Is it clean?  
An objective way to check

Observation can sometimes give you an idea about how well the staff is complying with OR cleaning protocols, but it can’t tell you about organic residues that might remain on surfaces. Bacterial cultures of the OR environment can also have drawbacks.

To evaluate the effectiveness of its cleaning, a Connecticut hospital is using a test pioneered by the food industry that gives a quantitative measurement of biological material left behind after cleaning.

The adenosine triphosphate (ATP) bioluminescence test (Hygiena, 3M Clean-Trace, and others) is designed to measure ATP, a molecule in the cells of all micro-organisms and organic residues. The test uses a specialized swab to sample a surface area. The swab is then read with a handheld instrument called a luminometer. The amount of ATP is quantified and expressed as relative light units (RLUs). Lower readings are typically associated with a cleaner surface and less soilage.

Because ATP is in all organic material, ATP-RLU measurements are good at identifying contaminated equipment and can be more useful than aerobic bacterial colony counts, which only measure living organisms.

The 511-bed Hospital of Saint Raphael in New Haven, Connecticut, used the ATP test as part of a performance improvement project on environmental cleaning. After the initial project was conducted on inpatient units, a similar approach was adopted for the ORs.

Project goals

The project’s major goals were:
• reviewing and revising the cleaning policy, including the specific cleaning processes to be performed, which workers were to perform them, and the types of products to use
• educating the staff on the new policy
• selecting and implementing the monitoring method.
• For the OR, the project involved detailing which cleaning processes would be performed by each category of employee, Diane Dumigan, BSN, RN, CIC, the hospital’s infection preventionist, told OR Manager.

High-touch surfaces tested

To monitor cleaning, the ATP test was used for 5 high-touch OR surfaces:
• OR table
• overhead surgical lights
• computer keyboard
• phone
• inside door handle.
All ATP swabs were taken 10 minutes after the surface was cleaned with a phenolic
disinfectant-detergent and air dried. The measurements were taken periodically over 3 months in 4 of the hospital’s 27 ORs. The RLU measurements were plotted on a graph (illustration). Most of the measurements were 250 RLU or less, the level considered “clean” at the Hospital of Saint Raphael.

Dumigan says the results have been used for quality improvement and staff education. When the RLUs on the OR lights spiked, for example, managers and staff discussed possible reasons, such as whether the lights weren’t cleaned well the night before.

“The results spur a conversation about possible causes. It’s been a useful teaching tool,” she says.

For OR leaders who want to implement a standardized, monitored environmental cleaning program, she recommends the following steps.

**Identify responsibilities**

Clearly identify who is responsible for cleaning which surfaces and equipment. Saint Raphael’s Operating Room Sanitation Standards outline cleaning responsibilities for RN circulators, surgical technologists, and OR environmental services personnel.

**Define terminology**

Be sure the policy defines terms such as between-case cleaning, daily surgical cleaning, end-of-day OR cleaning, cycle cleaning (detailed weekly cleaning), and project cleaning (weekly stripping of floors and wiping of ceiling, walls, vents, etc).

The Hospital of Saint Raphael used the ATP test to sample the effectiveness of OR cleaning as part of a performance improvement project. Graph courtesy of Ola Balogun, MBA, HCM, assistant director, environmental services, and Heather Havill, epidemiology intern, at the Hospital of Saint Raphael.
Consider a monitoring technology

Use of a monitoring technology, such as the ATP test or a fluorescent dye marker provides a method for monitoring how effective cleaning is over time. Each method has advantages and disadvantages, as outlined in the Centers for Disease Control and Prevention toolkit, Options for Evaluating Environmental Cleaning (www.cdc.gov/HAI/toolkits/Evaluating-Environmental-Cleaning.html).

Dumigan says her organization likes the ATP test because “it gives an actual quantifiable number,” which can be tracked over time.

In contrast, the fluorescent dye test, which is also an objective method, doesn’t quantify the result, she notes.

The ATP test does have limitations. It’s relatively new to health care, and cut-off RLU values for considering a surface clean need to be established for types of cleaning solutions such as those made of phenol, ammonic, or bleach compounds. Also, values may differ among manufacturers’ luminometers. All of these require more research, notes John M. Boyce, MD, the hospital’s section chief for infectious diseases, who studies cleaning and disinfecting methodologies. He is conducting further studies comparing bacterial culturing to the fluorescent dye marker test and the ATP test. Dr Boyce is also a clinical professor of medicine at the Yale School of Medicine, New Haven.

A copy of the Hospital of Saint Raphael OR sanitation standards is in the OR Manager Toolbox at www.ormanager.com.

References
