Do no harm. The underlying tenet in health care applies to all hospital operations, not just those that take place within hospital walls. Saving lives and promoting community health certainly are commendable undertakings. To fully realize those goals, hospitals must be good environmental stewards.

Yet hospitals are in an unusual predicament. As community leaders and stewards of community health, providing care generates considerable waste material — more than 6,500 tons per day nationwide — that jams landfills and creates environmental and health hazards.

Environmental sustainability programs help hospitals significantly reduce their environmental footprint. Yet the process of reducing waste often requires a cultural shift and a change in the way hospitals operate. Radiation dose management is an example of a change in practice that can improve patient outcomes and reduce environmental impacts.

White. “There’s a lack of understanding and knowledge in the medical community in general.” It’s important to build awareness of the potential risks of radiation exposure among senior leadership, physicians, including referring physicians, as well as technologists, patients and patients’ families.

Another challenge is the fast pace of technological development. “Technology is moving so quickly it’s hard for medical professionals to keep up,” says Marilyn Goske, M.D., a staff radiologist for Cincinnati Children’s Hospital. In many instances, the technology is not being used to its fullest extent to help reduce radiation exposure. Forming strong vendor relationships and participation in accreditation programs can help hospitals identify ways to reduce waste and continue to improve patient care.

Radiation dose management programs provide a systematic way to track and report radiation dose and to determine adherence to dose management protocols. These programs track the number and type of radiologic examinations performed and can identify opportunities for dose reductions. They also allow hospitals to monitor changes in radiation exposure over time and ensure that protocols and procedures are being followed.

“Organizations need systems in place that allow the constant observation of adherence to protocols and procedures,” says Elliot Fishman, M.D., director of diagnostic imaging and body CT, for Johns Hopkins Medicine, Baltimore. It’s important to monitor changing recommendations from the scientific community as well, Fishman adds. Protocols and procedures should be evaluated at least once or twice a year.

Patient and family involvement is also critical, especially among pediatric patients. “Children are more vulnerable to radiation exposure,” Goske says. It’s important that individuals and their families are aware of the test and the radiation dose the patients are receiving. “You have to have that discussion in order to achieve quality and safety,” she says.

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RADIATION DOSE MANAGEMENT
A PATIENT SAFETY PRIORITY

RESEARCH BY LEE ANN JAROUSSE

Advances in diagnostic imaging have transformed patient care, enabling timely, effective decision-making and ultimately saving lives. The benefits, however, do not come without risks. Overexposure to radiation is linked to cancer; a 2009 study published in the Archives of Internal Medicine estimates 29,000 future cancers and 14,500 future deaths may result from the 72 million computerized tomography scans performed in the United States in 2007.

Calculating the risk to patients is a complex process that often doesn’t generate any clear answers. Still, radiation dose management is becoming a top patient safety and quality issue for hospitals. “It’s true the magnitude of the health risk for medical diagnostic scanning isn’t unequivocally clear,” says Keith White, M.D., medical director of imaging for Intermountain Healthcare, Salt Lake City. “The best we can do is to reduce patient exposure from CT scans by 50 percent.”

The development of comprehensive radiation dose management programs provides a systematic way to track and report radiation dose and to determine adherence to dose management protocols. These programs can identify opportunities for dose reductions and help ensure that the right test is performed on the right patient.

The establishment of radiation dose-management programs is not without its problems. One of the keys to success is education and training among all stakeholders. “Physicians don’t necessarily, as a body, believe the risks associated with radiation dose are as written,” says White. The development of comprehensive radiation dose-management programs is not without its problems. One of the keys to success is education and training among all stakeholders. “Physicians don’t necessarily, as a body, believe the risks associated with radiation dose are as written, so it’s important to build awareness of the potential risks among senior leadership, physicians, including referring physicians, as well as technologists, patients and patients’ families.”
A PATIENT SAFETY PRIORITY

Advances in diagnostic imaging have transformed patient care, enabling timely effective decision-making and ultimately saving lives. The benefits, however, do not come without risks. Overexposure to radiation is linked to cancer; a 2009 study published in the Archives of Internal Medicine estimates 26,000 future cancers and 14,500 future deaths may result from the 72 million computerized tomography scans performed in the United States in 2007.

Calculating the risk to patients is a complex process that often doesn’t generate any clear answers. Still, radiation dose management is becoming a top patient safety and quality issue for hospitals. “It’s true the magnitude of the health risk for medical diagnostic scanning is not unreasonably clear,” says Keith White, M.D., medical director of imaging for Intermountain Healthcare, Salt Lake City. “We have an obligation to our patients to mitigate the risk as best we can.” Intermountain launched an initiative last year to reduce patients’ exposure from CT scans by 50 percent.

The development of comprehensive, radiation dose management programs provides a systematic way for hospitals to track, report and monitor radiation dose and eliminate unnecessary exposure. These programs focus on building processes to ensure that the right test is performed on the right patient and in the right dose. “The goal is to match the image quality based on the clinical indication and the individual patient based on body size and weight, among other things,” says Dushyant Sahani, M.D., director of computed tomography for Massachusetts General Hospital, Boston.

The establishment of radiation dose management programs is not without its problems. One of the keys to success is education and training among all stakeholders. “Physicians don’t necessarily, as a body, believe the risks associated with radiation dose are as written,” says White. “There’s a lack of understanding and knowledge in the medical community in general.” It’s important to build awareness of the potential risks of radiation exposure among senior leadership, physicians, including referring physicians, as well as technologists, patients, and patients’ families.

