



Over-Radiation: Emerging Danger in Workers' Compensation?

Are Americans getting too much radiation from medical imaging?

According to recent headlines, the answer is: maybe.

Over the last year, news stories on this topic captured the attention of the healthcare industry, of consumers, and ultimately, the Federal Drug Administration (FDA) which recently held a series of hearings on this issue. This Bulletin examines the facts behind the headlines, the scope of a potential problem, and the implications for workers' compensation payers, providers, and injured workers.

Advances in imaging technology in the last generation have made it possible to "see" inside the human body with extraordinary clarity and detail. With this insight, illnesses and injuries can be diagnosed faster, with greater accuracy than ever before, and without the use of invasive diagnostic procedures. The two most widely known and used of these high-powered tests are the CT (Computed Tomography) scan and the MRI (Magnetic Resonance Imaging) test. CT scans are non-invasive tests that combine special X-ray equipment with sophisticated computers to produce multiple images or pictures inside the body. Its diagnostic strength is its ability to provide a superior evaluation of fine bone details. The MRI is a non-invasive test that uses a powerful magnetic field, radio frequency pulses and a computer to produce detailed pictures of internal body structures. This type of scan provides a superior evaluation of soft tissue detail as well as good bone detail.

Of these two commonly used diagnostic tests, only the CT scan emits radiation. This controversy over potentially excessive radiation focuses on the CT scan.

Americans Are Getting More Scans and More Radiation

The invention and availability of the CT scan has increased the number of scans that people receive, and consequently, the amount of radiation. Americans received about 70 million CT scans in 2007, up from only three million in 1980.² Because of the increasing use of CT scans for diagnosis, the average American's dose of radiation has grown six fold over the last couple of decades.¹

These scans do emit a significantly greater amount of radiation than the X-rays that were in use prior to the availability of the more detailed CT scan. For example, heart patients can receive the equivalent radiation of 850 chest X-rays over the first few days they are in the hospital.¹ A CT scan of the chest exposes the patient to more than 100 times the radiation of an X-ray, while an abdominal CT scan is roughly equivalent to 400 chest X-rays.²

Radiation exposure is measured in "millisieverts." A sievert is the unit for measuring ionizing radiation effective dose, which accounts for relative sensitivities of different tissues and organs exposed to radiation. A millisievert is one thousandth of a sievert.³ Twenty millisieverts is considered a high exposure. One major study estimated that four million Americans get more than 20 millisieverts a year from medical imaging, and that two percent of the people in the study had high exposures of 20-50 millisieverts.¹

With higher radiation comes greater health risks. Another study published by Columbia University researchers in 2007 estimated that in a few decades, as many as two percent of all cancers in the U.S. might be due to radiation from CT scans.¹



These statistics and predictions must be balanced against the benefits that timely, appropriate CT scans can give: fast, accurate diagnosis of the patient's condition due to an accident or illness, without costly and potentially dangerous invasive procedures. Today's sophisticated medical imagery is a powerful tool to arrive at an early diagnosis and fast, appropriate treatment. Many doctors point out that the danger of serious injury or death resulting from missing a potentially life-threatening diagnosis if no imaging is performed is a much greater, more imminent, and very real risk, than the radiation from the test itself.⁴

Why Would a Patient Get Too Much Radiation?

The one culprit behind an individual receiving too many CT scans is the lack of information on the patient's medical care. Different providers simply don't know how much radiation the patient may have received from previous tests, or in many cases, if previous tests were done.

Second, some believe that tests include more views than needed, resulting in too much radiation.¹ *The Wall Street Journal* claims that "in scans that are medically appropriate, radiation doses could be dramatically reduced without hurting the quality of images."⁵

Third, some patients receive radiation overdoses due to human or equipment error. Accidental radiation exposure became a major worry in October, 2009 when the FDA announced an investigation of more than 200 cases of patients who were exposed to toxic doses of radiation from CT scans at a major Los Angeles hospital.²

Other reasons for over-use of CT scans include physicians' fear of malpractice if they do not have the imaging test to back up their recommendations, patient demand ("find out what's wrong with me right now"), and diagnostic tests performed when there are no symptoms or when tests are not indicated as the first line therapy.

What Are the Solutions?

Early in 2010, the FDA announced a broad initiative to reduce unnecessary radiation exposure from all medical imaging.⁵

Recommendations from the FDA's investigation and the debate it initiated include:

- Improve the safety of the devices. Suggestions include requesting that manufacturers add safety mechanisms to their products to guard against errors, such as alerts to warn technicians when patients are getting too much radiation.
- Reduce the level of radiation required to get a good image. Some manufacturers are already offering software programs that enhance the quality of CT images, allowing radiologists to use up to 50 percent less radiation while still producing a high quality scan. Results from one of GE's software programs show it may allow doctors to cut the radiation dose by 80 percent.²
- Develop stricter standards such as requiring national certification requirements for medical-imaging technologists and other equipment users, and mandatory quality assurance practices.¹
- Establish standard doses for CT scans, and make equipment terminology uniform among all manufacturers, including terminology used during their user training sessions.⁶
- Improve and share patient records so that healthcare providers know what tests patients have had. Some specific suggestions include developing a "radiation medical record" to track radiation doses from cradle to grave¹, and requiring device makers to print the radiation dose on each X-ray or other image so patients and doctors can see how much was given. The American College of Radiology is working on a national registry to track the radiation dose that patients receive from CT scans nationwide, which will allow facilities to compare their rates to others.⁵



