KODAK EVP Software
Hospital reports Kodak image processing software offers clinically significant difference in quality

John Lin, M.D., is the chairman of radiology at Queen of Angels-Hollywood Presbyterian Medical Center. Dr. Lin asserts that there is a significant difference with the Kodak EVP (enhanced visualization image processing) software, giving doctors the ability to see previously undetectable conditions.

Contrast and latitude have always been a balancing act. In order to gain more of one, you lost some of the other. Until now.

Kodak EVP (enhanced visualization image processing) software for computed radiography (CR) images allows healthcare providers to have the best of both characteristics. Increased latitude allows radiologists to detect subtle details in areas of both low and high contrast.

"EVP software makes it possible to diagnose conditions that might have previously gone undetected," reports John Lin, M.D., chairman of Radiology at Queen of Angels-Hollywood Presbyterian Medical Center in Los Angeles.

"There is a clinically significant difference between the images we see today with EVP software, and the images we saw previously without it. For the first time, we have optimal viewing of the retrocardiac, mediastinum, and lungs in a single image," he notes.

It has been difficult, if not impossible, to obtain a film or softcopy image of the chest that optimally displays all structures, because of differences in density and the close proximity of many structures and organs.

If the diaphragm is optimally displayed, the apices of the chest are dark and over-exposed. If the lungs are correctly exposed, the retrocardiac area is under-penetrated, and light. The uppermost part of the lungs, under the collarbone, is often obscured. In female patients, lung tissue that is behind the breast is rendered much lighter than lung areas that are not behind the breast. Imaging in heavy patients is further complicated.

Where It Makes A Difference

Kodak EVP software can play a vital role in detecting a variety of medical conditions. A subtle pneumothorax is a good example, explains Harry Keleshian, administrative director of imaging at Queen of Angels Hospital.

"The software's ability to show subtle features in the lung perimeter and chest wall allows radiologists to detect air in the pleural

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cavity. This is an extremely serious condition that is difficult to diagnose, and an excellent example of this software's superior imaging capabilities," Keleshian notes.

"The software has also improved imaging of the bowel area, by providing an excellent view into areas that have gas and therefore tend to be dark," he adds. "And in trauma cases, enhanced visualization allows us to see the soft tissue as well as the bones. This is important because swelling next to the bone may be indicative of a problem that is not evident in the bone itself."

Queen of Angels, a Tenet Health System, 434-bed acute care facility in Los Angeles, implemented the optional EVP software after installing a Kodak Digital Science computed radiography system 400. In addition to quality improvements, the hospital's conversion to Kodak CR technology has reduced retakes from 8–10 percent to less than 1 percent.

Harry Keleshian is the administrative director of imaging at Queen of Angels Hospital. Keleshian reports Kodak EVP software has the ability to show subtle features.

How Is Optimal Imaging Accomplished?

Kodak EVP software divides the image into low- and high-frequency component images. The contrast of the low-frequency image component is reduced to increase latitude, while the high-frequency image component is enhanced to preserve its details. Then the two images are combined to produce a single image that optimally displays all anatomical structures.

The software is easy to install and operate. Once the parameter values have been set, the software requires no adjustment. This creates greater productivity and efficiency for radiologists. If desired, further enhancements can be made through one simple adjustment, but most users report that it is rarely needed.

Some imaging software requires adjustment of up to a dozen different parameters. The degree of latitude enhancement applied by EVP software avoids this unnecessary complexity. In addition, this software utilizes the full dynamic range captured from the storage phosphor imaging plate. Imaging methods that truncate data prior to image processing limit the ability to extend latitude.

A side-by-side comparison of two films shows a distinct difference in contrast between the image taken without the Kodak EVP software (left) and with the software. Both images were acquired on the same day,

When radiologists at Queen of Angels view comparative studies created before the software was installed, they immediately notice a clinically significant difference in image quality, Dr. Lin reports.

"Our radiologists say, 'so much diagnostic detail is lost because areas of the image are either too dark or too light.' This software is a significant improvement in patient care. Now that we have it, we can't imagine how we did without it."

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