Another challenge is the fast pace of technological development. “Technology is moving so quickly it’s hard for medical professionals to stay current,” says Marilyn Gooke, M.D., a staff radiologist for Cincinnati Children’s Hospital. In many instances, the technology is not being used to its fullest extent to help reduce radiation exposure. Forming strong vendor relationships and participation in accreditation programs for technologists are two ways to overcome that challenge.

Radiation dose management programs should involve a multidisciplinary team, including radiology, radiologic technologists and radiation physicists. Organizations need systems in place that allow the constant observation of adherence to protocols and procedures, says Elliot Fishman, M.D., director of diagnostic imaging and body CT, for Johns Hopkins Medicine, Baltimore. “It’s important to monitor changing recommendations from the scientific community as well,” Fishman adds. Protocols and procedures should be evaluated at least once or twice a year.

Patient and family involvement is also critical, especially among pediatric patients. “Children are more vulnerable to radiation exposure,” Gooke says. “It’s important that individuals and their families are aware of the fact and the radiation dose the patients are receiving.”

“You have to have that discussion in order to achieve quality and safety,” she says. ©
RADIATION DOSE MANAGEMENT

THREE KEYS TO ELIMINATE AVOIDABLE RADIATION

The approach to imaging is changing, from volume to value, from implementation to alignment, and from one-size-fits-all to one-size-doesn’t-fit-all. Every institution is using different strategies to ensure the proper use of radiation. These strategies are centered around these three keys: obtain comprehensive knowledge of current best practices, establish clear guidelines and protocols, and implement comprehensive oversight. Source: H&HN research, 2012

FOUR FACTORS CONTRIBUTING TO UNNECESSARY RADIATION EXPOSURE

1. IMPROPER DEVICE USE: It is well known that radiation dose exposure is impacted by the type of imaging equipment used. The utilization of uncalibrated equipment and limitations in the equipment’s design and configuration can contribute significantly to unnecessary radiation exposure. Source: H&HN research, 2012

2. LACK OF ACCESS TO PATIENT INFORMATION: Healthcare providers need clear, consistent information about a patient’s medical history, including prior imaging studies and treatments. This information is critical to determining the appropriate test for the patient’s condition. Source: H&HN research, 2012

3. LACK OF AWARENESS OF STANDARD PROTOCOLS AND RECOMMENDATIONS: Many organizations have established protocols and guidelines for radiation dose management, but they may not be consistently followed. Source: H&HN research, 2012

4. LACK OF ACCESS TO EDUCATION AND TRAINING: Healthcare providers need ongoing education and training to stay up-to-date with the latest developments in radiation dose management. Source: H&HN research, 2012

MASSACHUSETTS GENERAL HOSPITAL | BOSTON

For more than a decade, Massachusetts General Hospital has been providing the lowest dose of radiation for each test. Among other things, they have developed a comprehensive computer-aided review and consent system to assist clinicians in determining whether conducting a study is in the best interest of the patient. Most physicians agree that the new system is a winner, and the savings potential is enormous. For example, one study found that the system can reduce radiation by up to 40%, which amounts to a savings of $250 million per year. The system can also help to reduce the risk of radiation-induced cancer, which is a long-term concern for patients. Massachusetts General Hospital is a leader in radiation dose management and is committed to providing the best care possible for their patients.
Do no harm. The underlying tenet in health care applies to all hospital operations, not just those that take place within hospital walls. Saving lives and promoting community health certainly are commendable undertakings. To fully realize those goals, hospitals must be good environmental stewards.

Yet hospitals are in an unusual predicament. As community leaders and stewards of community health, providing care generates considerable waste material — more than 6,500 tons per day nationwide — that jams landfills and creates environmental and health hazards.

Environmental sustainability programs help hospitals significantly reduce their waste. "There's a lack of understanding and knowledge in the medical community in general," says White. "It's important to build awareness of the potential risks of radiation exposure among senior leadership, physicians, including referring physicians, as well as technologists, patients and patients' families.

Another challenge is the fast pace of technological development. "Technology is moving so quickly it's hard for medical professionals to keep pace," says Marilyn Goske, M.D., a staff radiologist for Cincinnati Children's Hospital. "In many instances, the technology is not being used to its fullest extent to help reduce radiation exposure. We have to find ways to overcome that challenge.

Radiation dose-management programs designed to help reduce exposure include strategies such as using computed tomography dose-length and volumes; tube current and tube potential setting; and the use of automatic exposure control and automated tube current modulation. "It's important to develop processes that ensure the right test is performed on the right patient and in the right dose," says Dushyant Sahani, M.D., director of computed tomography for Massachusetts General Hospital, Boston.

The development of comprehensive radiation dose-management programs provides a systematic way to track, report and reduce radiation dose and determine unnecessary exposure. "We have strong evidence that radiation exposure from diagnostic x-rays is linked to an increased risk of cancer," says Keith White, M.D., medical director of imaging for Intermountain Healthcare, Salt Lake City. "We have to find ways to reduce patients' exposure from CT scans by 50 percent.

Calculating the risk to patients is a complex process that often doesn't generate any clear answers. "Still, radiation dose management is becoming a top patient safety and quality issue for hospitals," says White. "We have an obligation to our patients to mitigate the risk as best we can." Intermountain launched an initiative last year to reduce patients' exposure from CT scans by 50 percent.

The establishment of radiation dose-management programs is not without its problems. One of the keys to success is education and training among all stakeholders. "Physicians don't necessarily believe the risks associated with radiation exposure are as written," says White.

"It's important to have education and training sessions about the importance of radiation dose management," says White. "It's important to have discussions in order to achieve quality and safety."