

**OR Design & Construction**

## Tips for planning new surgical facilities

If you're planning new operating rooms to be built in the next few years, what should you consider?

This is advice from Joyce Berger, RN, MPH, senior advisor with the Health Technology Center, San Francisco, who specializes in planning for health care environments. The center, known as HealthTech, is a nonprofit organization that focuses on technology forecasting and decision making ([www.healthtechcenter.org](http://www.healthtechcenter.org)).

### Make the ORs large enough

Regarding the size for new operating rooms, "we would recommend a minimum of 600 sq ft," Berger says. "This is for general surgery and the majority of cases." The reason for large rooms, she says, is to be able to do any case in any room and not have to wait for a specialty room.

The exception is cardiac and neurosurgery rooms, which she recommends be larger, around 750 sq ft, due to space needed for the cardiopulmonary bypass equipment or neurological imaging equipment.

That is larger than the current recommendation in the *Guidelines for Design and Construction of Hospital and Health Care Facilities* from the American Institute of Architects and Facility Guidelines Institute, published in 2001. The guidelines recommend that new ORs have a minimum clear area of 400 sq ft for general ORs and a minimum clear area of 600 sq ft for cardiovascular, orthopedic, neurosurgical, and other ORs requiring additional personnel and equipment. No change is proposed in a draft of revised guidelines scheduled for publication in 2006.

### Have the ORs be identical

Berger suggests designing ORs to be identical, not mirror images.

"This is necessary for safety reasons so that any staff member entering any room knows where everything is located," she says.

She also recommends pods have no more than 6 ORs.

### Build a technology infrastructure

"Make sure ceilings and floors are designed for plenty of weight-bearing for new equipment," she advises. Articulated arms to hold video equipment, monitors, and other devices are common in new ORs.

"Put in enough IT capability in the ceilings and walls—probably triple what you think you would ever need," she adds.

Plan for conduits so wiring for new equipment can be installed without tearing out walls. "You don't want your ORs to have to be down for long periods for renovation," she notes.

### Plan for additional ventilation

Because more large equipment is being used in ORs, she suggests that ventilation and heat exchanges be upgraded.

### Consider integrated spaces

"We're seeing a blurring between what used to be endovascular procedures, interventional radiology, and surgery," which has an impact on facility planning, Berger says.

Imaging, which used to be the purview of radiology, now is used during many operative procedures. As robotics progresses, more robotic procedures may also involve imaging.



*A wearable 2 oz communications badge is part of a communications system from Vocera ([www.vocera.com](http://www.vocera.com)) that allows hospital staff to speak instantly to the resource they need.*



Some larger hospitals are planning integrated suites that include the ORs, interventional imaging, and cardiac catheterization rooms in the same area with common preoperative and postoperative areas. (See March *OR Manager*.)



*A high-tech communication system in new ORs at Toronto General Hospital in Ontario, Canada, links 4 systems—wireless telephones, the intercom, video monitors, and the OR information system. Using a touch screen, a circulating nurse can touch an icon to access the system she needs. For example, in an emergency, the nurse can summon help by touching one icon linked to 7 preprogrammed phones. The system has cut down significantly on phone calls and paging. Nurses were instrumental in helping to plan the system, which was developed by open-architecture software from GlobeStar systems ([www.globestarsystems.com](http://www.globestarsystems.com)).*

**Plan for good communication**

High-tech communication devices are helping improve customer service and staff productivity. Among these are radiofrequency identification (RFID), electronic “white boards,” and hands-free communication tools.

RFID tags are small chips that can be used for tracking staff, patients, supplies, and equipment. RFID tags can hold much more information than bar codes and do not have to be scanned.

“We know of a couple of systems that use RFID for patient tracking, and it has made a huge difference in patient flow,” Berger says. The technology saves phone calls and legwork for the staff.

Electronic “white boards” are video displays that use software to monitor and communicate the status of patients and cases, cutting down on phone calls. Some products incorporate paging and instant messaging.

Wireless telephones and communication badges help staff communicate more quickly and easily. Wireless telephone systems, such as those from Spectralink ([www.spectralink.com](http://www.spectralink.com)) allow staff to call and text message both within and outside the facility and can be integrated with nurse-call systems.

Another option is 2-oz wireless badges from Vocera ([www.vocera.com](http://www.vocera.com)). By pushing

a button on the badge, nurses can talk with other users on the system or connect to an outside phone. The badges save time and reduce phone calling and overhead paging.

In a highly integrated communication system in new ORs at Toronto General Hospital in Toronto, Ontario, wireless phones are linked not only with the nurse call system but also with video monitors. Personnel can be summoned to the OR with the touch of a code button on the OR wall.

### **Where should ambulatory surgery be located?**

Should outpatient procedures be performed in the main OR? Or should there be a separate department or facility for ambulatory surgery?

"There are a lot of strong opinions on this subject, but I'm not aware that it has been proven either way," Berger says.

Some argue that it's better to have a dedicated ambulatory surgery center because most outpatient cases are elective, fairly short, and can be done most efficiently in a dedicated area. Others say surgeons prefer to do all of their cases, both inpatient and outpatient, in one OR.

"If you have the luxury of being able to have a separate ambulatory department close to your main OR, that's probably the best situation," Berger says.

### **Plan for enough storage space**

With space-consuming equipment being used in surgery, storage needs to be planned to keep the hallways clear.

Says Berger, "What we're seeing is people building about 200 sq ft of equipment storage per OR." Storage space is "absolutely critical" though it is often the first thing planners want to take away, she says.

### **Consider materials flow**

Plan to have separate flows for clean and contaminated supplies and equipment.

"If you can have the central sterile reprocessing area directly under the operating rooms, that is ideal," Berger says. "Plan for dedicated elevators for clean and dirty supplies—not dumb waiters." With elevators, the staff doesn't have to wait for someone on another floor to load the dumb waiter; they can go and get the materials themselves if necessary.

Also, consider how you will dispose of waste, both solid and liquid, to comply with regulations and minimize contact by personnel.

Recommendations for materials flow are in the *Guidelines for Design and Construction of Hospital and Health Care Facilities*.

### **Plan for patient- and family-friendly preoperative and postoperative areas**

"The trend is for preop and postop spaces to be large and more private than in the past," says Berger. "In the preop area, there is a big trend toward 3-sided rooms with a glass door on the front—no more big areas with curtains between the beds.

"In the postop areas, there is also a trend toward more privacy, with space for families and more bathrooms." ❖

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## **Resources**

American Institute of Architects. Facility Guidelines Institute. *Guidelines for Design and Construction of Hospital and Health Care Facilities*. Washington, DC: American Institute of Architects, 2001. The guidelines can be purchased at [www.aia.org](http://www.aia.org). Click on Store, then enter search term, Hospitals. Price \$75 retail; \$52.50 for AIA members. A draft of the 2006 guidelines is at [www.aia.org/aah\\_gd\\_hospcons](http://www.aia.org/aah_gd_hospcons).