Options for Radiation Protection in the Lab

How do YOU want to work every day?

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OMEGA Medical Imaging

In a 2020 paper published with the National Center for Biotechnology Information (NCBI), Doctors Nicholas Frane and Adam Bitterman of Northwell Health in New York wrote that radiation protection and safety is a concern for physicians, staff, and patients across several departments such as radiology, interventional cardiology, gastroenterology, and others. They stated that radiation emitted during fluoroscopic procedures is responsible for the greatest radiation dose to medical staff, but any radiation exposure poses risk to staff and patients alike. There's not much argument to these points.

The use of ionizing radiation has become an indispensable tool for the diagnosis and treatment of several medical conditions. With increased use has come increased risk and with that must come a better understanding of the risks of radiation exposure and dose reduction techniques and technologies. They are not all the same.

There are three fundamentals proposed as key to radiation safety – time, distance, and shielding. Time refers to the amount of radiation (the time) used to achieve the needed imaging. Distance means increasing the distance of the staff from the X-ray source – the further away the better…for staff. Shielding aims to block the scatter radiation bouncing off the patient.

In a previous article, Omega introduced a fourth fundamental of radiation safety – technology. Technology can dramatically reduce radiation exposure to not only the physician and staff, but to the patient as well.

But is all technology the same? Is all available technology universally adopted? Despite the claims of many manufacturers and despite the misperception of many in healthcare, the unfortunate answer is no. But not everyone will tell you that. When pulsed fluoro was introduced, it was revolutionary. Still, it was not immediately adopted across the board. Such is often the case with new technology – even when the results are proven to be dramatic.

ROI technology is proven to provide dramatic results in radiation reduction. Still, ROI technology has not yet been universally adopted by all manufacturers. Nor has AI image-guided technology that automatically collimates to the Region of Interest (ROI) – reducing radiation exposure by up to 84% without any interruption of existing workflow while delivering superior image quality.

Why has ROI technology not been adopted across the board? We can't tell you that. We don't understand it either. If you knew you could reduce radiation risk without changing your workflow and still get the image quality you need, why wouldn't you do that?

There are other "technologies" that make claims to reduce radiation risk. Sure, their claims might be accurate, but at what cost? Is spending over $100,000 for a "floating" full-body suit for the physician alone really cost-effective? What about working around "portable and convenient" lead shielding? Is reaching around a wall not intrusive to your workflow?

What's more, these proposed solutions might be good for the physician – but what about the staff? What about the patient? Don't they matter? Don't they deserve protection? Or is it burn baby burn?

Claims of #ShedTheLead are simply irresponsible. No one should advocate that. Sure, lead clothing is inconvenient. No one enjoys it. It's heavy and causes ergonomic stress (body strain). Everyone knows this, but this level of protection is still important. Why? Because the risk of radiation exposure to the physician and staff is too great.

Don't be foolish. Don't shed the lead. But do look for better solutions than standard ALARA goals and the protection of lead clothing. There's better technology available than those that are grossly cost preventative or make unnecessary demands and restrictions on workflow.

Is there technology proven to provide protection beyond that provided by lead clothing? Yes! ROI and AI technologies take increased safety to another level and reduce radiation exposure to everyone in the lab – not just the physician, but the staff and patient as well. And they do so within the cost of an X-ray system – not an additional cost in funds or footprint – and without impeding workflow.

In 2019, Omega took the idea of radiation safety to a new level with the introduction of FluoroShield™. This advanced AI-enabled technology creates a new modality in interventional imaging and reduces dose by up to an additional ~84% – additional to standard ALARA practices. The resulting radiation safety extends to not only the physician, but to the staff and to the patient as well. Knowing this, why wouldn't you want to add this level of protection for everyone in the lab?

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