

University of Arkansas for Medical Sciences

Perioperative Solution Case Study



As the premier destination for care in the region, the University of Arkansas for Medical Sciences (UAMS) is committed to providing access to high-quality perioperative care, which also drives the overall financial performance of the enterprise. UAMS perioperative leadership recognized that previous approaches to improving operational efficiency and growth were no longer enough, so they embarked on a new strategy using AI and automation.

Background:

- Only AMC and Level 1 trauma center in Arkansas
- 535 beds across 8 regional campuses
- 30 operating rooms
- 5 surgical robots
- 1,200 faculty members

Challenges:

- Increase margins
- Improve OR utilization
- Grow surgical case volume
- Reduce manual work for OR scheduling

EHR:

- Epic

Qventus Solutions in Use:

- Perioperative (since 2021)

Challenges to improving OR performance

Like many health systems, perioperative leaders at the University of Arkansas for Medical Sciences (UAMS) faced considerable challenges when trying to optimize its OR performance. For one thing, manual scheduling processes and a lack of actionable data made it difficult to identify areas for improvement or implement strategy changes. **Scheduling still required multiple back-and-forths between schedulers and the OR team, which slowed things down and created unnecessary friction.**

Another challenge UAMS faced was too much OR time going unused. Surgeons with block time often used only a portion of the time they had reserved, but they didn't release unused time until the last minute. This left OR teams scrambling to fill the time with whatever cases they could. **As a result, surgeons with less block time were struggling to get the OR access they needed, and sometimes took cases to a competing health system if they couldn't get access.** It was also challenging to accurately predict case lengths, resulting in scheduling backups or even more unused time.

On top of balancing these demands, UAMS OR teams also needed to **focus on meeting efficiency, utilization, and growth goals in order to support the health system's strategic priorities.** As is the case with most systems, there was pressure to accommodate more cases despite having fewer staff.

Prior to implementing Qventus, UAMS took several important steps to address these challenges and make progress towards their strategic goals. Additional investments in infrastructure, adjustments to the department organizational structure, and the revision of key OR policies were foundational steps to improving OR performance over the long term and resulted in incremental progress across the board. However, UAMS leadership remained committed to investing in new resources that would continue to improve efficiency and access in their ORs – and to move away from manual, time-consuming processes. In order to transform perioperative operations, UAMS leaders wanted to take advantage of modern technologies. With that goal in mind, they turned to Qventus' AI-powered software to enable them to automate care operations and simplify perioperative operations.

The Qventus Perioperative Solution

The Qventus Perioperative Solution uses innovations in AI, machine learning, and behavioral science to automate key OR scheduling processes. The software is comprised of four modules that work together to unlock supply, capture demand, and provide actionable insights to improve future performance.

Access: Increase available time by proactively unlocking supply

Growth: Strategically grow volume by engaging with high-value surgeons

OR Insights: Surface actionable insights for surgeons and OR teams

Market Insights: Identify growth opportunities with Insights powered by longitudinal claims data



- **The Access Module** leverages machine learning algorithms to predict up to a month in advance which blocks are unlikely to be utilized. When the algorithm identifies a block, the surgeon receives an email nudge explaining both the reason for the outreach, and, importantly, the positive impact that releasing this time would have on their block utilization. The automated outreach and efficient block release mechanisms create valuable lead time for OR teams to attract cases, increase utilization, and serve more patients sooner.
- **The Growth Module** aligns health system strategic objectives and OR utilization. This not only enables health systems to grow case volume, but to do so strategically - prioritizing cases that are in line with the health system's goals. This is achieved through two mechanisms:

1. Available Time Outreach: Once an OR slot becomes available, an algorithm automatically offers the time directly to surgeons who are predicted to be the best fit based on practice patterns and past performance. The algorithm can be modified to weigh institutional priorities, such as growing targeted service lines, improving robotic utilization, or decanting low acuity volume to specific facilities. Paired with the increased lead time created through the Surgical Access module, this automated approach enables leaders to proactively recruit high priority cases, rather than accepting whichever cases fill the slots organically.

2. TimeFinder: Employed and independent surgeons - and their schedulers - use the intuitive reservation interface to view and request OR time in real time - without logging into the EHR. Machine learning filters and prioritizes time slots predicted to be the best fit based on the surgeon's past case time performance and other factors, which makes it simple and efficient for users to find time and schedule cases.

- **The OR Insights suite** has personalized, persona based products designed to enable key stakeholders in the OR to better understand performance and drive proactive improvement.
 - **Surgeon Insights:** Empower surgeons with insights and feedback they need to improve operative efficiency and grow case volume of their practice through never before available referral and market data.
 - **Executive Insights:** Understand system performance at from the highest level down to specific service lines with added context from recent market data to explain monthly volatility and performance shifts.
 - **OR Leader Insights:** Highlight opportunities for coaching and kudos for surgical stakeholders and measure performance improvement and impact in real-time.

