

FDR D-EVO USER'S VOICE

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Digital Radiography

Imaging Neonates in the Isolette at Children's Hospital & Medical Center



Kari Kunze

radiology supervisor at

Children's Hospital & Medical Center in Omaha, Nebraska



Children's Hospital & Medical Center (Omaha, NE) boasts the largest and most sophisticated newborn intensive care unit (NICU) in the state.

Designated a Level IV Regional NICU, the facility provides the most advanced care possible to the most vulnerable of patients, including infants born with complications and premature infants weighing as little as a pound. In this environment, imaging is often necessary, but presents special challenges because the patients are confined to isolettes, explains Kari Kunze, radiology supervisor at the hospital.

"Due to the sensitivity of the babies in the NICU, we want to remove them from the isolettes only when necessary," Kunze says. "Our goal is to give as little disturbance to the infant as possible."

"With the advent of mobile, bedside digital radiography (DR), the goal of imaging neonates without moving them was within reach—all the hospital needed was a detector small enough to fit inside an isolette. In late 2012, following an evaluation of the two vendors that made detectors of this size, Children's selected the D-EVO 24x30cm panel from Fujifilm Medical Systems USA.

"The plate fit perfectly, and the image quality we were shown was fantastic," Kunze recalls. "With the decreased dose factored in as well, the Fujifilm detector made the most sense for us."

At just a half-inch thick and weighing only four pounds, the D-EVO detector from Fujifilm offers multiple proprietary features to enhance image quality while reducing exposure to the most fragile patients. Irradiated Side Sampling reduces light scatter and blur, while the columnar crystal



Proudly serving children since 1948, Children's Hospital & Medical Center is recognized as a 2014-15 Best Children's Hospital by U.S. News & World Report in cardiology and heart surgery, gastroenterology and GI surgery, pulmonology and orthopedics.

structure of the cesium iodide inside the detector transfers light more efficiently than other materials.

The detector comes standard in wireless configurations for optimal flexibility.

"We like the plate," Kunze notes. "It's very lightweight and easy to get in and out from the standard incubator cassette tray." That's not just an issue of the infant's comfort, she stresses. "Some of these babies have lines coming out, and with bigger plates, we have to watch to make sure we don't bump them. The Fujifilm plate is the perfect size."

Children's implemented its first D-EVO detector in the NICU in late 2012. The reaction from physicians was instantaneous, Kunze says. "Our intensive care physicians, nurses, and pediatric surgeons were all thrilled when we got this. We already had a digital portable in our Pediatric ICU and med surg units, and every day they wanted it in the NICU."

The detector immediately distinguished itself in terms of image quality, she adds, thanks to the two-story set-up of the hospital's NICU.

"When we got our first Fujifilm detector we kept it on one floor, but sometimes a patient would have to be moved to another floor, meaning we'd get an x-ray one day on the Fujifilm portable and the next day on a different system," Kunze says. "The image quality on the other system wasn't poor, but it also wasn't as sharp."

As a result, the hospital eventually decided to invest in a second D-EVO detector for the other floor of the NICU, ensuring consistency across the board. "People like to interface with the Fujifilm," Kunze says. "It's easy to annotate, easy to rotate your image to collimate it if necessary—it's very userfriendly. On the rare occasion where we have to repeat an x-ray, the process is very simple." Ease of annotation is critical because it plays a

key role in the hospital's tracking and management of dose, Kunze notes. "We always annotate our distance, whether we imaged through Plexiglass, our mAs output and our kV technique," she says.

Perhaps most importantly, the use of the small detectors protects the infants from exposure to infection, a critical concern given the fragility of their immune systems. The D-EVO detectors never leave the NICU and are cleaned after each exam using a CaviCide solution. "The cleaning agent is effective but also very harsh, and the equipment is holding up extremely well," Kunze says, noting that the detectors could be used anywhere between fifteen and thirty times a day. "The detectors get wiped down a lot, so durability is extremely important.

"With the ability to safely and effectively image the infants within their isolettes, Children's can elect to decrease risks associated with transferring them to the OR for routine procedures like umbilical line placement, ET tube placement or catheterization for extracorporeal membrane oxygenation. "Fujifilm's detectors are fantastic at decreasing the dose to the patient while getting excellent image quality," Kunze concludes. "It's a huge advantage to be able to bring that to the bedside—we disturb the babies so much less than we would otherwise."