Nurses speak up on new ORs design

OR managers have many opportunities to improve the lives of their patients. They meet with staff to review scheduling policies and infection prevention procedures. They may sit on committees to help select new supplies and equipment.

The physical work environment, however, is usually a given. The operating room may have been designed decades ago with different technologies and health priorities in mind, and there is not much anyone can do about it.

Until, that is, the hospital decides to remodel an OR suite, or even to construct a new one.

When that happens, rule one for nurses is: Get involved. Other disciplines will be meeting with architects early in the planning stages. Nurses need to speak up about their priorities as well, and have been doing so, as recent OR construction projects show.

What bugs you?

When Yale-New Haven Health System in New Haven, Connecticut, decided to add a new cancer wing that would include 12 new ORs, nurses were full of ideas. With the help of their leaders plus a receptive architect, their voices were heard, and improvements were implemented.

Ena Williams, MSM, MBA, RN, nursing director for perioperative services, says nearly all of her department’s recommendations were carried out in the new ORs. “We helped direct the shape of the buildings, and the shape of the ORs,” she says. Among changes were the design of the recovery areas, location of supply storage rooms, and improved accessibility to pathology.

During the 4-year project completed in January 2010, the new ORs came on line one at a time as specialties moved to the new building. “That was the best decision we made,” Williams says of the gradual changeover.

After all 12 ORs were completed, opening of each was timed to coincide with opening of related patient units in the new wing.

“We managed the schedule in a way that we moved patients and units within the same week,” she says.

The decision was part of a business strategy by the hospital management, Williams recalls, and was specified in the certificate of need granted by the state for the new construction. Planned depreciation offset delayed revenue.

Before sitting down with the architect, she called together the staff, including nurses and surgical technicians. “I asked them, ‘What bugs you the most?’” she recalls. “We talked about things that were not currently working for us that if we had an opportunity to change, we would change.”

They looked at supplies, patient comfort and safety, and how best to incorporate new technology.
Striving for consistency

Over the years, OR designers have learned to plan ahead, because technology and clinical practice change so rapidly.

As Joyce Berger, MPH, RN, of the Health Technology Center (HealthTech) in San Francisco, warned OR Manager readers in May 2005, hospitals should plan for more computer, radiofrequency identification (RFID), and imaging equipment than they think they will need and increase the size of new ORs to accommodate additional devices and increasingly complex procedures. (HealthTech is now the Center for Information Technology and Innovation at http://citph.org.)

In the January 2008 OR Manager, medical architect Elizabeth Brott of Kaiser Permanente in Oakland, California, advised keeping room designs consistent throughout the hospital to provide greater flexibility of use and reduction of errors and placing radiology and interventional services as well as postanesthesia care units (PACUs) on or near the OR floors.

Because of these lessons, some general principles are now accepted (sidebar, p 13).

Lowering the boom

Everyone has an opinion about ceiling booms. These are the maneuverable mechanical arms through which components such as PACS (picture archiving and communication system), lights, monitors, cameras, and other equipment, are routed in many ORs.

Proponents say they offer a major improvement over carts carrying devices that must be pushed around and plugged in, often leaving a trail of tangled wires and cables.

Critics, who appear fewer in number, counter that once installed, the booms are not easily reconfigured, particularly for specialized video equipment, meaning they reduce flexibility. For some hospitals, critics add, carts, which can be shared, are more affordable than redundantly outfitted booms.

Dottie Hays, RN, admits to mixed feelings: “The carts are not easy to roll in and out of a room. But the issue is financial. If you can’t afford to duplicate a technology in every OR, you have to be able to share, and the cart would be the way to do it.”

Hays is a design and construction consultant with HCA Healthcare in Nashville, Tennessee, where she coordinates information systems for new OR construction in HCA’s approximately 160 hospitals. HCA, which aims for consistency in design and operation of its hospitals, has opted for booms, she notes.

Deciding for booms

Providence St Peter Hospital in Olympia, Washington, also decided to put ceiling booms in the 2 new ORs it opened in January 2010 and 2 others it plans to add in 2012.

Lorna Eberle, BSN, RN, CNOR, director of perioperative services, says the decision came after the staff weighed the alternatives. “We spent a lot of time moving carts in the older rooms, so we made a conscious decision to put booms in the new ones.”

At Yale-New Haven, nurses specifically asked for booms in the new cancer wing, Williams reports. “There’s less equipment to push and assemble. The opposite view was that the carts were more flexible, but we opted for the fixed booms. We haven’t had any problems at all,” she adds.

The booms contain suction and electrosurgical equipment as well as a surgeon’s headlight in each room. “It’s one less thing for the nurse to be looking for,” Williams explains.

In a nod to ever-advancing technology, Yale-New Haven skipped the ceiling booms in rooms used for robotic surgery. The reason? Robots arrive with mobile equipment that is part of the package.

