

CT Contrast Administration

Increasing operational efficiency through prefilled syringes

By Tom Schaffner

With the advent of prefilled syringes a few years ago, CT contrast administration may have found an avenue to benefit both patient and technologist.

Contrast media is administered during most CT procedures. Although the costs of prefilled syringes are more than a bottle of contrast and its injector combined, administrators are now looking at the advantages of the technology to warrant the additional capital expenses.

David S. Enterline, MD, department of radiology, Duke University Medical Center, Durham, N.C., says that improving CT efficiency by re-engineering the workplace may be a tough sell to upper management. "[Management] may have to spend a little bit of money to enhance productivity, and then ultimately have a net gain and reduction in costs," he says. "Enhancing productivity may increase bottom-line profitability."

Enterline says that Duke's radiology shortage has had some adverse financial effects on the center. "Because of the understaffing, we're not able to run the machines as much as we typically do, putting us in the \$80,000 to \$100,000 a month loss," he says.

DISSECTING THE CT PROCESS

Enterline says that his facility performed a time management study and a technologist satisfaction survey to determine whether prefilled syringes work better than manually filled cartridges. Looking at 400 patient CT examinations, Duke checked all aspects that affect the CT scanning process.

"As a component to the time-motion study, we wanted to look at the overall time it takes to get the patient from the [scanning] room," Enterline says. The study observed how long it takes to get the contrast ready, how long to set up the injector, how long to scan the patient and how long to prepare the room for the next patient.

"Study results showed a 33 percent decrease in contrast loading time from 110

seconds to 74 seconds," Enterline says. "We also had a significant improvement in set-up time of about 7 percent and overall exam time improved by approximately 2.4 percent," he adds.

In the technologist satisfaction survey, 80 percent of the respondents at Duke preferred the prefilled syringes. He says that they felt there was improved patient safety, decreased risk of contamination and increased technologist job satisfaction.

"In conclusion, the prefilled syringes were felt to be more efficient than the bio-filled contrast method for the preliminary data analysis," Enterline says. "The potential for increased patient throughput and CT department efficiency is just one of the real improvements that [prefilled

syringes] can make. It also resulted in a much higher technologist satisfaction, which in this day of technologists not being very loyal to your institution can make a significant impact.”

ASRT SURVEY

Last fall, the American Society of Radiologic Technologists (ASRT) Education and Research Foundation distributed a three-page survey to approximately 14,000 registered technologists in CT by the American Registry of Radiologic Technologists (ARRT). The survey, which covered the use of prefilled syringes with power injectors at CT facilities in the United States, received a 25 percent response rate.

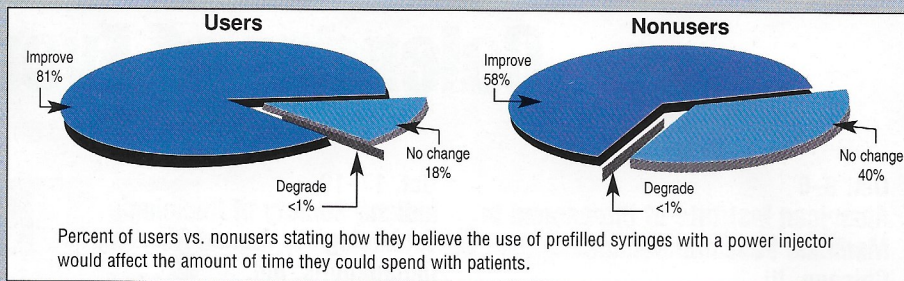
Of the respondents, about 29 percent used prefilled syringes with a power injector, while 71 percent did not. Almost all of the respondents reported that they work at least part of their week in CT, with 78 percent of respondents working most of the time in CT.

The survey results indicated that using power injection syringes prefilled with contrast media increased efficiency and productivity, resulting in better patient care.

According to research project lead investigator Philip A. Femano, PhD, president of Medical Imaging Consultants in Clifton, N.J., “both users and nonusers believed that prefilled syringes result in a faster procedure, thereby freeing up time to perform other tasks. Both groups reported this method of contrast administration would increase the amount of time they could spend with their patients. Improvements in quality include more consistent control of bolus timing and flow rate, and improved image quality, primarily through better enhancement of tissue contrast,” says Femano.

TIME AND MONEY

Responding to the survey question of how their facility decided to use prefilled syringes with a power injector, 19 percent said that it was the technologist that requested it, with an additional 14 percent stating that the prefilled syringes were approved after the technologists gave a convincing financial argument. Of the remaining number of respondents, 30 percent said that management made the



Source: Bracco Diagnostics Inc.

decision to use prefilled syringes without consulting the technologists.

The nearly overwhelming reason that respondents gave for using prefilled syringes with a power injector was that it saves time. Improving cost effectiveness and enhancing healthcare quality followed at a far second and third, respectively. Alternately, it was cost-related issues that nonusers cited as the main reason for not using prefilled syringes with a power injector.

The majority of respondents agreed that the use of prefilled syringes saves procedure time considerably compared with other methods. For facilities with similar patient loads, user facilities tended to operate with less staff than nonuser facilities. The use of prefilled syringes frees up technologists to do other jobs, spend more time with patients or increase patient volume.

The survey revealed about 35 percent more of manually filled syringes than prefilled syringes were discarded unused, resulting in contrast waste.

“Nonusers are more likely to discard unused, manually drawn contrast when patients cancel or reschedule their exams for a later date, which often renders the prepared contrast unusable,” Femano says.

Storage is also an issue when debating the prefilled syringe issue. Whereas prefilled syringes can be taken out and used as needed, the manually prepared syringes come in two parts that can take up valuable storage space. Added to the mix is the extra time staff spends stocking the inventory and the extra personnel training, and the amount of direct costs increase.

QUALITY ISSUES

When asked if they believed the use of prefilled syringes with a power injector would affect efficiency and productivity, 87 percent of the surveyed users and 65 percent of the nonusers said that it would improve.

In some facilities, techs can spend 40

minutes a day loading syringes, and labeling and dating its contents. It can not only be time consuming, but also confusing. There is also a greater risk of contamination. With the prefilled syringe, the tech only has to load it up to the injector.

However, when surveyed on whether using the syringes would improve the quality of healthcare, 61 percent of the users said that it would, where only 27 percent of the nonusers replied that it would be an advantage.

When asked about how using these syringes would help technologist morale, 61 percent of users said that it would be an improvement, while only 34 percent of nonusers said that it would improve morale.

PATIENT SATISFACTION

Patient satisfaction may play a big role in deciding on prefilled syringes. When asked if using prefilled syringes with a power injector would allow them to spend more time with patients, 81 percent of the users and 58 percent of the nonusers said that it would.

In addition to spending more time with patients, technologists noted that the patients’ anxiety level was lower because they didn’t have to watch the technologist filling the syringe. The prefilled syringes can simply be loaded into the injector head

This time-saving effort allows technologists more time to sit down and talk with patients as they’re being injected, or to answer any questions or calm any fears they may have. Additionally, patient waiting time may be reduced and patient throughput increased, since the time spent prepping the scanner room can be spent elsewhere.

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