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OR design & construction

A year in a new OR, happy with the result

OR Design & Construction

After 5 years of planning, Saint Joseph Mercy Hospital in Ann Arbor, Michigan, opened its 18 new ORs in November 2006. A year later, physicians, staff, and the project team are happy with the outcome—a sign of success in the planning and design process.

The new ORs and postanesthesia care unit (PACU) are in a new building adjacent to the old ORs of the 565-bed hospital. The old ORs are being retrofitted into preoperative preparation and holding areas. The final step is to redo the family waiting area. A Level II trauma center, Saint Joseph Mercy performs most surgery except for complex pediatrics, burns, and transplants. The most prominent services are cardiovascular surgery, orthopedics, and urology.

The ORs are built around a clean core with a perimeter corridor. Light is a major design feature. Windows line the OR's outside corridor, and light enters the ORs through clerestory windows.

Effective planning process

Leaders of perioperative nursing, surgery, and anesthesiology credit their close working relationship as a major success factor.

"We collaborate on almost all aspects of the operating room, and we approached the design of the OR the same way," says Rosalie Tocco-Bradley, MD, PhD, medical director and chair of anesthesiology. "We garnered input from each of our areas and identified people to serve on the committee."

Suzette Bouchard-Isackson, RN, MSN, system leader for surgical services, served as project coordinator. Also leading the team were Dr Tocco-Bradley and Walter M. Whitehouse, Jr, MD, chair of surgery. Drs Whitehouse and Tocco-Bradley both hold part-time administrative positions. HKS Inc was the architectural firm, and Barton Malow was the construction company.

"An important point is the absolute commitment of the people involved," says Dr Whitehouse. "Almost nobody on the team came to just an occasional meeting. The standard was set by the 3 of us."

Setting the vision

To gather input and gain participation, the leaders held 13 to 15 town hall meetings with the surgical specialties. The meetings explored each specialty's needs and what each saw for the future. For the most part, the specialties are each served by a single medical group, making it easier to determine needs, Dr Whitehouse notes.

Town hall meetings were also held with anesthesia providers and the nursing staff. "We discussed what they envisioned for the new ORs and what they liked and didn't like about the current setting," says Bouchard-Isackson.

As a result of the meetings, a couple of surgeons and a certified registered nurse anesthetist (CRNA) joined the project team.

Site visits

An interdisciplinary team traveled to see new ORs in other facilities. Included were anesthesiologists, surgeons, nurses, clinical engineers, the architect, and information systems personnel.

"I think that made a huge difference in everyone's voice being heard," says Bouchard-Isackson.

The ORs at Saint Joseph Mercy Hospital are laid out identically. Windows in the OR corridor supply natural light to the ORs through clerestory windows. Photos courtesy of HKS Inc.

The preoperative area has private rooms (left). The family waiting area, in warm colors, offers amenities including computer workstations, a concession area, and quiet room.

Among facilities visited were Memorial Sloan-Kettering in New York City; the Mayo Clinic in Rochester, Minnesota; the University of Maryland, Baltimore; Bronson Hospital, Kalamazoo, Michigan; and Johns Hopkins Hospital, Baltimore.

Mock OR

To assist the planning, a mock OR was built in a pole barn on the hospital property.

"We scheduled each service line to come and look at the equipment we were considering and test the placement. We enticed them with food," says Bouchard-Isackson.

At the hospital, bulletin boards and posters kept everyone up to date on progress.

Objectives and how they were met

Based on the meetings and other input, the Saint Joseph Mercy team set 6 objectives, which the team says have largely been met.

"Because of the thought we put into this and the broad gathering of data, there have been no major complaints," Bouchard-Isackson says.

1. Efficiency for physicians and staff

The aim was a more efficient process during the preoperative and intraoperative phases.

Preoperative areas. A more efficient preoperative process is intended to eliminate handoffs during the preoperative phase.

