BRIGHT IDEAS

Preventive Maintenance At VA Medical Center Gets a Boost

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Opened in 1932, the William Jennings Bryan (WJB) Dorn VA Medical Center (VAMC) is a 216-bed facility providing acute medical, surgical, psychiatric, and long-term care. At the time of the initiative described here (2011–14), biomedical engineering was staffed by department chief Robert Hijazi, PhD, MS, MHA, CCE, CBET, and five biomedical equipment support specialists. (Hijazi has since moved to the John D. Dingell VAMC in Detroit, MI.) Each month, this five-man crew was responsible for performing preventive maintenance (PM) on about 220 pieces of healthcare technology.

To maintain accreditation, hospitals must pass The Joint Commission (TJC) triennial survey, which includes meeting requirements for PM. Surveyors walk the floor, pulling numbers from several pieces of equipment, and request to see the equipment history on those items to make sure they're up to date.

Challenge

Toward the end of 2011, the department was averaging monthly PM rates of around 92%. Although explicit PM requirements are not stated in standards, based on TJC scoring guidelines, completion rates of 100% for life support equipment and greater than 90% for non–life support equipment are considered appropriate. Although WJB Dorn VAMC was hitting these marks, Hijazi said that biomed was coming up shy of the medical center’s internal goal of 95% PM completion for non–life support equipment.

Simply tracking down equipment was a time-consuming challenge for biomed. “You don’t want to dedicate a large percentage of your day walking a floor looking for one piece of equipment,” said Thomas Terry, biomedical equipment repair specialist. “That’s an inefficient use of manpower; it takes away from productivity,” he added.

Terry’s time is focused mainly in the operating room (OR)—a high-pressure environment where he needs to be continually locked in to deal with emerging situations. “If I’m spending unstructured time walking around looking for infusion pumps, for instance, that not only distracts from my attentiveness to troubleshooting and equipment repair, it also puts me further behind in monthly PM completion,” he said.

Solution

Prior to implementing its multipronged initiative, the equipment stickers at WJB Dorn VAMC required close-up inspection to determine when the next PM was due.

Jerry “JD” Johnson, CBET, lead biomedical equipment support specialist at the medical center, came up with the idea of using a sticker system that uses 12 colors and 12 numbers, with each number corresponding to a month of the year (i.e., 1 for January, 12 for December). For example, a “3” with a red dot/sticker would indicate that the PM is due...
in March 2014, whereas a “3” with a blue dot would indicate March 2015 (Figure 1).

“Prior to the color/number stickers, we had a four-sticker program that used red stickers for wet locations, green stickers for critical care locations, yellow stickers for general patient care areas, and white stickers for equipment that had no chance of patient contact,” explained Johnson.

One issue with the old sticker system was that inefficiency: “Before, we had to perform a close-up inspection of each piece of equipment,” said Johnson. “Now, with the addition of this straightforward color dot and numbering system, we can see everything that’s due for PM quickly upon entering a room.”

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—Jerry “JD” Johnson, lead biomedical equipment support specialist, WJB Dorn VA Medical Center

“The old sticker system left us open to possible Joint Commission write-ups if a piece of equipment was found in an area with the wrong color sticker, such as a white sticker in a critical care, or green sticker, location,” added Johnson.

Another key change came when Hijazi began having the department dedicate the first two hours of the day exclusively to PM tasks. “Assuming there weren’t any emergen-

cies, we would start our day devoted to PM, and that helped tremendously,” said Johnson.

In addition, Hijazi blocked off every Tuesday from 1 to 2 pm for tracking down difficult-to-locate equipment.

“During those times, everyone is focused on finding or addressing specific equipment on a list,” explained Terry. “If you’re out there on the floor with that specific focus in mind, you’re more likely to see a patient walking with that infusion pump you’re looking for.”

With experience, Terry said the biomed team developed more efficient means for tracking down equipment, first of which was knowing the right people to ask (e.g., a head nurse).

