing availability, and reduced the risk of early congestion or late-day overruns as volume ramped up.

In addition, LeanTaaS integrated the new 7th-floor unit directly into Rush's existing iQueue environment, enabling real-time data ingestion and system-wide visibility from day one. This seamless integration allowed leaders to monitor performance continuously, make immediate adjustments during go-live, and establish a scalable operating model that could be replicated as Rush continued to expand infusion capacity.

IMPACT

26%
increase in daily completed appointments

16%
increase in total patient hours completed

50%
reduction in infusion wait times

29%
reduction in drug wait time

The Path Forward

Infusion centers are entering a future defined by rising patient demand, workforce strain, and increasing operational complexity. Traditional scheduling and staffing methods — no matter how familiar — simply cannot absorb the level of variability that modern infusion centers face each day. To deliver safe, timely, and efficient care at scale, leaders must adopt tools that proactively align capacity with demand across every layer of the operation while preserving safety and satisfaction.

End-to-end optimization brings together the elements that matter most: predictive scheduling, AI-driven staffing, pharmacy readiness, real-time orchestration, and continuous learning. When these components operate in harmony, infusion centers unlock measurable improvements in access, efficiency, staff/patient experience, and financial performance, without adding unnecessary additional chairs or new workforce expenses.

The future of infusion care belongs to organizations that embrace proactive, data-driven operational intelligence. With solutions like iQueue for Infusion Centers, teams can build resilient systems that deliver better care for patients and better days for staff.

See how iQueue for Infusion Centers can help your team deliver smarter, safer, and more sustainable care. Explore more webinars and case studies, and schedule a demo today!

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