

Società Italiana di Radiologia Medica



**Teleradiology**  
**Document of the Italian Society for Medical Radiology**

**O. Tamburrini**



Università degli Studi "Magna Græcia"  
Catanzaro

[tamburrini@unicz.it](mailto:tamburrini@unicz.it)

## Information Technologies and Healthcare

..changing the way healthcare is delivered..  
..faster internationalisation of the sector..

Information technologies not only enable the provision of medical care to patients located at a distance from healthcare centres , but also bring other useful innovations to the healthcare system , in particular as regards emergency settings , hospital organisation , medical teaching and continuing education , health education for the general population , de-hospitalisation.

Those who fail to keep up with technological progress will be virtually marginalised!!

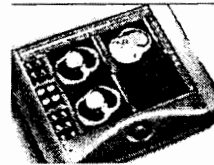
*This change should be experienced and interpreted in a rational and balanced manner without excessive enthusiasm and without acting prematurely !!*

..we are experiencing an explosion of information systems in healthcare ..

...medicine without frontiers...

..radiologists in the future will be able to practice in any part of the world..always..

.. Teleradiology will enable the Radiology Specialist to be " geographically independent ".



**The application of Information Technology to healthcare systems represents a sector that is particularly appealing to Industry and one that requires the active and concrete involvement of Radiology Specialists coordinated, if necessary, by Scientific Societies.**

## **Teleradiology today and ..... future developments**

- Teleradiology is bound to transform the work of radiologists : special care must be taken , especially with regard to professional , educational , ethical , deontological and medico-legal issues.
- Scientific Societies and Universities are called upon to make a serious and constructive commitment to this broad-ranging issue. This commitment must take into due account on the one hand the training , the work and the continuing education of Radiologists and Radiology Technicians and on the other the central issue of the patient's right to health.

***...the right image at right place at right time...***

## Teleradiology Indications and recommendations for use - 2001

- Many have described the *advantages* of Teleradiology: we now need to propose *recommendations* for its use.
- No doubt an improper use could in the long term lead to several disadvantages for Radiology professionals, whether Radiologists or Technicians.

### Teleradiologia. Indicazioni e raccomandazioni all'uso

Coordinatore: CARLO CABOTONDI (Roma)  
 Editori: OSCAR TAMBURRINI (Torino)  
 Editori: FRANCESCO DALLA PALMA (Torino)

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Coordinatore: G. TAMBURRINI (Torino)  
 Editori: DALLA PALMA (Torino)

Autori: S. BARBERA (Bari) - A. BUI (Torino)  
 G. ROSSI (Reggio Emilia) - E. BUI (Cremona)  
 D. CARAMELLA (Pisa) - A. CAZZUFFANI (Milano)  
 P. CORTESE (Trento) - F. DALLA PALMA (Torino)  
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 P. C. MUZZO (Padova) - G. NIRELLI (Torino)  
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 A. RIFORDO (Bari) - O. TAMBURRINI (Cuneo)  
 N. VILARI (Torino) - F. VIMERCATI (Milano)

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...how to use – and how not to abuse ..

Nel Documento *Teleradiologia. Indicazioni e raccomandazioni all'uso*, editato nel 2001, si precisò che "tutta la materia è in continuo divenire sia dal punto di vista strutturale che normativo" e si sottolineò il carattere informativo e non prescrittivo delle raccomandazioni all'uso proposte. E di fatto ci si impegnò ad una rivisitazione periodica del documento [1].



### Teleradiologia

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A cura di Francesco DALLA PALMA\* - Oscar TAMBURRINI\*\*  
 con la collaborazione di: Carlo CABOTONDI (Roma) - Davide CARAMELLA (Pisa) - Francesco DE FERRARI (Brescia)  
 Francesco LUCA (Roma) - Enzo MOSER (Trento) - Claudio SACCAVINI (Padova) - Palmiro SACCO (Siena)  
 Franco VIMERCATI (Milano)

## Teleconsultation

- (Tele)consultation , in general , is largely justified by the ethical and deontological principles of our work as physicians.
  
- Several medical situations can give rise to a need for a Teleconsultation , for example:
  - increase in requests for services in elective and urgency/emergency settings;
  - need for specific competencies in given fields , in situations of unevenly distributed resources;
  - numerical prevalence of peripheral primary care structures compared to specialist care centres.

### Teleconsultation at all costs?

## Teleradiology : professional approach

- **Teleconsultation** : remote consulting between physicians, generally working from two workstations connected via the phone line or computer networks.
  
- **Teleconsultation in radiology:**
  - a) (tele)consulting requested of another Radiologist or Specialist by a Radiologist ;
  - b) (tele)consulting on a radiological exam and report , requested of a Radiologist by a General Practitioner or Specialist , for a second opinion ;
  - c) (tele)consulting on a radiological exam performed and reported by a Radiologist requested of another Radiologist by a User.

## Teleconsultation

- synchronous
- asynchronous
  
- individual
- team
  
- methodological
- interpretative
  
- official\*      ⇒      reporting
- unofficial

\* we have to lay down accepted operational protocols to be formalised by official documents to be agreed upon and shared with all the professionals involved in teleconsultation.

