You know meticulous instrument care and handling can reduce your GI endoscopy repair costs. But did you know that the organization and design of your GI unit can also affect your daily operations as well as your repair costs? Rethinking the layout of your setting is an opportunity to manage resources cost-effectively, improve the unit’s flow and function, and potentially reduce repair expenses. Here are key issues to consider.

Assess your inventory

Maintaining an optimal scope inventory is fundamental to keeping repair expenditures at a minimum. Monitor the size and age of your endoscopes and balance your scope inventory against your current and forecasted procedural requirements. Do you have the right scopes to meet current and predicted case-mix demand?

Too many of the wrong scopes can lock up excessive capital; too few of the right scopes may delay procedures. This can lead to patient and physician dissatisfaction, unplanned staff overtime, and increased scope handling-related repairs.

Data from the Olympus benchmarking program for 2008 showed that endoscopes per procedure room averaged:

- 2.0 of the most often used upper scopes
- 3.1 of the most often used lower scopes
- 0.2 and 0.3 specialty scopes for upper and lower procedures (chart, p 21).

Benchmarking data can help you evaluate your own scope mix, ensuring you get the most mileage out of your capital equipment budget. You can also look at the number and frequency of procedure-start delays and cancellations resulting from unavailable equipment. This will provide a good indicator of whether your inventory is sufficient to meet your typical procedural load.

It’s also important to evaluate the age of your inventory. If you keep a frequently used scope for too long, repair expenditures may start to climb while your technology edge plummets. The benchmark data for 2008 shows the median age of all endoscopes as 2.6 years, with the overall average ages reported as: colonoscopes (3.0 years), EGD scopes (3.1), ERCP scopes (3.0) and EUS scopes (2.4).

Manage the design of your unit

A workspace that aids operational throughput may mean less rushing and fewer incidents of damage. Most important, achieving optimal efficiency allows more time to ensure proper protocols are followed. The most effi-
cient and cost-effective units have considered the dynamics of staff, equipment, and workspace. A few questions to think about:

- Do you have an appropriate number of prep and recovery bays to meet the needs of your case mix and volume? Benchmark data in 2008 finds the ratio of prep and recovery bays to procedure rooms as 4:1 in both single-specialty ambulatory surgery centers and non-teaching hospitals and 3:1 in teaching hospitals.

- Do your workspaces follow a dirty-to-clean flow? Is the reprocessing room close to the procedure room? This is important not only for infection control but also to ensure scopes and staff move through the space efficiently.

- Does the procedure room have adequate space to protect endoscopes before, during, and after procedures?

- Does your facility have dedicated clean scope storage separate from accessories?

**Rearrange your reprocessing**

Equally as important as a well-designed facility, the GI unit must structure reprocessing protocols, processes, and workspace to maximize throughput of scopes while minimizing risk of damage.

**Location**

The Society of Gastroenterology Nurses and Associates 2008 Standards of Infection Control in Reprocessing of Flexible Gastrointestinal Endoscopes state: “Reprocessing of contaminated patient equipment should be done in an area designated and dedicated for this function. This should be a room separate from where endoscopic procedures are performed.” (www.sgna.org)

Proper cleaning of endoscopes is essential to safe reprocessing. As mentioned, this dedicated area ideally should be located close to the procedure rooms. Additional time spent moving scopes to remote sites may present infection control risks associated with delayed reprocessing and make scopes more vulnerable to damage. Always check with your original endoscope manufacturer (OEM) for instructions on delayed reprocessing.

In addition, to expedite transport to remote reprocessing areas, staff may be more tempted to tightly coil and stack scopes together or scopes and accessories together in the same transportation bins. Such shortcuts make scopes more vulnerable to kinks, cuts, punctures, and other damage.

**Time**

Allow staff adequate time to complete all cleaning, disinfection, and sterilization (CDS) steps in accordance with OEM guidelines. The schedule can get hectic. But the more rushed the reprocessing technician is, the more opportunity there is to omit steps, causing endoscope damage and downtime. Insufficient or improper leak testing can result in accidentally missing a small leak, which left unchecked can escalate into a major repair. Failure to inspect the water-resistant cap before attaching it to the scope or forgetting to attach it

<table>
<thead>
<tr>
<th>Endoscopes per procedure room</th>
<th>Multi-specialty ASC</th>
<th>Single speciality ASC</th>
<th>Non-teaching hospital</th>
<th>Teaching hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper standard</td>
<td>1.9</td>
<td>2.0</td>
<td>2.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Lower standard</td>
<td>3.2</td>
<td>3.1</td>
<td>3.1</td>
<td>3.2</td>
</tr>
<tr>
<td>Upper specialty</td>
<td>0.2</td>
<td>0.1</td>
<td>0.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Lower specialty</td>
<td>0.2</td>
<td>0.2</td>
<td>0.6</td>
<td>0.1</td>
</tr>
</tbody>
</table>

before immersing the scope into the basin of water can also cause damage and additional repair work.