- **Market Insights** enables surgeons to identify growth opportunities in near-real-time with insights powered by longitudinal claims data, available exclusively from Qventus. Some common use cases include:
 - Automatically identify high-potential referral sources
 - Gain insight current market position by procedure
 - Understand volume volatility in the context of overall market shifts

Results

After implementing the Qventus Perioperative Solution, UAMS saw significant impacts across three main areas:

1. Scheduling Process Improvements

Manual scheduling processes had hindered UAMS' ability to get cases scheduled in a timely manner. With Qventus, they were able to significantly reduce the time and effort it took to get a case on the schedule.

Because TimeFinder made it easy for schedulers to identify open time that met the length and equipment requirements for each case, they no longer needed multiple back-and-forths with the OR to get on the schedule. The median turnaround time for OR requests dropped to only 36 minutes, and 91% of OR requests through Qventus were accepted.

91%
OR requests through
Qventus accepted

36 mins
median response turnaround
time for OR time requests

70%
of requests responded to
within 1 hour

While the improvement of these key metrics was important, they also saw major qualitative benefits in staff satisfaction. What was once a cumbersome, frustrating process became simple, quick, and efficient. The scheduling teams were happy to be able to schedule cases more easily, and they were often able to get a patient on the schedule before they made it home from their appointment.

2. OR utilization and case volume growth

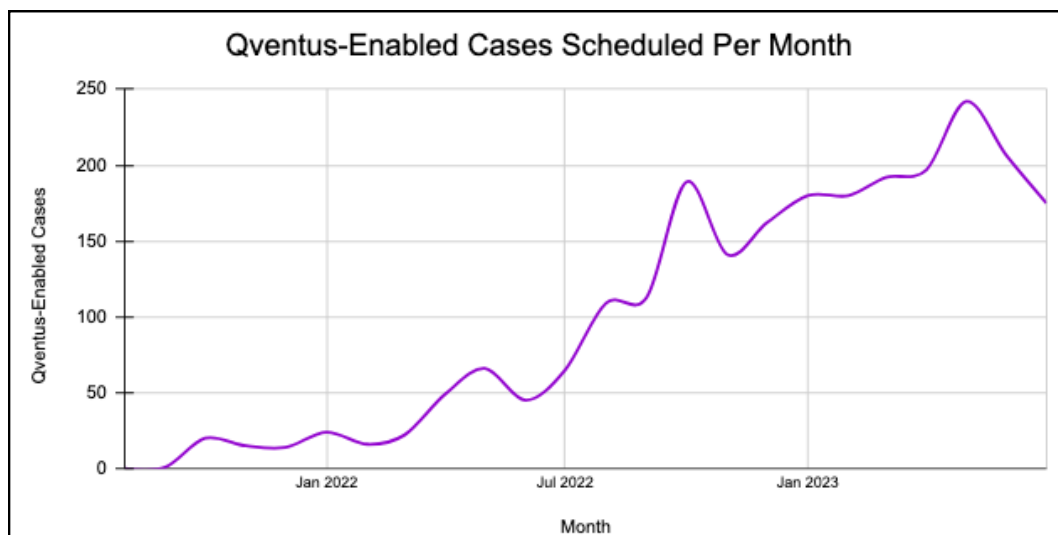
Over the 2 year period since going live with Qventus, UAMS has achieved significant increases in case volume and utilization. They are now releasing 173% more block hours early than they were prior to implementing Qventus. And the utilization of released hours has improved by 400%. This boils down to 4+ hours per OR per month - 120+ total hours - of unlocked time that otherwise likely would have gone unused.

173%
Increase in hours
released early

400%
Increase in utilization
of released hours

120+
Additional OR hours
unlocked each month

After implementing Qventus, UAMS very quickly saw improvement in these key metrics. And over time, the results kept getting stronger as the team became more comfortable with the solution and adoption increased.



196

Additional cases per month in 2023

86%

OR utilization in 2023

In 2023, UAMS is averaging an additional 196 cases per month thanks to Qventus, and has increased their OR utilization to 86%. This continued increase shows that UAMS has fully embraced the Qventus solution and that it has become part of their standard operating procedures.

3. Case length estimation accuracy improvement

Another positive outcome that UAMS has realized thanks to Qventus is an improvement in case length accuracy. Qventus' Case Length Adjustment Tool (CLAT) uses machine learning to analyze each surgeon's historical data for specific procedures to more accurately predict future case lengths. UAMS set up a notification for whenever a case was predicted to be 60+ minutes longer or shorter than it was scheduled for, so they could proactively adjust their schedule to avoid delayed starts and wasted OR time. With this program in place, they save 40 hours per year in wasted OR time and have achieved a 33% improvement in case length estimation accuracy, reducing their error rate from 36% (pre-CLAT) to 24% (with CLAT).

40

Fewer hours of wasted OR time

33%

Improvement in case length estimation accuracy

Conclusion

UAMS leverages the Qventus Perioperative Solution to improve OR access, maximize utilization, and simplify its OR scheduling processes. By identifying and proactively encouraging release of blocks that are likely to go unused, and strategically filling those blocks with best-fit cases that align to the health system's priorities, Qventus is able to create meaningful impact.

With Qventus, UAMS has been able to achieve impressive results, while improving patient care and making life easier for surgeons and OR staff. Qventus enables UAMS to be more efficient and more strategic, setting them up for continued success and sustained perioperative growth.