HAND HYGIENE • SINGLE-USE DEVICE PROCESSING • YEAR IN REVIEW

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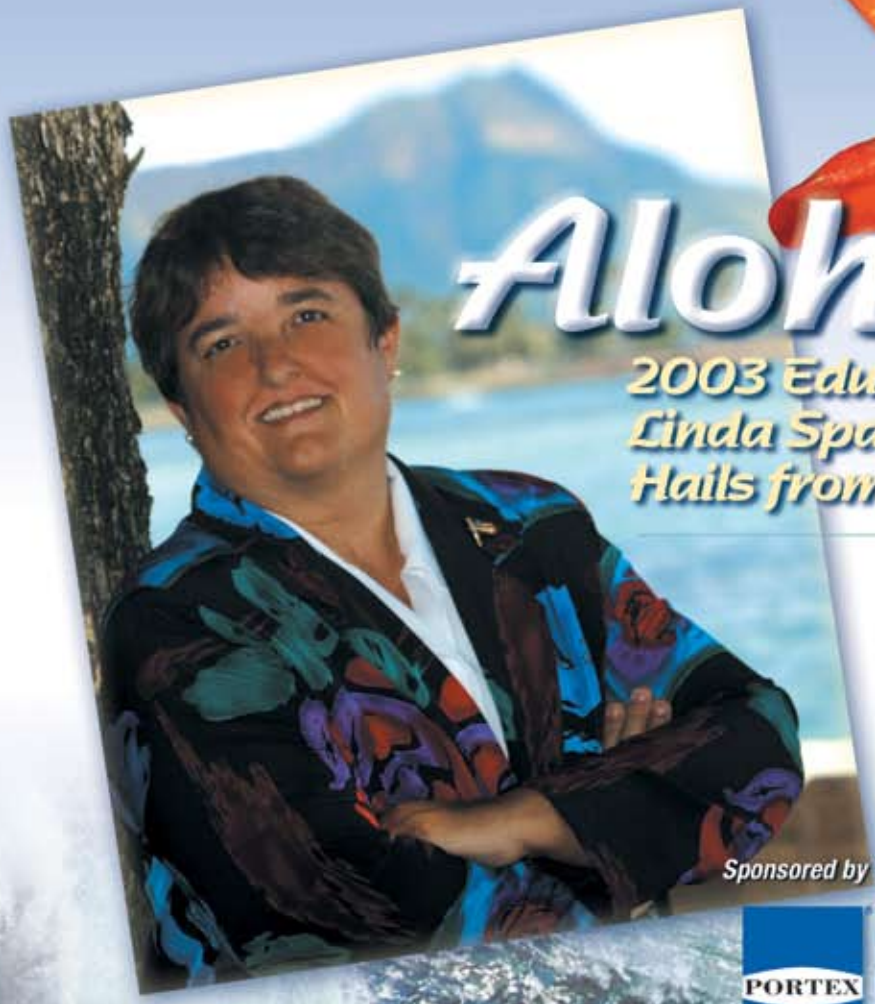

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2003 Educator of the Year, Linda Spaulding, RN, CIC, Hails from Hawaii

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INSIDE CENTRAL STERILE

By Felipe Mejia

Designing the Sterile Processing Department

When contemplating the design of a central service processing area, location —of the department, areas within the department, and equipment —becomes a primary consideration. The first step should be defining the function of sterile processing and what is required to accomplish that function. The goal is to create an efficient infrastructure to support the processing of instruments and supplies for the operating room (OR).

The design criteria will depend on the needs of the OR, such as the number of operating suites, expected use, the type of cases that will be performed and the distance between OR and sterile processing. Armed with this information, you can assess the type and quantity of equipment needed to wash the soiled goods; specifically, the number of washers, automated or manual, size, type and number of cart washers, if any.

The next step is the selection of fixtures and support equipment for the decontam area. The type and number of washers will dictate the number of sinks, washer-ultrasonics, hoppers, etc. Moving on to the clean side, again, based on the number of washers, it is possible to determine the number and type of steam-sterilizers, gas-sterilizers, plasma sterilizers and other equipment. The number of washers and sterilizers will determine the number of workstations for prep and pack.

