

## Volume 7 - Issue 3, 2007 - Cover Story The New Virtual Radiology Department: Managing a Multisite Network

### The New Networked Approach to Diagnostic Imaging - Where is Teleradiology at Today?

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**Teleradiology is probably the most extensively developed area of telemedicine. There are no doubts about its added value to healthcare, particularly in reference to imaging services. Teleradiology can help ensure access to secondary consultation, speed up image interpretation and improve continuing medical education. When used appropriately, teleradiology can significantly improve access to quality radiological services. The implementation of teleradiology benefits patients directly, ensuring better care and minimising the need to travel for consultation. In this environment, new opportunities arise, making it possible to share specialised care and optimise the use of technological and human resources.**

This new scenario requires novel organisational approaches to define and coordinate relations among radiologists, between radiologists and clinicians, and ultimately between patients and radiologists. First and foremost, teleradiology is a means of providing the radiological image interpretation and consultation by professionals located some distance from the site where the images are acquired, due either to a lack of human resources or specialised knowledge at the institution requiring the services. In this scenario, the patient's images and relative clinical information are sent to a radiologist at a remote site, who interprets them and assumes the responsibility for the diagnosis.

#### Challenges in Teleradiology Today

Although much emphasis was formerly placed on the technological aspects involved in establishing reliable and secure connections between the different sites, a teleradiology project involves much more than overcoming physical distance. The real challenge in teleradiology today is in integrating a variety of information (not just images) into the workflow of different professionals working at at least two different institutions. Although the technical difficulties related to transferring information have been overcome, these aspects are none the less important today. However, it has become clear that it is even more challenging and important to establish guidelines to ensure smooth and efficient workflow and to reach a consensus regarding the criteria to determine the roles of the different professionals involved.

Questions have arisen, such as "What clinical information do radiologists need to have so that their contribution to the diagnostic process has the greatest added-value?", and "What kind of information needs to be exchanged between the different professionals involved?". While it is obvious that these are ever-present questions in the field of diagnostic imaging rather than newly emerging ones specific to the context of teleradiology, the new scenario brings them to the forefront.

## The New “Networked Approach” to Diagnostic Imaging

As the new “networked approach to diagnostic imaging” is implemented, significant changes can be expected. This new concept of teleradiology is centered on the management of medical information, rather than the simple transmission of diagnostic images from one site to another. Teleradiology must be capable of contributing to the integration of radiological services into a digital environment in which medical information is distributed throughout the hospital and beyond. This will generate added-value services for patients, professionals, institutions and therefore also for the healthcare system on a regional, national or even international level. Radiologists and other professionals need to assume new responsibilities to manage these new technologies and organisational changes to preserve the confidentiality and integrity of patients’ data.

Teleradiology can only succeed if it is implemented with the approval and cooperation of the radiologists working at all of the institutions connected. It is important for these professionals to understand that the teleradiology service is not peripheral to their activity but rather one of the central pillars that support the department. Therefore, it is very important to dedicate sufficient time and resources to reviewing the new situations proposed and their relations to healthcare processes.

### Organising Workflow

It is extremely helpful to have written protocols to govern the complex relations between different institutions and departments during and after the implementation of the teleradiology service. The different parties need to decide on the way to standardise all procedures. Protocols must include the indications for different clinical situations. Other issues that need to be settled include the manner to inform the recipient of the need for an urgent study, who will be responsible for reviewing the work routines established, how studies will be reported, as well as to whom the results will be communicated and the time lapse from the time a patient’s images and information are sent to when professionals at the referring institution receive the report. Having a study in digital format that can be accessed from any given place at any given time makes it possible to develop new ways of working and new ways of collaboration and cooperation among professionals:

- Emergency examinations can be performed without the need for the physical presence of a radiologist at the place where the examination is being performed;
- Remote reporting of scheduled examinations;
- Access to specialised expert assistance;
- Shared areas of specialisation;
- Reviewing and consultation of cases;
- Virtual training; and,
- Cooperative research networks.

“Virtual radiology department” is probably the term that best describes the new paradigm: the integrated management of a multisite department with knowledge and expertise distributed to the professionals at the different institutions. In this way the elimination of technical barriers enables us to strengthen and reinforce relations between diagnostic imaging departments at different institutions. It is more feasible to open lines of collaboration among professionals for the evaluation and monitoring of certain pathologies, establishing criteria of suitability, continuing medical education and refresher courses, etc. than to mark off territories and try to work in isolation.

### Teleradiology a Central Support

Teleradiology should never attempt to function as an isolated service to support clinical practice. It is essential to have access to and make use of all the relevant information in order to define the most efficient diagnostic strategies to elucidate each patient’s clinical problems. This is the principal value that should be promoted in the practice of radiology and it can only be accomplished through interdisciplinary collaboration with other professionals at each centre.

Attitudes among professionals toward teleradiology range from the effusively enthusiastic to the decidedly pessimistic. While some see the potential for new technologies to expand the specialty and improve the position of radiologists, others view them as expensive, bringing only marginal benefits and eventually worsening the radiologist’s position through excessive competition. We must ask ourselves whether teleradiology should be considered a comprehensive solution for a community to which the providers have no other commitments or responsibilities. The physical presence of radiologists that take part in the local healthcare system has an added-value that should not be sacrificed.

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