A ‘cockpit checklist’ reduces defects in instrument sets

Checklists are a common safety strategy in the OR. Why not have a checklist for the sterile processing department (SPD)?

A “cockpit checklist” has helped reduce defects in instrument sets at Virginia Mason Medical Center in Seattle, Washington, by serving as the final quality assurance audit before a set enters the sterilizer.

The checklist was introduced after packaging mistakes were found to be the most common type of defect in sets reaching the OR.

At Virginia Mason, a mecca for Lean management in health care, the search for and correction of defects is relentless. The hospital has wholeheartedly adopted the Toyota Production System pioneered by the Japanese.

Like all departments, sterile processing regularly engages in Lean activities such as kaizen (continuous improvement) events and rapid process improvement workshops (RPIWs) to mistake-proof processes and eliminate waste.

Checking the ‘newspaper’

Every morning when the director of sterile processing, Sam Luker, MBA, CRCST, and his leadership team arrive for work, they check the “newspaper,” the defect status report from the previous day. A defect is any flaw in a sterile instrument set discovered in the OR. The defect rate is the number of defects divided by the number of cases.

“Whenever we discover a defect, we analyze the data, initiate mistake-proofing protocols, and solicit Everyday Lean Ideas (ELIs) from our front-line operators, so we can quickly correct the problem,” he says.

The cockpit checklist, he adds, “is probably the most effective mistake-proofing strategy we’ve implemented so far.”

After the checklist was introduced, the defect rate for set packaging fell from 3% a few years ago to 0.12% in December 2012. That’s just 2 packaging defects for the 1,552 cases the ORs performed that month, which used approximately 20,409 sets.

Among packaging defects the checklist catches are missing locks and chemical indicators, loose filters and retention plates, and mislabeled sets.


He says, “We immediately planned a 5-day RPIW on defect reduction for surgical instrument sets where front-line operators and leaders worked together to develop and refine the cockpit checklist.”

Patient safety

Cockpit checklist

To ensure quality and safety in every set, please verify the following:

1. Chemical indicator placed in set.
2. Instrument set, recipe, and production label all match.
3. Filters are placed in lid and bottom of container if needed.
4. Verify that retention plates fit snugly against the filters.
5. Examine the set for orderliness.
6. Write “FIM” (filter, indicator, matching) at top of recipe and include Tech #. (Verify successive check.)
7. Place lid on container.
8. Place locks on container.
9. Apply tape tail to production label.
10. Write Tech # on tape tail and place label on container. (Verify successive check.)

Source: Virginia Mason Hospital & Medical Center, Seattle.
How the checklist works
After a set is assembled but before it is containerized, the set is placed on a staging cart at the “cockpit check station.” There a sterile processing tech reviews the checklist to verify items such as the chemical indicator, filter, and correct label (sidebar).

After all items are verified, the set is containerized and placed on the cart to go into the sterilizer.

The checklist project is reported in the March 2013 Joint Commission Journal on Quality and Patient Safety.

Building trust with the OR
The checklist is just one of the strategies Luker and his team have employed to improve customer service with the OR. Others include:

Barcoding
Every instrument set is barcoded, as are some instruments critical to a set, such as the carpal tunnel release instrument from the set for that procedure.

“The system won’t let the tech complete the set until that item is scanned, showing it is present,” Luker notes.

Rapid response line
The OR can call the SPD’s rapid response (RR) line during a case to report a defect, such as a dirty suction in an ENT set. A sterile processing leader is dispatched to the OR immediately.

“It’s always about customer service,” Luker says. “We want to make sure the OR gets to interact with our team member and that we get the documentation we need for analysis and accountability.”

At times, the situation can be resolved on the spot. In a recent example, the OR called the RR line when a surgeon found an instrument wasn’t functioning as expected. When Luker went to the OR, he discovered the surgeon was using a delicate laparoscopic instrument to try to grasp a tube, which the instrument wasn’t designed to do. The surgeon was provided with the correct instrument.

The information about the defect is brought back to the SPD, posted on the status board, and reported to the team so the defect can be addressed in real time.

Visibility board
The daily status report is used to update a poster-sized monthly “visibility board” complete with pink stickers to highlight the defects and the categories in which they are occurring. A color-coded dot indicates the process in which the defect occurred and the level of seriousness based on risk assessment. For example, a red dot indicates potential for major harm or case delay, an orange dot indicates potential for minor harm or case delay, and a yellow dot indicates no potential for harm or case delay.

The “visibility board” is a status report that shows defects in instrument sets, the process involved, and the seriousness.
Accountability for SPD staff
If the defect involves an SPD tech, the supervisor meets with the tech to review the incident, discuss contributing factors, and assess any education and training opportunities. The department educator is involved if education/training needs are identified. The conversation is documented using an online “important conversations” form. To close the loop, copies are submitted to the SPD director, manager, supervisor, educator, quality assurance coordinator, and the tech.

Sushi, anyone?
Consistent with Virginia Mason’s Lean culture, the SPD holds regular continuous improvement events.

Japanese sensei (Lean masters or teachers) visit hospital departments to counsel them on improvements.

“Instrument sets should be like sushi, made just in time, not put on the shelf to sit for a year,” one sensei recently challenged.

Says Luker, “We thought that made sense. We have hundreds of ‘sleeping sets’ that sit idle in our storage area. That is an inefficient use of space and inventory.

“If we can build sets to order—say, give Dr Smith just the instruments needed to perform that particular procedure scheduled—we could reduce what we have to reprocess and store as well as the number of instruments we purchase.”

Just-in-time sets
When interviewed, Luker and his team were preparing for a 5-day 3P (production preparation process) workshop. In industry, a 3P focuses on new product development. In this case, the “product” is instrument sets, specifically just-in-time sets.

The workshop included 5 front-line SPD techs, each tied up for 40 hours.

How can the department free up that much staff?

“Our culture and our leaders are totally committed to Lean,” Luker responds. That includes supporting him by allowing overtime and use of per-diem personnel during these projects.

“Front-line techs are considered essential to improvement efforts,” he notes. “They do the work all day, and as the ‘process experts,’ they generally have the best ideas for resolving issues. Our job as leaders is to draw out the best mistake-proofing ideas and facilitate their implementation.”

—Pat Patterson

Reference