Once the amount of equipment, fixtures and stations has been defined the number of full time employees (FTEs) can be established. This number will dictate the additional rooms needed to support staff, such as restrooms, employee lounge and manager's office. The size and type of equipment will also define the mechanical space needed for service support equipment. Finally, it's time to put the puzzle together. The goal is to minimize cross-traffic, allow enough space for people to work comfortably and minimize travel time in between points of activity.

Washer Selection

The key to determining the number of washers is assessing a theoretical average number of trays and basins per procedure and the average number of procedures per day. For example, if a hospital has six OR suites and expects to turn each OR suite over every three hours, based on the type of cases it expects to receive, it estimates an average of 12 trays and eight basins per procedure. This means they will need to wash a total of 72 trays and a combination of 48 basins and containers in a three-hour period.

Suppose the hospital considers a standard stand-alone, single-chamber washer capable of processing eight trays or eight large basins per one-hour cycle including the time it takes to load and unload; 72 trays can be processed in nine cycles and 48 basins can be processed in six cycles, therefore they must complete 15 cycles in order to wash all the soiled items received in a three-hour period. One washer can complete three cycles in the three-hour period; therefore, five washers working at full capacity are needed to complete the task.

An alternative is a tunnel washer. Tunnel washers have a higher throughput than a single washer. However, the instruments will require more preparation (pre-wash), which means more FTEs. Another consideration with tunnel washers is that if there is a mechanical problem the entire washing comes to a halt. If a single chamber washer is down, with five washers the throughput will still be 80 percent.

Another alternative is to automate the single-chamber washers. With automation, the loading and unloading is more efficient. The total time per washer is reduced to the cycle time of the washer since the racks with the trays can be queued. In the example above, a typical fully automated system (queuing, auto loading, auto unloading and rack return) would reduce the washing time to about 40 minutes. Three to four washers can do the work of five washers in the same time. Selecting four will introduce a time cushion unavailable before. In addition, the number of FTEs can be reduced because once the trays are queued, the employees are free to do other tasks. Generally, a typical two single-chamber, fully-automated system will have the same throughput as a tunnel washer and occupy the same footprint area.

Independent of the number or type of washing system selected, it is wise to allow space for future expansion if at all possible. Save the space for an extra washer, for example. There may be extra space on the decontam side for a while, but if the hospital grows it will not incur tremendous remodeling costs by adding a washer.

Fixtures and Equipment in the Decontam Area

Plan for a hopper near the entrance to the decontam area. The next requirement is a sink-station with multiple sinks and counter space to unload soiled items in need of pre-wash. In addition, a number of ultrasonic cleaners may be required.

The number of sinks and the size and number of ultrasonic washers will be determined by the type and the number of washers. For example, a washer that circulates a high volume of water at a low pressure is more efficient and hardly requires any pre-washing. A two to six single-chamber, fully automated system will only require one sink station and one small ultrasonic cleaner. High-pressure, low-volume washers and tunnel washers will require twice the number of sinks and ultrasonic cleaners. Some tunnel washers are equipped with an ultrasonic chamber.

Cart Washer

The key in determining the size and number of cart washers needed, is to estimate the average number of carts per surgical procedure. Continuing with the example above, let's assume that the hospital estimates that every procedure will yield three 36-inch soiled carts. This represents 18 soiled carts every three hours or six carts per hour.

Options include wiping the carts manually, assuming that it will take no more than 10 minutes to wash and dry a cart. If this option is chosen, a washing room with a spray gun is recommended. The cost of this option will be mostly labor, water and chemicals.

A cart washer will do a more thorough job. When selecting a cart washer it is necessary to look at the net usable dimensions and cycle time. Generally, the recommendation is to use the largest cart washer that will fit in the area as the cycle time will be the same and the price difference and the utility consumption are normally insignificant compared to the benefits of a higher throughput.

Consider a cart washer that has a cycle time of 10 minutes. This means a throughput of six carts per hour if it accommodates one cart. However, if we select a cart washer with larger net usable dimensions that will process two carts per cycle, it is possible to wash the same number of carts in half the time. The extra half-hour that is gained will become particularly useful during peak periods and when the cart washer needs servicing. In addition, basins and containers can be washed through the cart washer, reducing the load on the washers. Revisiting the example above, if all the basins are washed through the cart washer, the fully automated washing system can be reduced to three washers since we are reducing two cycles per hour. ICT

Felipe Mejia is a design engineer for Belimed USA and is a member of the American Society for Healthcare Central Service Professionals (ASHCSP).

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