

Leading the Edge of Dose Monitoring

Cullman Regional Medical Center, Alabama

Organization

Located in north Alabama, Cullman Regional Medical Center is a 145-bed medical center that is owned and operated by the Health Care Authority of Cullman County. More than 150 doctors practice medicine at the hospital with a team of nearly 1,000 nurses, technicians and other support staff. The hospital is part of an extensive medical complex built in 1995 that contains some of the newest medical equipment and technology available in the world today.

Cullman has been widely recognized for its commitment to excellence and is fully accredited by the Joint Commission. Designated as a Tier I hospital by Blue Cross and Blue Shield of Alabama for its quality, cost-effective care, the hospital has received numerous awards including: The Robert

Wood Johnson Foundation Transition to Better Care Program Award; Modern Healthcare's Spirit of Excellence Award for Patient Safety; and HealthData Management's 2013 Nursing IT Innovation GOLD Award. Most recently, Cullman's chairman of radiology services, Jeffrey K. Nicholson, MD, was named one of the Best Doctors in America for 2013, along with Cullman's UAB Interventional Cardiologist, Silvio Papapietro who has also been named one of the Best Doctors in America for 2013.

Focused on Patient Care

Jim Weidner, chief executive officer at Cullman attributes much of the hospital's success to the hard work and dedication of its physicians, nurses and staff. "We have a responsibility to provide excellent healthcare services in the most efficient manner and exceed the expectations of our



patients,” he explained. “It’s outlined in our mission statement and serves as our guide when we make decisions.”

This mission focused on patient care supports a deep commitment to monitoring and lowering radiation dose and patient exposure. Diagnostic imaging is a useful tool for physicians, emergency services and trauma situations, and leadership at the hospital wants to be able to accurately track and document exposure levels as a safety process for both patients and staff. To accomplish this, they needed an easy method of tracking overall exposure for patients who receive multiple types of exams, including CT, Mammography and Interventional, as well as a reliable tool to help them educate their staff and reduce exposure on individual exams.



“At CRMC we are always looking to exceed the expectation. As a smaller facility we were able to establish a dose monitoring solution – a facility at this size to have DoseWatch at their own initiative without any pressure from state regulations is huge. We have the evidence to make better determination of healthcare delivery and decisions.”

— Jim Weidner,
Chief Executive Officer, Cullman

Leading-Edge Technology Helps Enable Patient Safety

Cullman is a long-time GE Healthcare customer. Not only is a majority of the Hospital’s equipment from GE, but they also ensure the equipment is maintained through full service coverage with GE. When DoseWatch* was introduced to the market, Dwayne Denney, Director of Cullman’s Diagnostic Imaging Center was quick to want to learn more, a decision whole-heartedly supported by Weidner because a solution that monitors dose aligns with the Hospital’s mission. The desire Cullman has to continue to collaborate with GE Healthcare is built on “a level of confidence, comfort and trust in the products and services they provide.”

Cullman installed DoseWatch on the Hospital’s GE LightSpeed 16 CT scanner, GE BrightSpeed CT scanner, GE Senographe DS Mammography scanner, and Philips Allura FD10 Interventional system. “With DoseWatch installed across our radiation emitting devices, we are able to have a comprehensive view of our practice,” explained Denney, who was especially pleased with the comprehensive-nature of the implementation process.

DoseWatch had provided Denney and his team with a simple process to track exposure to patients from multiple modalities, display the cumulative dose, and acquisition parameters in the patient’s history. With the advanced reporting tools, Cullman had access to all their data with the ability to create customized reports. For example, Denney could easily look at the activity level and number of exams completed on a specific device at a certain time. After identifying that more than 70 percent of exams were completed at 8:00 p.m., he recognized that staffing needed to be adjusted accordingly. DoseWatch generates multi-level reports indicating dose delivery by protocol, technician, device, and facility; providing data in fine detail, right down to the device settings.

DoseWatch gave the radiology department the information it needed to efficiently review its established protocols to see if there was anything they could do to reduce the exposure without losing the quality of the image. “As we changed our protocols to reduce dose levels, our radiologist, Jeffrey K. Nicholson, MD, evaluated the quality of the procedures and compared them with previous studies. He didn’t notice a difference in image quality,” claims Denney, who further explained his satisfaction with the decision to implement DoseWatch. “It sends an important message to our patients and physician staff that the imaging department is committed to providing the quality expected and the safety we insist on for our patients.”

Cutting Down the Threshold

Now, Cullman has a reliable tool to track exposure on individual exams and cumulative exposure. Managing dose across their interventional, mammography and CT systems has provided a comprehensive view into the course of a patients

imaging history. In CT, DoseWatch is monitoring dose based on body size and using the AAPM supported measure: Size-Specific Dose Estimate (SSDE), which is an estimate tailored to specific patients based on body habitus. This estimate reflects the amount of radiation to which the individual patient is exposed. For Interventional Procedures the Incidence Mapping tool identifies spots where higher radiation amounts may have been administered at specific gantry angulation during certain procedures. Armed with this data, Cullman is taking steps to avoid dose outliers in the future and reduce variability.



“When they implemented DoseWatch in our facility, they did more than just install the software. The TIP Applications specialists were instrumental in ensuring our staff understood how the software works, how to identify outliers and standardize protocols.”

— Dwayne Denney,
Director of Cullman's Diagnostic Imaging Center

Anytime a threshold is exceeded, the staff receives an email alert identifying the patient, type of exam and exposure level. This increased awareness has created a better understanding of what situations will create alerts, and over a five-month period, Denney was able to reduce the number of events that exceeded the established threshold by 54 percent, which bodes very well for the safety of Cullman's patients and staff. With DoseWatch, Cullman was also able to narrow the threshold, standardize protocols and eliminate variability of exam exposures by using an average of 10 exam exposures to establish an acceptable exposure range and monitoring the exams that did not fall within the acceptable threshold.

Training and Education

An unexpected benefit from the implementation of DoseWatch was the impact it had on training and education of the technicians. Specific DoseWatch tools, such as the isocenter alignment tool and the Size Specific Dose Estimate (SSDE) for CT, also help

the technicians understand the role positioning plays in the exposure a patient receives during an exam. Denney, who closely monitors protocols used, has educated the team on reducing the table scan length, MA and KV based more on the patient's weight and age. DoseWatch provided the monitoring tool to show how they could adjust, as patient size varies which impacts the level of dose a patient is receiving.

About DoseWatch

DoseWatch is a dose management solution that captures, tracks, and reports radiation dose directly from the medical device. You can deliver the right dose by detecting the causes of excessive radiation and producing sharp and focused diagnostic images with the lowest possible exposure.

With GE Healthcare's DoseWatch, you can:

- Analyze radiation data across modalities and devices
- Identify and alleviate the causes of dose outliers
- Turn raw data into standards-based information

For more information on DoseWatch, visit www.doseoptimization.gehealthcare.com

About GE Healthcare

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GE Healthcare
3000 North Grandview
Waukesha, WI 53188
USA



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