Thinking of Buying…OR Lights

Quality illumination depends on stability and usability.

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I don't think it's possible to overstate the importance of surgical lighting or the importance of choosing the right lights for your OR. Whether you're outfitting a new OR or renovating an existing one, your selection of surgical lighting should consider the following factors.

Ceiling and clearance

Before you begin, you'll want to make sure you study up on the structure above the ceiling of the ORs where you're installing lights. Sturdy bracing is essential. The structural support not only keeps your lights securely mounted above the surgical site — I've seen poorly supported lights knocked off by collisions with other equipment — but it also lends stability in positioning the lights. Without good bracing, lights tend to drift from where you moved them.

The bracing should also protect your lights against damage or movement caused by vibrations from HVAC ducts or other infrastructural effects. Manufacturers should be able to tell you what support configurations are optimal for each lighting model. The height of the ceiling is another important architectural issue. Review the sizes and shapes of the lights you're considering in comparison to the dimensions of the room so that you'll know what kind of headroom remains for your surgeons and staff.

Given the increasing popularity of ceiling-mounted equipment booms and flat-panel monitors, you'll also want to review the placement of lights in conjunction with these devices — whether they're already installed or they're being added with the lights — to ensure that each can move freely and operate effectively without too much conflict. Most light and boom manufacturers now have the ability to offer potential customers computer generated, three-dimensional "walk-through" images of what their ORs will look like after installation and how the equipment articulates.

Trial and input

While it's possible to test lighting systems in exhibit halls and at the invitation of other facilities that have had them installed, there's no substitute for knowing how they'll work in your own ORs. If manufacturers can temporarily install the models you're considering in your surgical center — and many times, they can — there's no reason you can't trial the lights "at home" for a few weeks each.

Most surgeons will need only an hour or two under a new light to know whether they like it, but each of the surgeons who brings cases to your facility more than occasionally should be given the opportunity to try it and offer his input.

The perception and use of lighting is very subjective, and opinions on necessity and effectiveness will vary. An evaluation form that includes quantifiable factors, however, can help to keep the decision-making process fairly objective.

The surgical field

Nurses and scrub techs may be looking at hands-on features of surgical lights, such as the ease of maneuvering, changing a bulb or getting technical support, but surgeons' needs are quite a bit more aesthetic.

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The quality and pattern size of the lighting are important distinctions, because surgeons are looking for lights that accurately illuminate colors and retain a consistent focus on the surgical site. They don't want to spend a lot of time asking for the light to be readjusted and refocused during a procedure. Consider also the amount of heat the lights generate. As surgical personnel draped in gowns and gloves under the OR lights for hours at a time will tell you, less heat is best.

The light itself shouldn't produce any shadows — and this is easily detected simply by turning the light on — but your staff should also determine what kind of shadows result from a member of the surgical team leaning or reaching into the field.

Are the lighting systems you're trialing able to supply indirect light to other locations during minimally invasive surgery's dimmed conditions? Some newer models have settings in which bulbs on the outside edge of the fixture provide soft lighting for anesthesiologists at their machines or nurses and surgical techs at the back table. As this can help them to better identify medications or instruments, indirect lighting can be valuable for patient safety.

Other options

The next wave of surgical lighting will involve LEDs (light-emitting diodes), small solid-state semiconductor devices that can be grouped to produce sufficient light. Manufacturers claim LEDs are brighter, cooler, longer lasting and more energy efficient than conventional bulb-type lighting.

Since LED lights are a relatively new technology in the medical field, some observers are still questioning how they'll age and whether they'll retain true color accuracy over the long term. This issue will doubtlessly be addressed and, if necessary, corrected in later generations of the technology due to the obvious benefits of LED lighting.

You may also want to consult with your surgeons on whether they have a need for lights that can be equipped with a digital camera. The overhead view can provide a more useful perspective than a view from the side for recordkeeping, off-site viewing or education. Even if it's not on your list of needs now, will your lights and OR data capabilities be able to accommodate the addition later?

The cost of light

Cost is, of course, a critical factor in the decision to purchase capital equipment, and you'll want to weigh the costs of each light you're considering against its features and benefits. But I don't think it's possible to say that cost is the most important, or even the second-most important, factor in the purchasing decision. This isn't equipment that you're going to replace every few years. You're looking for something that's going to last your facility for the long term, and lights are far too important to buy at a lower price if they compromise the needs of your surgeons and staff. Even though the need for light in the room has changed dramatically with the continuing trend from open to endoscopic surgery, remember that OR lights continue to be critical equipment in practically every case.