

# Winning features in a new operating room

**T**hirty days into a new 21-OR suite, leaders at Memorial Sloan-Kettering Cancer Center in New York City have already identified winning features they think will help improve patient and staff safety.

Memorial Sloan-Kettering performs only cancer care and has a longer-than-average case length at 4.5 hours. Still, many of the lessons learned during the 5-year project apply to any hospital planning new ORs, says Aileen Killen, RN, PhD, CNOR, director of nursing for surgical services.

During planning for the suite, Killen and her colleague, David P. Jacques, MD, FACS, formerly the vice chairman of the Department of Surgery, applied principles they learned during a patient safety fellowship offered by the Health Forum.

These are some early winners.

### Nurses' work station

At a work station that swings out from the wall, circulating nurses can keep patients in view while entering documentation. They can also watch the surgery on a video monitor and control equipment with a touch screen.

"Preserving the line of sight is a huge winner" says Dr Jacques. But it requires sacrificing space, "which is why most designers will reject it. It's a lot easier to tuck the computer against the wall and have the nurse facing away from the patient." Because the desk swings out, careful planning was needed to supply the work station with the necessary conduits for power and IT services.

### "Wall of knowledge"

A "wall of knowledge" assembles information so the whole surgical team can see it, including physiologic data, names of the OR team, and key patient data such as allergies. The "wall" has 3 elements:

- a 42-inch flat-panel display that integrates live data for nursing, surgery, and anesthesiology
- a video display of the surgical field, whether the surgery is open or laparoscopic
- PACS (picture archiving communi-



Patients at Memorial Sloan-Kettering may choose to walk to surgery. The main corridor of the surgical center has a Tuscan-influenced decor, with arched ceilings and subdued lighting.



A presurgical bay at Memorial Sloan-Kettering.

tions system) to display digital imaging. "The quickest and most obvious improvement is that we can display the names of everyone on the team as well as the live documentation," says Killen. Names can be posted at the beginning of the case as well as when relief staff take over.

Studies have shown that knowing names of team members improves the

safety climate and increases the likelihood that team members will speak up if they see problems.

### A quieter environment

An unintended but welcome consequence of greater use of information technology is a quieter work environment. There are fewer distractions, such as phone calls and pages, which have been shown to be a patient safety risk.

## OR Design & Construction

"People who visit from outside pick up on the quiet instantly," says Dr Jacques.

Aids to communication include:

- An audiovisual system in each OR connected to the nurses' control station enables nurses to monitor the status of every case.
- An AV hookup enables surgeons to communicate with pathologists "without squawking across the room at a speaker phone," Dr Jacques notes.
- Phones at nurses' and anesthesiologists' work stations eliminate the need to walk across the room to use a common phone.
- A tracking system with airport-style screens enables the staff to see the status of patients and events. The system is part of the enterprisewide scheduling system, Epic. Each area, including surgery, can customize the tracking system to its needs.
- A Vocera system ([www.vocera.com](http://www.vocera.com)), which uses small wireless communication badges, is being installed housewide. Anesthesiologists will be the first to use Vocera in the OR so they can be located quickly. "With a 72,000 square-foot space, we decided that was an important safety feature," Killen says.

### Consistency in OR design

A guiding principle was to design the ORs to be 95% the same and 5% specialty specific, including the layout, configuration of the booms, and major equipment. A researcher who visited Memorial Sloan-Kettering observed that there were more near misses when staff worked in unfamiliar rooms.

The ORs are organized into 5 pods to keep specialties together. "Teamwork makes a difference in patient outcomes," Killen notes. The nursing staff works primarily in 1 or 2 specialties. (There is little call because few procedures are done on nights or weekends.)

### Better ergonomics

All ORs are equipped with 2 ceiling-mounted booms. One boom is for minimally invasive surgery equipment (all of the rooms are MIS capable). The second boom carries other equipment and services such as the electrosurgical unit, light sources, and warming blankets. Because the rooms are large—17 ORs are



*The surgery department's family waiting area.*



*The consultation room gives families privacy. There are separate entrances for families and physicians.*



*The "wall of knowledge" displays patient data, a view of the surgical field, and imaging data.*

## OR Design & Construction

600 sq ft, and 4 ORs are 800 sq ft—it is a long way from the OR table to the wall. Having equipment on booms keeps cords off the floor, avoiding a trip hazard. Booms also enable video screens and equipment to be positioned comfortably and save the staff from having to push heavy equipment carts.

### Infection control

A pass-through between each OR and the central core allows instruments and supplies to be retrieved without the nurse leaving the room. (Each of the ORs' 5 pods has a central core.)

"This is both for patient safety and infection control," says Killen.

A recent study found that nurses left the room an average of 7.5 times per hour of incision time during long cases, "significantly disrupting the case flow," note the authors led by Caprice Christian, MD, MPH. The study involved detailed observation of 10 complex surgical cases at Brigham and Women's Hospital, Boston.

### Early adopter of technology

Killen and Dr Jacques mentioned the pitfalls of being an adopter of new technology and how they resolved them. For example, the nurses' phone, which plugs into a USB port on the computer, conflicts with the keyboard—when someone dials the phone, the numbers show up on the nurse's screen. They are working to resolve the glitches. ❖

### Reference

Christian C K, Gustafson M L, Roth E M, et al. Prospective study of patient safety in the operating room. *Surgery*. 2006;139:159-173.

*Photos by Richard DeWitt. Courtesy of Memorial Sloan-Kettering Cancer Center.*



*Ceiling-mounted booms help keep cords off the floor and improve ergonomics.*



*The nurses' documentation station faces the patient, with the "wall of knowledge" visible to everyone in the room.*



*Surgeons perform a laparoscopic case.*