

## Sterile reprocessing

# Heavy instrument sets shed pounds

**A** major orthopedic case can take 30 instrument trays, some weighing as much as 40 pounds. A Bookwalter retractor alone is over 25 pounds. Hysterectomy sets can top 30 pounds. Day after day, OR and central service (CS) staff wrestle heavy sets and carts. It's taking its toll (related article).

In 2006, the Association for the Advancement of Medical Instrumentation (AAMI) recommended limiting instrument sets to 25 pounds. AAMI notes that heavier sets can compromise sterilization in addition to being an ergonomic strain.

AORN's 2007 *Guidance Statement: Safe Patient Handling and Movement in the Perioperative Setting* has an ergonomic tool outlining risks of lifting and carrying items such as instrument trays. The guidance was developed with the aid of ergonomics experts, including the National Institute for Occupational Safety and Health (NIOSH). According to NIOSH, the maximum load for a 2-handed lift for most adult females is 22.2 pounds. Instrument trays carry a NIOSH risk index of 2.0, the guidance notes. An index above 1.0 places some workers at risk of low-back pain. AORN advises caution with lifting tasks that have an index of 1.0 or greater. Examples of precautions are assistive devices such as adjustable-height tables and rolling carts.



*Narance, right, reviews the inventory list for a reorganized set with employee Eric Johnson.*

### A campaign to reduce tray weight

MedCentral Health System based in Mansfield, Ohio, has been working to reduce tray weights since 2000. David Narance, RN, BSN, manager of the sterile processing department (SPD), says when he took the position 9 years ago, he asked the staff to name 3 to 5 issues they saw as roadblocks to their work. One issue was tray weight and handling. Reducing tray weight became part of the department's overall effort to save wear and tear on the staff as well as to eliminate wet packs and reduce flash sterilization.

To validate what the staff was saying, Narance asked an ergonomic expert from MedCentral's occupational health department to conduct an assessment. MedCentral has 2 hospitals, Mansfield with 10 ORs and Shelby with 3 ORs.

"He spent a day with us, and he validated a lot of what the staff were saying as an objective observer," says Narance. Narance also regularly tracks metrics like tray weight, wet packs, and flash sterilization.

### Lightening the load

These are steps Narance and his team have taken to lighten the trays:

- Following the advice of the ergonomics expert, they immediately reorganized the storage area so the heaviest sets are stored at waist height, lighter trays are on higher shelves, and medium-weight trays are on lower shelves.
- Tracked and weighed wet packs. "We identified set after set that was over 25

# Saving backs and shoulders

MedCentral Health System, Mansfield, Ohio, has been working to reduce the weight of trays and sets since 2000. Manager David Narance's team show ways they're helping to prevent injuries.



Johnson is trying to maximize his productivity by carrying as many sets as he can. But this can lead to injury.



An overweight hysterectomy set has instruments for both abdominal and vaginal procedures. Not only is this an ergonomic hazard, it can also lead to instrument damage, wet packs, and steam sterilization failure.



In decontamination, Ryan Ulmer shows what not to do—place a heavy set on the bottom of the cart and bend at the waist to lift it.



A rolling cart is a better way to carry multiple trays.



The same set has been divided up. Instruments used only for vaginal procedures are now in their own add-on container.



A better way—placing the heavy tray is on the upper shelf and using legs to lift sets on a lower shelf.

pounds," he says. To help reduce wet packs, he and his team worked with the sterilizer manufacturer to standardize loads and increase dry time.

- Worked one specialty at a time to bring down weight and standardize sets.
- Brought in experts from the prime instrument vendor to audit trays. The vendor has an incentive to do the audits because it stands to benefit if more instruments or containers are needed, Narance notes. One specialty at a time, the vendor audited trays as they came into the decontamination area to see which instruments were actually used. Based on the audit, the SPD team formulated recommendations for reducing some sets.

If a set was overweight, they might, for example, recommend 4 Kochers instead of 8. "You can always put some in peel packs," he says. "Or we might find a 2-pound mallet that isn't used on each case and package it separately." Bookwalter retractors were broken into A and B sets. In dilatation and curettage sets, a second speculum might not be needed every time and could be placed in a separate container.

Reducing sets is a sensitive issue, Narance notes. "The OR staff worries that if you take instruments away, a doctor might need them," he says.

- Took the audit results and their recommendations to the OR Committee. "You need to work together and communicate," he says. He reminded the committee of the infection risks from wet packs with heavy sets, saying "If you have infections, and there are reports of wet packs, who wants to defend that?"

As another assist, carts have been purchased for SPD so the staff can move trays from sterilizers to shelves in smaller batches.

### **Shedding pounds**

Using this gradual approach, they have steadily peeled off pounds. The hysterectomy set, which started at 31.2 pounds, was reduced to 29 pounds, then 27 pounds.