## Teleconsultation

- ...the possibility of a non-radiology specialist sending radiological images to a Radiologist in theory located anywhere in the world for a *second opinion* or for overreading...
  
- ...the possibility of patients themselves transmitting radiological images to another Radiologist or Specialist ...

*...constant compliance with deontological principles is a duty...  
...any personal, professional and economic advantages will be illusory and transient...*

*“If it is misapplied , teleradiology can fragment speciality ”  
“ ...teleradiology can spawn a fratricidal clash that will benefit  
neither academic nor private practice radiology ...”*

Review article

Legal issues in teleradiology—distant thoughts!

P. WHITE, LL.M. (Hons), DCR

Department of Obstetrics and Radiography, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

Misdiagnosis or missed diagnosis

In terms of diagnosis, it is clear that conventional radiology allows the radiologist to examine the patients if necessary, but in teleradiology the radiologist may also have a duty to warn the patient about the risk of opportunity to physically examine the patient because of the risk of misdiagnosis or missed diagnosis [22]. Fundamentally, there are three models in teleradiology/telediagnosis: teleconsultation and telemanagement [23]. Diagnosis is made within 4–24 h of images being produced, as immediate diagnosis is not required, and images are transmitted to a remote site. Teleconsultation occurs within half an hour and is different as the patient may still be waiting at the examination site or primary care physician's office. Perhaps a second opinion is being sought in these circumstances. Telemanagement occurs in real-time and the radiologist manages the patient as if the patient was on site for the examination, so that an immediate diagnosis is required. Therefore, one may also need to consider the individual duties that fall under the umbrella of teleradiology, so as to address fully the legal responsibility and liability of the physician. Depending on the mode of service, the turnaround time may differ [23].



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and Programs  
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Real-time radiology — new concepts for teleradiology

Y. Kinosada<sup>a</sup>, A. Takada<sup>a</sup>, M. Hosoba<sup>b,\*</sup>

<sup>a</sup> Department of Radiology, Japan System Development Center, Kyoto Prefectural University of Medicine, Shimodzu Corp., Kyoto, Japan

<sup>b</sup> System Development Center, Shimodzu Corp., Kyoto, Japan

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COMPUTER APPLICATIONS

Akihiro Takada  
Toshiyuki Kasahara  
Yasutomi Kinosada  
Minoru Hosoba  
Tsunehiko Nishimura

Economic impact of real-time teleradiology  
in thoracic CT examinations

## Teleradiology : professional approach

- **Telemanagement:** (tele)management of the service assigned to the Radiology Technician in Radiology Units temporarily and occasionally without a Radiologist and/or requested by another Specialist at a remote site.

*“Preliminary” teleconsultation* , before performing the radiological examination for justification and information ( “ tele-presence ” and “ tele-indication ” ).

Telemanagement of the the clinical radiological act necessarily involves an exchange of information between the clinical and diagnostic settings.

## Teleradiology : professional approach

**Telemanagement ends with Telediagnosis.**

**Radiological telediagnosis may be used provided that the following conditions are met :**

- a) appropriate technical equipment ;
- b) complete patient history and clinical information , with precise clinical query ;
- c) security guarantees ;
- d) easy and immediate communication with the centre performing the examination.

## Teleradiology : professional approach

### Telemanagement may be justified :

- a) for intra-hospital procedures ;
  - b) for procedures within a hospital group in non-postponable urgencies / emergencies;
  - c) for procedures in different hospital groups.
- Considering the interdependent nature of all phases of the clinical (tele)radiological act , there is no justification for two other possible uses of telediagnosis, i.e. the outsourcing of the reporting phase alone to free-lance radiologists or private radiological practices.
- Obviously the presence of the Radiologist is still compulsory for any examination requiring the administration of intravenous or intracavitary contrast material.

## The Clinical Radiological Act in Teleradiology

The clinical radiological act consists of a series of strictly interdependent steps , which need to be guaranteed also in a Teleradiology context by making the Radiologist the coordinator of the entire process.

- Motivated service request by the referring physician , with clinical query.
- Clinical-anamnestic assessment.
- Justification for the proposed exam ( or non justification).
- Patient information and consent.
- Performance
  - appropriateness of equipment
  - effective professional competency
  - delegating practical tasks to Radiology Technician
  - appropriate image documentation
- Interpretation.
- Reporting/Communication (and discussion) with referring Clinician
- Archiving.

## Reporting and Teleradiology

- Assessment of previous radiological exams and/or reports.
- Reference to technique and method used \*
- Perception
- Description
- Interpretation
- Decision
- Conclusion
- Communication
- Archiving

\* In the report, the Radiologist should specify that the report is based on telematically-received images (number) , and indicate the name of the examiner , the name of the referring physician , the clinical query , and the transmission modality.

### *...first opinion....*

- What is a provisional radiological report?
- What is its clinical-radiological and medico-legal value?
- The drafting of a provisional report pending a definitive report is not considered and involves non-negligible “ risks ” !!