The preop area has 9 private rooms with 110 sq ft, which offer privacy and allow anesthesiologists more room than curtain cubicles. There are also 39 bays of 80 to 90 sq ft that are a combination of private and curtained and can be used for preoperative or recovery care.

Another improvement is that equipment storage is centralized in the preop area so anesthesia technicians and nursing staff do not have to chase it down.

Operating rooms. All 18 ORs are 625 sq ft and laid out the same way.

"Our goal was for all of the rooms to be identical so they could be scheduled that way," says Dr Whitehouse. "We had come from a specialty OR concept. We wanted to make this more universal so we could essentially do any case in any room and improve our throughput."

The ORs have separate work stations for nurses, surgeons, and anesthesiologists. The nurse's workstation has a computer and touch-screen controls for OR equipment. The surgeon's workstation has a computer for e-mail, documentation, and access to the PACS system. The anesthesia team also has a work zone with a computer.

2. Emphasis on critical adjacencies

The ORs are near the emergency room, cath lab, and surgical ICU.

The central sterile (CS) department is located on the floor below the ORs—not the basement—and has windows. The ORs use a case cart system. An elevator and dumb waiter connect the departments. The dumb waiter isn't used, Bouchard-Isackson notes, because the staff find it more convenient to use the elevator.

Locating the CS department on the floor below the ORs was a good decision, the team agrees. They decided against locating CS on the same floor as the ORs after noting the travel distances at some sites they visited.

3. State-of-the-art digital equipment and communication systems

The visit to Memorial Sloan-Kettering, which considered patient safety and has high-tech equipment in its design, was instructive, Dr Whitehouse says.

"We decided we wanted every room equipped identically," he says. "We decided not to do so would limit our flexibility for the future." As a result, all rooms are equipped with an integrated system from Stryker with:

- ceiling-mounted booms
- in-light video cameras
- high-definition monitors and flat-panel monitors
- digital capture of images
- large wall-mounted plasma screens
- adequate computer support
- voice recognition
- a wireless communication system, with headset for the circulating nurse.

"The beauty of this is we can configure the screens the way we want," says Dr Tocco-Bradley. "We can have physiological data on one, a surgical view on another, and a radiographic image on another, and we can change them at any time."

With the exception of voice recognition, everything is being used well, Dr Whitehouse says. He expects use of voice recognition to increase as surgeons get used to it. Generally, the surgeons have adapted well to the new equipment, he says, and there are no rooms where the technology is going totally unused.

Still to be added is integration software from LiveData, which will take data from a variety of devices and information systems and display it on a wall-mounted screen called the Wall of Knowledge. The screen can display, for example, names of team members, the timeout checklist, and antibiotic timing.

Finally, all ORs are equipped with sound systems with XM Satellite Radio, allowing a choice of music and eliminating CD collections. "We're not doing the managing-the-music part anymore," says Bouchard-Isackson.

(Read more about the Memorial Sloan-Kettering ORs in the August 2006 *OR Manager* or the case study at www.ordesignandconstruction.com.)

4. Focus on safety for patients and staff

Additional safety features in the new ORs include:

- Ceiling-mounted booms, which keep cords off the floor
- The clean core design, allowing equipment like airway and crash carts to be stored close to the ORs. The carts are labeled consistently and kept in the same place.
- Corridors with alcoves, allowing equipment to be stored without obstructing the hall.
- A quiet environment, with nursing staff using the center core and physicians and patients using the outer corridor.

"We will be giving a tour, and the guest will say, 'It's so quiet. Is anyone operating?' Then we will look in the rooms, and every one is filled," says Dr Whitehouse.

5. Creation of a healing environment

"We wanted to make a great environment both for patients and families and for the staff," says Bouchard-Isackson. "We made sure there were light, color, and soft touches such as the look of wood."

She adds, "One thing we learned is you can't overplan this space. We pushed for space that was going to be generous, but now we find it is just enough."