On average, 2008 benchmark reprocessing time data showed 8.2 minutes were required for leak testing and mechanical cleaning, 32.5 minutes for automated endoscope reproprocessors (AER) cycle time, and 6.4 minutes for postautomated time, for a total of 47 minutes from start to finish. Compare your average scope turnaround time. Faster time is not necessarily better. Factor in sufficient time to cover all of the necessary reprocessing steps.

**Protocols and processes**

Make sure to complete precleaning in the procedure room. Precleaning removes bioburden before it has a chance to harden, avoiding the need for more aggressive cleaning and potential damage to the scope. Check the integrity of the water-resistant cap, making sure it is dry, and attach it to the scope at bedside. Transport scopes to the reprocessing area in covered containers. Then in the reprocessing room, always perform leak testing prior to moving on to manual cleaning and high-level disinfection. Consistent leak-testing practices can help avoid fluid invasion damage to the scope, which is the number-one cause of expensive, refurbishment-level repairs.

**Space**

The reprocessing room should be of adequate size with proper ventilation. Check the sink drain and work areas to ensure they are free of sharp edges. Remove all unnecessary objects that might damage the endoscope. Leave ample counter space for leak testers, basins, flushing pumps, and so forth so there is room to maneuver the scopes without stacking or bumping them into other equipment.

**Sinks**

Use a sink large enough to avoid crimping the instrument during leak testing and manual cleaning. The sink should be deep enough to allow full immersion of the endoscope. Never use sinks to stack scopes waiting for leak testing and manual cleaning.

**Automated reproprocessors**

If your facility uses AERs, make sure you have the appropriate number and types of machines for your volume of scopes. Benchmark data for 2008 shows the average number of scopes that can be reprocessed at once per endoscope procedure room is 1.3.

It is also a good idea to design enough space to allow access for planned and unplanned maintenance and repairs. Make sure you are using an AER that is appropriate for the types of scopes at your facility. Also, use only FDA-approved liquid chemical germicides (LCG) recommended by the endoscope manufacturer to protect your equipment from chemical damage. LCG potencies should be tested and recorded prior to every cycle. Staff can avoid chemical damage to the scope as well as cross-contamination risks by adhering to the detergent and/or disinfectant/sterilant manufacturers’ instructions.

**Safety-proof your storage**

To safeguard endoscopes when not in use, store them in clean, dry, well-ventilated cabinets maintained at an ambient temperature. Store endoscopes without valves and caps; they can trap moisture in the channels and promote
unwanted microbial growth. A well-ventilated storage cabinet reduces the chance of microbial contamination.

Proper storage of the endoscope should support the control body. The insertion tube and universal cord should hang in a vertical position, with the distal tip hanging freely. Finally, to prevent stretched or broken angulation wires, place the angulation locks in the unlocked position.

Never store endoscopes in their carrying cases. Use appropriate carrying cases or shipping containers for transporting endoscopes to and from repair facilities. Do not pack the scopes with accessories to prevent further damage during transport.

**Practice prevention**

An ounce of prevention can greatly influence your repair expenditures. Fix minor damage quickly before it escalates. This includes ensuring regularly scheduled preventive maintenance checks, checking instruments and equipment for wear, and documenting postrepair inspections of all returned endoscopes. Track and trend scope repairs by individual scope serial number. This data will help point to aspects of reprocessing that need improvement. Finally, keep staff trained on handling, operating, and reprocessing practices and protocols.

**Delegate duties**

Every member of your staff, from physician to technician, needs to understand the direct correlation between proper endoscope care and handling and repair expenditures. This is particularly true of reprocessing staff. Facilities with the lowest rate of repairs tend to have highly trained, dedicated reprocessing staff members who have been given ownership of the reprocessing responsibilities. These staff members comprehend that skipping and/or ineffectively performing reprocessing steps, or failing to follow OEM instructions, can adversely affect patient safety and directly increase the incidence and cost of repair.

All staff working with endoscopes need proper training and to keep current on handling, operating, and reprocessing protocols. Proper handling and CDS protocols go a long way toward maintaining properly operating equipment, reducing repair expenditures and supporting positive infection control outcomes. Seek the support and resources of your scope manufacturer to help with training.

**Encourage certification**

A new Certified Flexible Endoscope Reprocessor exam was introduced in the US in February 2008. All reprocessing staff should be encouraged to take this test. The exam provides uniform guidelines and standards for evaluating the knowledge and skill set necessary for this critical reprocessor position. (More information is at sterileprocessing.org)

In summary, a well-organized and efficiently designed GI unit that enables careful equipment handling, preventive maintenance, and proper storage protocols can eliminate the need for many repairs and ensure continued delivery of safe, cost-effective quality care.

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About the benchmarking study

The benchmarking study is conducted by Olympus Endosite Consulting as a quarterly web-based subscription service.

- The data is from the 2008 Quarter 3 survey.
- The number of participants was 79.
- Data is reported directly by participants.
- The data is segmented by facility type and volume.
- The data is based only on reporting by participants for the period and is not aggregated over multiple periods.
- The survey is not limited to Olympus customers, though it is likely most participants are.
- Olympus says it publishes the de-identified results regardless of whether they appear favorable to the company or not.

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