“Another trick we use is printing out a picture of the equipment, which can be more effective at jogging someone’s memory,” he said. “They might not know the name, but when they see the picture, they say, ‘Oh yes, I saw that in a closet or in bathroom’—basically some location where we haven’t been looking.”

Terry spoke of the feeling of empowerment gained from this dedicated equipment sleuthing: “When your focus is scattered, you find yourself wasting time. But when the whole team is focused on one mission, it accelerates the realization of your goal.”

Another helpful action was sending out an e-mail of “could-not-locate” equipment to key contacts in various departments. In addition, Hijazi contacted the executive chief of nursing, who allowed biomed to tap into the nursing e-mail group for the whole facility.

“That was a lot of help, not only in terms of improving our PM rates but also fostering a stronger relationship between the nursing and biomed departments,” he said.

Figure 1. Images showing the improved sticker system. The number on the sticker denotes the month during which the unit is due for preventive maintenance (PM) inspection, and the colored dot denotes the year in which the inspection is due. In the examples shown, the PM inspections would be due in November 2016 (A), November 2017 (B), and November 2018 (C).
Johnson said that another pressure-reducing measure instituted by biomed was to complete PM activities in stages. “During the time we had set aside to focus on PM, the goal was to complete one-third in the first week, a third in the second week, and the final third in the third week. Then, by the fourth week, we could wrap up any remaining PM. That framework gave us a solid game plan and helped to alleviate having to scramble to perform last-minute PM,” he said.

Results
Taken as a whole, Terry said these endeavors sent a clear message: Biomed really cares.
“The open communication gave the staff a sense of, ‘Hey, we can trust these guys,’ and that encourages them to want to help us even more,” he said.

The increased collaboration among departments and enhanced awareness of biomed’s role are reflected in data for PM: After implementing the initiative in 2012, biomed has averaged a PM rate of greater than 98% per month (Figure 2).

Since Hijazi’s departure, WJB Dorn VAMC has hired three additional technicians, bringing the total in the department up to eight. This much-needed increase has helped the department maintain its impressive PM completion rate, as well as meet the demands of biomed’s increasingly heavy and complex workload.

“The reason I nominated the department was because there were five guys working in biomed back in 2011–12, and they were able to achieve 98% PM,” said Hijazi. “That deserves recognition because I know a lot of biomed departments in the country aren’t able to do that.”

When asked for the secret ingredient for success, Hijazi said it all points back to the cohesiveness of the team. “They all have to work together as one. It boils down to placing a strong emphasis on teamwork, accountability, and work ethic. But simply dictating those concepts isn’t going to work. Motivation comes from building that sense of ownership among each and every person in your shop.”

Buy-in from leadership is another key ingredient, said Hijazi, and something that Terry and the other technicians helped foster by walking the floor and coordinating with
Radio Frequency Tracking: On the Horizon at VA

Although still in the planning phases, one VA-wide initiative that figures to improve PM even further is the forthcoming introduction of a radio frequency (RF) tracking system. With such a system in place, said Johnson, “it wouldn’t matter whether the equipment is hidden from view. This ceiling-mounted RF technology would send out a beacon to a sensor on the equipment. Rather than having to physically walk the floors searching for equipment, we could simply look at our computers, locate the equipment, go right to it, and perform the PM. We will be much more efficient once that is in place, especially regarding notoriously difficult-to-find items like infusion pumps,” he added.

staff via e-mail. “You have to look at the overall culture,” he said. “When people see these requests as demands, they aren’t going to be as helpful as when they see that cohesion facilitates a positive work culture and, in turn, increased patient safety. When you have that foundation, you find that people are willing to help; they’re willing to take a couple minutes of their time to respond back to your e-mail and tell you the location of various items.”

Johnson was quick to redirect the praise toward Hijazi. “Some managers will sit back and take all the credit for the hard work of their staff. But Robert realizes the power of viewing his staff as assets, and when you take care of your people, your people take care of you. You work like a team, or you might say like a family—and if somebody has a problem, everybody pitches in to help.”

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