"Finally, we broke it up," he says. "It was kitted for abdominal and vaginal cases, and we broke out the vaginal hysterectomy basket."

In orthopedics, trays that weighed 28.6 pounds are now down 24.25 pounds.

"We have a lot of trays that are in the 20- to 24-pound range and a bunch that are way under that," he says.

Narance, who has 18 years of experience in the OR, has built a partnership with the OR. He also relies on a team of SPD experts who work on performance improvement projects.

Recently, the OR manager called, saying, "We have a loaner set that is overweight," says Narance. "I put my experts on it, and they gave me a report—it is 31 pounds. We are now working with the rep to bring that down."

There are still challenges. A vendor-supplied neuro set is still at 27 pounds, and a spine set weighs in at 29 pounds.

### **Spin-off benefits**

The project has had spin-off benefits. With many sets in the process of being standardized, the Mansfield and Shelby ORs will be able borrow from one another when volume demands.

"If I have 8 ortho sets and I need a 9th, I will be able to call the other hospital," Narance says. The staff also will have fewer sets to learn, making it easier for them to move between the 2 hospitals.

The flash sterilization rate has been reduced from 6% a few years ago to below 0.5% today.

Though reducing tray weights can be costly, MedCentral has been able to spread the cost over a number of years. Containers freed up by standardization have helped keep the cost down. For example, Mansfield had 3 ENT surgeons who used 3 set variations. After one surgeon left and another was recruited, the newcomer was told he would be using the same set as the other 2. That freed containers for other uses.

SPD's data, kept meticulously without the aid of an automated instrument tracking system, is a big help in justifying budget requests, he adds. For example, by tracking use of flash sterilization data, Narance can report at the end of the year the top 10 procedures using flash sterilization. That data is used to justify the purchase of needed sets.

## **Veteran RN sidelined by injury**

Martha Murphy, RN, BSN, CNOR, felt she had found her niche when she came to the OR 26 years ago. She'd tried med-surg, critical care, and psych, but in orthopedic surgery, she says she found her passion.

"When you are scrubbed, you are so involved and such a critical part of the procedure," she says.

She didn't mind the heavy lifting of trays, positioning devices, and patient limbs.

"I loved having my mind and body engaged," she says.

Today Murphy is sitting behind a desk, hobbled by an injured elbow. The pain began in 2005.

"I pooh-poohed it and tried to pretend it wasn't there," she told *OR Manager*.

"Then one day I banged my elbow and thought I was going to go through the ceiling."

One of the orthopedic surgeons told her it was probably tendonitis. She had the joint injected routinely, but it didn't help. She wore a sling on weekends, but



*Martha Murphy, RN, BSN, CNOR*

that helped only while she was wearing it. Finally, in February 2007, she had surgery on the elbow, a lateral epicondylectomy with tendon reimplantation. The pain is gone, but her arm strength is no longer what it was.

"I don't have the stamina anymore, and I can't do heavy lifting all day long," she says.

She started back to work as a greeter in the hospital lobby. Then she gave hepatitis shots and worked in the orthopedic clinic. Now she's trying infection control,

but she doesn't feel the passion she did for orthopedic surgery.

What might have helped?

"Part of it was my fault," Murphy says. "I liked the physical exertion. I liked to keep moving—I could outrun anyone.

"When I was younger, I used to watch the older nurses who said, 'I'm not lifting that.' But I would never say that."

Her advice for managers? Spend time observing the strain the staff is under. Work with them on modifications that might help. An example is a second circulator, at least at the beginning of large orthopedic cases. Consider ergonomics in the instrument room. Murphy's hospital tried to limit tray weight to 25 pounds but was hampered by limited storage. The staff tried to keep the heaviest trays on middle shelves where they could be slid onto carts.

"If you have a nurse hurt, you've lost a valuable resource," she says.

*Murphy's story was first told in the August 2007 American Journal of Nursing.*

It also helps to put a human face on the ergonomic threat. Mansfield has had a number of sore shoulder reports by OR and SPD staff, and the management teams have taken a number of steps to improve ergonomics, including the tray-weight project.

"I would rather buy containers than lose a highly qualified person," Naranca says. "If you have an OR nurse with 20 years of experience who goes out with an injury, you have lost a valuable asset." ❖

## **Resources**

Association for the Advancement of Medical Instrumentation. *Containment Devices for Reusable Medical Device Sterilization*. ANSI/AAMI ST:77:2006. Arlington, Va: AAMI, 2006. [www.aami.org](http://www.aami.org)

Association of periOperative Registered Nurses. *AORN Guidance Statement: Safe Patient Handling and Movement in the Perioperative Setting*. Denver: AORN, 2007. [www.aorn.org](http://www.aorn.org). Look under AORN Store.