## **ACR Standard for Communication : Diagnostic Radiology**

effective 1/1/00

- An official interpretation ( final written report ) shall be generated following any examination , procedure , or officially requested consultation.
- The timeliness of reporting any radiological examination varies with the nature and urgency of the clinical problem.
- Under some circumstances , practice constraints may dictate the necessity of a preliminary report prior the preparation of the final report.
- Any significant *discrepancy between an emergency or preliminary report and the final written report* should be promptly reconciled by direct communication with the referring physician , other healthcare provider , or an appropriate representative.

## **Teleradiology : professional approach - Patient information and consent -**

**In accordance with the provisions of art. 32 of the Italian Constitution , the use of Teleradiology requires that the patient be informed on the procedure in order to obtain valid consent.**

**The practice of Teleradiology therefore requires two different consents : one for the procedure , and the other for transmitting the data via the network.**

## Responsibility profiles in Teleradiology

- This specific work activity falls into the class of “team” healthcare services, in that the interventions are carried out consequentially, rather than simultaneously, and each act in the process concurs to a single goal.
- All participants assume responsibility, in terms of diligence, prudence and expertise, for performing the tasks assigned to them and which pertain to their job profiles, coordinated and supervised by the “team” leader.

Multiprofessionality of healthcare interventions

## Responsibility profiles in Teleradiology

In the practice of teleradiology delegating radiology technicians to take care of the practical aspects is regulated by para. 3 of art. 5 of Decree of Law n. 187/2000.

- The Radiologist must guide the activities of Radiology Technicians, and formally agree and plan their activity with them, while respecting their specific professional competencies.

## **Responsibility profiles in Teleradiology**

**In the case of the Radiologist we can hypothesise professional liability in the case of :**

- a) **incorrect use of the method , resulting from omissive or commissive conduct;**
- b) **incorrect reporting : liability , even in the case of tediagnosis or teleconsultation falls exclusively on the reporting physician.**

**In the case of Radiology Technicians , whose activity is that of a healthcare professional, they bear direct responsibility (civil, criminal and disciplinary) in performing the acts pertaining to their job.**

## **Professional responsibility in Teleradiology**

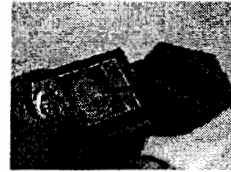
**...we cannot omit to remark that , often , what could be regarded as a professional liability of the Radiologist due to imprudence or negligence , is in fact the last event in a complex series of delays , omissions , and failures to act by those who , at various levels of governance of health centres, are in charge of providing quantitatively and qualitatively adequate equipment and personnel , compatible with a “ safe ” practice of medicine...**

**Teleradiology : myth or reality ?  
boon or bane ?  
friend or foe ?**

**Teleradiology is not a new specialty !!  
Teleradiology is a great new opportunity !!**



...Scientific Societies have to participate in governing the whole issue of Teleradiology rather than allowing others impose it on them ...



## **Teleradiology**

...the Radiologist may end up spending increasingly less time with patients and increasingly more time at the computer...



...a risk of growing conflict between healthcare service providers and service users , on account of the relationship being increasingly mediated by technology...

**Anthropology and medical technology :  
clashes and...desirable convergence!**

- Phase of growth
- Phase of reflection

## **Teleradiology - risks -**

**...de-personalization of the medical radiological act ...and  
fragmentation of the speciality...**

**...difficult relationship between Radiologist and Clinicians...**

**...less sense of responsibility of healthcare workers...**

**...possible obligation to apply the most recent  
technologies...teleconsultation at all costs ???...**

**...liability for possible technical, methodological, and  
diagnostic errors...**

## **Telemedicine and Teleradiology**

- Dishomogeneity of initiatives and experiences
- Relatively poor knowledge of application
  - “ Resistance ” to change
- Objective lack of law regulations

**There is an absolute need for adequate culture and awareness of the actual role of  
Telemedicine in Diagnostic Imaging.**

## Telemedicine and Teleradiology

... Barricading oneself in a position of isolation and defence that does not take into due account the technological and legal changes affecting all the professionals involved is not acceptable ...

*...at all times the provision of teleradiology must be primarily developed in the best interest of patient care and not on the basis of the shortage of radiologists, inadequate training of general radiologist or as a cost-cutting measure without clear benefit in terms of standards of health care...*

## The challenges of the future

*"The integration of teleradiology into telemedicine"*

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Mobile teleradiology

CME  
Teaching

Law on telemedicine

Contract rules

Guidelines for Teleradiology

## Teleradiology

- The Scientific Society has the institutional duty to propose a model of behaviour for the performance of all clinical radiological acts.
- The concrete possibility of Telemanagement of the radiological act , in the modality known as *real-time teleradiology* , is most likely a *future teleradiology modality*.

The position of SIRM is not completely and acritically “against” but consciously “in favour” of a use of Teleradiology that is logical and fully aware even in the light of current laws!