Waiting at the hospital is bad enough. Waiting for surgery—and after surgery—is a taxing experience with the potential for medical consequences, and a familiar one for many Americans.

But at Massachusetts General Hospital (MGH), those waits are getting shorter, thanks to a strategic partnership between the hospital and MIT Sloan.

In November of last year, surgery units at MGH implemented a new scheduling system that loosened the bottlenecks of patients waiting to enter surgery, in the operating theater after surgery, and in the important Post-Anesthetic Care Unit, where patients are closely monitored immediately after leaving the operating theater.

Since implementation, MGH has halved the number of patients facing long waits to enter surgery. And the hospital has freed up about 4 percent of beds reserved for post-surgery patients—all without new resources or a reduction in caseload.

“As much as 4 percent sounds like a very modest impact, it boils down to the science of queuing systems,” said Retsef Levi, the J. Spencer Standish (1945) Professor of Management. “If the system is highly utilized—as it is at MGH—even a small difference can have a significant positive impact on how long patients are waiting.”

Prior to the changes, the scheduling process for surgery at MGH was rife with inefficiency—and mirrored a problem experienced by hospitals across the country.

Collaborating with Levi and a team of MIT students from the Leaders for Global Operations (LGO) program, as well as post-doctoral fellows, MGH designed two improvements to scheduling.

In the past, the scheduling of elective surgeries resulted in unbalanced bed occupancy levels, peaking in the middle of the week and causing longer waits for both nonelective surgeries and patients waiting for a hospital bed after surgery.

So the group used integer programming to improve efficiency in the hospital’s block scheduling system for operating rooms (OR), smoothing the bed census over the week and reducing occupancy by 4 percent.

The team also reserved some operating room blocks as “open” and allowed central OR administration to determine when nonelective surgeries would be scheduled. That made better use of operating rooms and reduced by half the number of patients with unreasonable waits to enter surgery.

“We found that with a modest number of open blocks, we could reduce the patient waitlist substantially,” Levi said. “We already see a major decrease. The average wait for urgent cases went down by a whole hour.”

But the new schedule threw off surgeons’ long-established work schedules, meaning that change required buy-in from hospital leadership and support from surgeons.

“This was a burning platform that resonated with every single one of our surgeons,” said Dr. Peter F. Dunn, executive medical director of Perioperative Services at MGH. “They struggle to get their patients into the OR in a timely manner. The end product with this system is a positive result for surgeons and our patients.”

“More than 40 percent of surgeons changed their schedules, which is unheard of,” Levi said.

Unlike routine consulting to implement known best practices, MIT Sloan’s work with MGH is seeking innovative solutions to problems experienced by hospitals across the United States. Levi also worked with the hospital to improve wait times in its Pre-Admission Testing Area, where patients receive comprehensive exams before surgery. That work—completed with Kelsey McCarty, MBA ’10; Leo Espindle, LGO ’11; Andres Garro, LGO ’11; Devon Price, LGO ’11; and Jérémie Gallien of London Business School—was summarized in a teaching case and won the New Case Writer award from the European Case Clearing House.

Levi and Dunn, along with MGH President Peter L. Slavin, MD, have presented the results of the scheduling improvements at the Association of American Medical Colleges and the Institute of Medicine.

“What we hope to do,” said Dunn, “is take our lessons learned and help apply them in those institutions that don’t have what we have afforded to us.”

— Zach Church