OR design:
General principles

• Make each OR at least 600 square feet, larger for cardiovascular, orthopedic and other complex procedures. (The 2010 Guidelines for Design and Construction of Healthcare Facilities recommend a minimum of 400 square feet of clear floor space for general ORs, with a minimum of 600 square feet for ORs performing surgical procedures that require additional personnel and/or large equipment, such as some cardiovascular, orthopedic, and neurosurgical procedures.)

• Make the ORs identical to avoid staff having to adjust to new positions and item locations.

• Install adequate wiring, ventilation, and structural reinforcement to accommodate equipment.

• Design ORs for multiple uses because case loads and surgical techniques may change.

• Include communication tools such as wall monitors and email stations in OR design.

• Make storage space adequate and rapidly accessible; avoid distant storerooms, or expect more onsite hoarding of supplies.

• Design logistics for smooth supply transport and protection of sterile items.

• Design patient transport routes and waiting locations to provide comfort, privacy, and the growing trend toward presence of family members.

Complete information about requirements is in the guidelines.
Supply cores, convenient computers
When nurses and other clinical staff developed a wish list for the new cancer wing ORs, one of the first subjects to come up was storage. Like most contemporary OR suites, Yale-New Haven’s at the time had separate supply storage areas. That arrangement was costly in the time and energy the nurses spent gathering supplies. The project team wanted a central core to hold supplies in the new wing.
“We needed storage close to the OR,” Williams says. At the same time, locating supplies in each OR was not practical either: “The trouble always is, how do you stock those high-demand rooms?”

The core makes supplies accessible with less overstocking: “We were able to reduce duplication of supplies,” she notes. “Every OR opens to the core.”

A workstation for surgeons
While the concept of a supply core is not new, another suggestion was truly innovative: At the nurses’ recommendation, every new OR contains a workstation dedicated to surgeons. Says Williams, “The surgeons can use the computer, make case notes, and do research. They don’t have to compete with the nurses for use of the computer.” The keyboards are attached to articulating arms mounted on the walls.

Nurses have their own dedicated workstations. Each one is placed so the nurse can enter data without losing sight of the sterile field.

Not content to explain their concern to the architect, the nurses created a cardboard mock-up showing how each OR should be arranged.

Each OR also contains one or more 42-inch wall-mounted monitors, used to project procedures or to display patient records, radiology images, or other communications related to the surgery.

Access to pathology
Since the building is dedicated to cancer treatment, pathology plays a role in many procedures. The new OR layout recognizes that relationship. The pathology department is located next to the OR suite to provide immediate access during a procedure. The pathologist can pick up a specimen, give a rapid report, or send an instant message or microphotograph to be displayed on the wall screen. “So there can be a conversation verbally as well as through technology,” Williams notes.

The patient’s experience
The Yale-New Haven nurses took the design of the new OR as a chance to improve interactions with patients. The new cancer wing takes steps toward that priority.

“Most OR nurses would like to have access to patients before they enter the OR,” Williams explains. “But sometimes the prep area is too far away, so nurses don’t see the patient before the procedure.” The new ORs are much closer to patient preparation rooms, while administrative offices are farther away because they are not as critical.

The recovery areas, meanwhile, represent a creative approach to both efficiency and compassion. The large patient preparation room also serves as the PACU. Yet no incoming patient is ever wheeled to the OR past a postop patient.

Williams explains, “It is a big room, with 20 little cubbies. We use one end of the room to prepare patients. At the end of surgery, they are transported by a different hallway leading to the opposite end. As the day goes by, there are fewer new cases, and the room fills with recovering patients.”

Providence St Peter Hospital also added recovery rooms along with its 2 new ORs but followed existing layouts. “Variability is not good in an OR,” notes Eberle. “So
we kept the same layout, but we added some PACU space to accommodate additional growth.”

**Looking ahead**

Martha Stratton, MSN, RN, MHSA, CNOR, NEA-BC, already has some ideas for when her hospital next decides to add more ORs. She is director of perioperative services at AnMed Health in Anderson, South Carolina, a member of Carolinas Healthcare System. Each of AnMed’s 2 campuses has 10 ORs, all built before Stratton joined the staff.

The ORs open into central sterile cores containing supplies and instruments. The trouble, Stratton believes, is that the ORs also open directly into peripheral hallways, from which patients arrive. She worries that because both the patient and sterile field are in the traffic flow in any given OR, infection control may be compromised.

“Think about where the sterile field will be,” she advises. “The sterile field should be in the most protected part of the room.”

**Making it happen**

Yale-New Haven’s experience is proof that nurse input makes a difference in the design of new ORs.

It helps to have “the right architect,” Williams notes; that is, one with experience in hospital design and appreciation of clinical and operational concerns such as infection prevention and supply distribution.

Being prepared is also important. Williams’s staff even performed time studies to demonstrate inefficiencies in travel by staff members to look for supplies. Having good data made a difference, she believes.

“We didn’t get a lot of pushback. Part of it is to be able to clearly articulate why these things are important.”

—Paula DeJohn

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**Reference**