The Implications for Workers' Compensation

The scenario in which a patient is subjected to multiple CT scans is most likely to happen with an illness that requires diagnosis, and then ongoing monitoring in order to manage that illness. The vast majority of these types of illnesses are covered under group health plans. Injured workers in the workers' compensation system are less likely to experience an excess of radiation for several reasons:

- Workers' compensation cases are episodic. In most instances, injured workers are diagnosed, treated, and returned to work, as quickly as possible. Treatment is for a finite period of time and then the injury is resolved.
- Injuries in workers' compensation are most likely to occur to the back, or the extremities. Consequently, the majority of scans for workers' compensation patients are MRIs, which provide the best detail for these types of injuries. The percentage of cases requiring heart, chest or abdominal CT scans—which generate the most radiation—is much smaller in workers' compensation than in the overall healthcare system.
- Tests are usually pre-authorized by the adjuster or payer after a careful review of the injured worker's medical situation. Therefore, the "patient demand" factor is not present.

There are also situations where a CT scan may be the better option—or the only option—for the injured worker. People who have older types of pacemakers, ear implants or other devices cannot have MRIs because of the impact of the magnets on their implants. Diagnosis of hernias in the abdomen is an example of one type of problem that may be best diagnosed with a CT scan. CT scans are also used to detect and delineate fractures.

Overall, what does all this mean for adjusters and case managers? They should be aware of and concerned that over radiation and side effects from CT scans can occur in the course of treatment for a workers' compensation claim, and would be considered part of the liability for that claim. They should also consider:

- The patient's medical history. Someone with a history of previous injuries is more likely to have been exposed to CT scans. An effort should be made to find out what types of radiology tests were administered in the patient's past. This could be done by contacting the patient's primary care physician.
- Using CT scans only when they are especially effective for a particular diagnosis or when they are indicated due to other factors in the patient's situation.
- Working with physicians to be sure that the American College of Radiology's guidelines for the types of diagnostic tests to use in specific situations, are followed.

Eliminating Radiation Errors

The best protection against this type of medical error is having the test administered by a quality provider, with equipment that has been inspected to ensure that it is in good working order. Here's where a company like One Call Medical can help. Consider these quality indicators for providers and facilities:

- Membership in a provider network with stringent credentialing requirements. In contrast to the "rubber stamp" that some networks conduct, true provider credentialing is rigorous, labor-intensive, time-consuming and expensive. For example, One Call Medical employs a team of 10 full-time employees to conduct, manage, and continually improve a credentialing process that meets or exceeds standards set by the National Committee for Quality Assurance (NCQA), a not-for-profit organization dedicated to improving health care and the recognized symbol for medical quality. OCM also uses the American Medical Association (AMA) and the National Practitioner Data Bank (NPDB) to verify professional credentials, licensure, and memberships.



- Frequent re-credentialing. Every three years, OCM providers are re-credentialed to ensure ongoing adherence to quality guidelines.
- Board certification. In OCM's network, 96% of the radiologists in the network are board-certified by the American Board of Radiology.
- Credentialing that includes inspection of machines. Older machines tend to deliver higher doses of radiation. They also tend to be used by physician groups who may have added radiology as another revenue stream but are unable to keep up with the latest technology for financial reasons. In addition to credentialing reading radiologists, OCM also credentials the imaging center itself. Over 84% of OCM's contracted radiology facilities are accredited mostly by the American College of Radiology (ACR) for a minimum of one modality, which is more than the national average of 57%. Requirements for accreditation consist of a rigorous inspection and approval of the facility equipment and software.
- Performance of a high volume of tests. The skill of healthcare professionals increases with the volume of procedures they do. OCM network schedules more than 400,000 diagnostic tests annually, significantly more than any other network, giving their providers extensive experience with a high volume of tests.
- Oversight from medical advisory board of board-certified physicians, such as the ones that guide OCM on best practices for quality provider credentialing and clinical policy.

In conclusion, while workers' compensation patients are less likely to receive multiple CT scans than patients with certain ailments being treated through the group health system, adjusters and healthcare providers should be aware of recent findings on the dangers of excess radiation from multiple CT scans and from operator or equipment errors. The best protection against these types of medical errors can be the use of a credentialed, highly qualified specialty provider network like the one available through One Call Medical.

For more information on how to ensure that your organization is using a credentialed and highly qualified provider network, please contact:

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¹ Marilyn Marchione, "Americans Get Most Radiation from Medical Scans" *Associated Press*, June 14, 2010.

² Julie Steenhuisen, "Doctors Work On Radiation Problem to Ease Fears," *Reuters*, June 7, 2010.

³ RadiologyInfo.org – The Radiology Information Resource for Patients.

⁴ Thomas H. Maugh II, "Overuse of CT Scans Will Lead to New Cancer Deaths, a Study Shows," *Los Angeles Times*, December 19, 2009.

⁵ Laura Landro, "Radiation Risks Prompt Push to Curb CT Scans," *The Wall Street Journal*, March 2, 2010.

⁶ Shawn Rhea, "Trying to Improve Their Image: But FDA Scanning Hearings Reveals Regulatory Void," *Modern Healthcare*, April 5, 2010.

