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Spine Surgeons Waste Millions On Opened, Unused Implant Devices

Joe Cantlupe, for HealthLeaders Media , November 10, 2011

Talk to enough physicians and hospital execs, and you will hear a term they use to refer to colleagues deviating from their peers, whether they aren't doing enough to improve patient care, are falling behind in their work, or are spending too much: outliers.

"No one wants to be an outlier," Kevin McGuire, MD, MS, chief of the orthopedic spine service at Beth Israel Deaconess Medical Center in Boston and assistant professor of orthopedic surgery at Harvard Medical School, told HealthLeaders Media.

In spine care, McGuire found a lot of outliers, surgeons wasting money by wasting medical implant devices. McGuire admits he was once an outlier too.

Here's how they got rid of the waste. Several years ago, McGuire and other physicians at Beth Israel Deaconess examined how much they used and spent, questioning why anything was discarded improperly, down to the smallest screw. They also analyzed steps that could be taken to improve implant surgeries. The hospital initiated a Lean system to improve value, reflective of the Toyota Production System management process. The medical professionals carried the process one step farther, cataloging as much as they could and precisely reviewing use of implant materials through peer-to-peer evaluations, McGuire says.

By implementing a few process changes, the spine surgeons at Beth Israel Deaconess cut in half the number of procedures that produced waste, dramatically lowering costs. Before launching a simple awareness program about this issue, the monthly cost linked to the surgical waste was about \$17,680. Afterward, it dropped to \$5,876.

Extrapolating from the amount of waste these physicians uncovered at their hospital, they believe that spine surgeons across the country could save more than \$126 million in surgery costs for implants each year by conducting an awareness program. They presented their study to the 26th annual meeting of the North American Spine Society in Chicago last week.

"We were initially surprised at the size of the problem," says McGuire. "Most of the driver of that was implant waste. That's what drove the project forward, identification that there was a problem."

"We are the drivers of the cost; we need to be part of the solution," McGuire opines. "Physicians are responsible for ordering a significant amount of material."

Each year, more than 600,000 spinal surgeries are performed in the U.S. Medical implants require an abundance of costly equipment such as medical screws, rods, cross links, and interbody cages.

Too often, McGuire says, there is "intra-operative waste," which he and his colleagues describe as any item "wasted when it was prepared or opened during a case, but was ultimately not used or implanted and could not be subsequently used or implanted in a different patient."

What's the main driver of the cost burden? In the parlance of McGuire's study, it is simply stated as "surgeon changed mind."

In the Beth Israel Deaconess study, items improperly wasted included surgical implant devices, bone graft devices, and miscellaneous other material such as drapes, gowns, globes, sponges, sutures, and drains. A surgeon's change of mind accounted for 44% of the wasted items, and "contamination" for 27% of disposals. Other reasons for waste were "equipment failure/technical difficulties," items "opened by mistake," and "case cancellation."

"When we say 'waste,' it was something paid for, charged to the hospital, and it wasn't utilized in another patient. It was basically removed or thrown into the trash. That's waste," McGuire says. "In our environment, any of that wasted instrument is paid for by the hospital but not charged to the insurance company because it's all under the DRG [diagnosis-related group] payment system. That's why the word 'waste' is utilized."

Some level of waste is normal, "especially at level-one academic centers, since you are doing multilevel complex cases," McGuire says. "There is

a significant number of older patients who have osteoporosis; you put a screw in and you engage it and tighten it down, it doesn't fit, wrong size, and so there will be an incidence of waste."

Because there are so many variations of waste, physicians weren't exactly sure how to define it properly when they began their study, McGuire says. "We realized that there was no clear definition of what constituted a wasted implant," he wrote in a blog. To get to the root of the problem, they asked surgeons, operating room personnel, industry representatives, and nurses to help them pinpoint areas of waste that should be eliminated from operating rooms.

"If a screw was placed in a patient, and removed, as long as it wasn't destroyed or significantly compromised, it can go back in the bin (and be reused). If not, I think that's a significant definition of waste," he says. "Our consensus of waste was reached by asking the people who did the work: the nurses and surgeons and clinical advisors."

In their study, researchers recorded spine procedures and incidents of intra-operative waste over a 25-month period, from October 2007 to November 2009. Although it may be hard to believe, researchers say their study represented the first extensive review of waste-related spending in spine surgery.

After reviewing wasteful actions of surgeons, Beth Israel Deaconess staff decided to make changes to improve their use of implant materials. Those steps led to significant reductions of waste, says McGuire.

Besides initiating the Lean system, and cataloging their use of implant materials, they also challenged each other, saying, "This is your waste. This is your partner's waste."

They compiled lists of who had been wasting more instruments than others, and shared that information with one another.

"I led the list for awhile and it was shocking to me," McGuire says. "We are all competitive. No one wants to be an outlier. When it was reviewed that way, it made the problem ugly, and visual."

In particular, the internal review examined the process of "surgeon changed mind," evaluating the reasons behind surgeons' choices, what was accomplished, and the impact on waste flow.

"We are the drivers of the cost, we need to be part of the solution," McGuire says. "Physicians are responsible for ordering a significant amount of material."

A few simple changes amounted to a big impact. Intra-operative waste, which had occurred in 20.2% of procedures prior to the education program, decreased to 10.3% of procedures. Before the awareness program, surgical waste represented 4.2% of the total operative spine budget. Afterward, that percentage decreased to 1.2%.

Overall, the "awareness program was successful in decreasing the cost burden associated with intra-operative waste by 66%," the report states. That was achieved by decreasing the number of implants wasted from 44% to 24% and decreasing the "surgeon changed mind" waste from 42% to 24%. The changes "proved to be and continues to be effective in making surgeons aware of the import of their choices and the costs related to surgical waste," McGuire and his colleagues wrote.

Christopher Kauffman, MD, program co-chair of the NASS annual meeting and orthopedic surgeon at the University Medical Center in Tennessee, said in a statement that the McGuire report should be a "wake-up call" for physicians, particularly spine surgeons.

Looking back, McGuire says it's important that physician leadership, in particular, prompt change. "There has to be an internal champion for medical equipment conservation," he says. "One of the physicians [must] believe that this is the right thing to do."

Joe Cantlupe is a senior editor with HealthLeaders Media Online.



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