

Teleradiology and digital imaging

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Advances in the software and digital imaging widened the horizons of imaging. Viewing, reporting and storing of images on a hard copy (films) is no longer considered sufficient.

Teleradiology has come up in a big way to simplify the existing tasks of viewing, transferring and storing the images. Images are obtained using a particular software protocol called DICOM (Digital Communications in Medicine) format. Previously when DICOM standard was not devised, digitalization of the images was a tedious task and scanners or digital cameras had to be used each time. With DICOM standards, large number of images can be transferred within no time from the console to another computer (workstation). This allows the doctor to view images simultaneously when the scanning is going on without interfering the work at console. The images can be post processed in terms of the window centre, window width, magnification, reformatting, and 3-D reconstructions. It is possible to make CD-ROMs of the patients' study. Digital CD ROM is the most reliable and cost effective storage medium and PCs with CD ROM drives are ubiquitous. Thus the images can be given to the patient in digital format. They can be sent for a second opinion. The same can be used as a future reference. They can be sent via the Internet as well.

In short, digital imaging has completely changed the perspective of image archival, transfer, storage and retrieval and is responsible for enhancing educational opportunities for practicing radiologists and promoting efficiency and quality improvement.

Nanavati MRI Centre is one of the leading MRI diagnostic centres in Mumbai continuously seeking advantages of digitization and automation. In association with Indian Radiology Education and Research Trust (IRERT), Mumbai, the Centre recently arranged a MRI Teaching Course. "Digital imaging and teleradiology is no longer a fantasy but a necessity," said Dr Deepak Patkar, consultant radiologist Nanavati MRI. "It is difficult to implement software solutions in a busy MRI set up. Freely available software downloaded from the Internet, particularly add to the existing work as they do not fulfill all the requirements. Our long quest ended only when we customized the requirements with

Infometry Solutions, Imaging division of 21st Century Health," he added.

Storing of data has remained a big challenge since ages. With advent of digital imaging the task has become simpler and systematic. Some software even allow storing the images according to patient name, the region scanned and also according to pathological conditions. The data can be accessed retrospectively without trouble to find out images of various patients of the same pathology, or images of various pathologies of the same region. This is of particular importance in making presentations in conferences or while publishing data. The stored images can be supplemented with old images of the same or different modality and can be brought under the same roof.

Some software even allow direct power point presentations out of the images. "Very few software products lay thrust on retrieval. For all practical purposes archival has no value if quick retrieval fails," adds Dr Smruti Shah-Mulani, consultant radiologist, Nanavati MRI.

The immediate logical advance, after digitization is sending the digital data to a distal center via networks/ telecom connectivity i.e. digital teleradiology. Scarcity of radiologists in the country can only be compensated by teleradiology. Teleradiology enables hospitals and nursing homes to transfer images from radiology department to the respective wards /referring physicians and allows them to view the images directly on their monitor where they themselves can post-process the images to a certain extent. The reports can also go along with the images and can be viewed directly on the referring physician's computer. This allows the patient data to be viewed and analyzed from anywhere from the hospital by the doctors. At the same time one radiologist can serve multiple centers and expert opinion can be given in emergency situation.

"PC to PC communications using email, FTP are common but they are misunderstood as complete teleradiology solutions. Teleradiology stands for efficiency and accuracy. If the solution is not integrated to encompass all aspects from these two points; it's a workable solution but not a sustainable one," reflects Dr Patkar, who has started the implementation with a few peripheral centers. On successful implementation in three months time he has plans for expanding to state of

the art teleradiology hub of his own. The Imaging division of 21st Century Health, Infometry Solutions is supporting the technology backbone for the entire activity.