

Digital Imaging and Your Health

By Ian McLean, D.C., D.A.C.B.R., Director of Clinical Radiology, Palmer Chiropractic Clinics

Since the discovery of X-rays in 1895, photographic film has been the primary medium for displaying images. It is a technology that the chiropractic profession has embraced since the early 20th century, constituting a critical component of patient evaluation. However, radiographic film is expensive, needs special storage and requires processing with chemicals. It is a single-use medium that does not lend to image manipulation. With incorporation of digital imaging into all segments of health care, the Palmer Chiropractic Clinics introduced the technology on its campuses in 2007. Digital X-ray also supported the need for high-quality images and ensured that the Radiology Department remained on the forefront of chiropractic clinical care and education.

Two different forms of digital X-ray systems are available at the Palmer clinics. Direct capture (DR) represents a form of digital radiology that uses X-ray sensitive plates that directly transfers imaging data from the patient examination to a computer system. Alternatively, computed radiography (CR) is an indirect form of digital radiography that uses a cassette system, similar in appearance and function to that seen in conventional, film-based radiography. Each of the systems provides high-quality digital images and also significantly improves patient examination times when compared to the traditional X-ray film systems. It should be noted, however, that traditional chemical processing and film-screen technology continues to be taught at Palmer, and for most graduates will continue to be the most likely purchased equipment for private practice. The transition, however, to both CR and DR systems is virtually seamless, particularly since patient examination procedures are not altered.

Digital image quality is generally superior to that of conventional radiographic systems, with the added advantage of being able to manipulate image appearance after the patient has been examined. As with digital photography, image appearance can be altered after the X-ray is obtained so that images can be brightened and the contrast improved. Not only can this improve image diagnostic accuracy, but from the patient's perspective this is important because repeated examinations and associated radiation exposure is reduced.

A significant benefit of digital radiography is an almost instantaneous availability of images to the treating clinicians, which has a positive impact on patient management. The patient will often find that their doctor has already seen the images before they leave the radiology department and returned back to the treatment room.

Student interns are involved with all aspects of diagnostic imaging. This not only includes scheduling patients for the examinations, but also performing the actual X-ray examinations under the direction of the X-ray technologists. Student interns are also expected to interpret images and correlate the data with the patient's clinical presentation.

All images are read by the staff chiropractic radiologists, who provide accurate radiology reports very quickly to the treating doctors. The images are viewed on appropriate software, which includes capacity to alter grayscale, magnify and move images. An annotation toolbox is also included with the ability to measure linear distance and angles, particularly of the musculoskeletal system. Text, arrows and circles may also be superimposed on images. The radiologist's diagnostic workstation is housed in an amphitheater-style room where students can see the images on two 60" LCD displays to facilitate student learning. Of note, these digital images may also be very easily exported into computer-based libraries that expand experiences for student intern training. Patient information is easily removed from the images, complying with privacy regulations.

These radiology facilities also supplies radiology services to chiropractic clinicians in the surrounding community. Because of the advantages of digital radiology, referring chiropractors have direct access to their patient's images often before the patient leaves the radiology department.

Any questions regarding digital radiology may be referred to Ian McLean, D.C., D.A.C.B.R., Palmer Chiropractic Clinics.