The family waiting room has zones with easy chairs, TVs, computer workstations, phones, a concession area, and lockers, as well as a quiet room and a children's play area.

Private consultation rooms have double entries so the surgeon can enter from one side and the family from the other. The rooms are equipped with computers, allowing the surgeon to bring up radiology images to show the family.

6. Flexibility for the future

After a lot of discussion about OR size, which considered rooms as large as 800 to 900 sq ft, the team settled on 625 square feet. Adjacent space can be used as needed. Extra wiring was added as well as multiple plugs, both on the walls and the booms. Structurally, the building is built with reinforced concrete rather than steel beams, which eliminates vibration.

The first 100 days

After the new ORs opened, "we had a rule that we would go 100 days without changing anything. We made a list of the things we thought we needed to change," says Bouchard-Isackson. At the end of 100 days, relatively few changes were needed. ❖

Wearing two hats: Coordinating a project while running the OR

Suzette Bouchard-Isackson, RN, MSN, served as project coordinator during the 5-year project to build Saint Joseph Mercy's new surgical pavilion. She also continued her regular duties as system leader for surgical services for 3 hospitals with 6 surgical sites. Here's her advice for managing it all:

Build a great team

"You have to be prepared to build a great team," she says. "Admit that you cannot do this on your own. Remember that the project provides leadership opportunities for others also."

The architect, HKS, Inc, and the hospital's parent, Trinity Health, lent expertise on project planning and management. Bouchard-Isackson's strong partnership with the chairs of surgery and anesthesia provided collaborative leadership for the project. Their credibility, built through projects such as robotics, helped ensure support from the senior administration. She also has strong managers in the main ORs and the other surgical sites.

During the last 18 months of the project, Bouchard-Isackson named a nurse manager, Kim Aube, RN, to be the project leader and "go-to" person for the day-to-day interface with the construction company.

Be prepared for hard work

The project was demanding, Bouchard-Isackson acknowledges. Site visits required

some Sundays away from home. Your family has to be prepared for the time commitment, she notes.

Stay focused

"Remember the project is about patient care and customer service, which also includes the physicians and staff," she says. "You are working to build the best environment for everyone." Saint Joseph Mercy's 6 objectives helped define the project and keep it on track (related article).

Network with your colleagues

Visits with colleagues during site visits provided valuable input. "I created assignments for all staff who went on site visits," she says. "We always asked, 'What do you like, and what would you change?'"

Provide a thorough orientation

Before move-in, the leadership team required all clinical staff to complete a mandatory orientation called Passport to Success. The nursing staff provided a detailed orientation that covered:

- orientation to the space (maps of the building and rooms)
- patient flow
- individual work space and work zones for each caregiver
- safety and emergency items such as the Code Blue protocol and fire safety
- new equipment such as the integrated OR system.

"Some challenged us that this was not necessary," she says. "But after they attended the session, all of the feedback was positive, and the buzz and camaraderie were amazing."

Make the project fun

"Every time we reached a major milestone, we took the staff to the site and served coffee and doughnuts," she says. Posters, bulletin boards, and a count-down clock in the old suite kept everyone up to date on progress.

When the new suite was finished, the team held a big open house that attracted 500 attendees, including community donors; emeritus nurses, surgeons, and anesthesiologists; and families of staff and physicians.

"Provide credit to all those involved. Don't forget to thank everyone for their help and input," she says.

Review the first 100 days

Borrowing an idea from Memorial Sloan-Kettering, the team held a review after the first 100 days in the new suite. Generally, everyone was pleased. A couple of lessons learned:

- "We underestimated the impact of the many moves for the preop and recovery areas," which was built in the old OR space. "This was hard on that staff," she says.
- Though durable materials were used, "OR staffs are very hard on the environment and surfaces," she says. "You have to survey the environment monthly to keep it nice"—an idea borrowed from "aesthetic rounds" performed at Bronson Hospital, Kalamazoo, Michigan.