

Industry Snapshot for Teleradiology

Quality Use of Diagnostic Imaging

QS7(ii)

Establish technical standards for
accreditation requirements for clinical
teleradiology



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Executive Summary

This medical imaging industry snapshot was formulated from data obtained following feedback from a variety of representative stakeholders in teleradiology including:

- Private, independently owned practices,
- Public hospitals,
- Private hospitals
- Corporate practices.

A request for technical information was disseminated as part of the QUDI QS7(ii) project: *Establish technical standards for accreditation requirements for clinical teleradiology*. The technical information required included:

- General Teleradiology Information,
- Technical information
 - Monitor display,
 - Software functionality,
 - Compression,
 - Data transfer
 - Bandwidth
 - Data Security
 - Image acquisition.

The information supplied from the stakeholders reveals that almost all the imaging facilities undertaking teleradiology are using systems whose characteristics lie within the parameters described by the authors in the draft technical standards for teleradiology.

These draft technical standards for teleradiology are formulated from a combination of a literature review, stakeholder discussion paper and the request for technical information. It is reasonable therefore to presume that respondents are performing teleradiology within acceptable international guidelines and the draft technical standards the authors present for teleradiology could be determined appropriate as a minimum requirement.

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Introduction

The industry snapshot for teleradiology was undertaken to:

- Assist in the determination of an acceptable level of technical specification for teleradiology infrastructure,
- Obtain an opinion on the range of equipment being used in Australia for teleradiology
- Determine the reasons for variations in the technical specifications for teleradiology and whether such variations are warranted.
- Determine the level of compliance against the recommendations of the Stage III: Draft Final Report *Quality Use of Diagnostic Imaging QS7(ii) Establish technical standards for accreditation requirements for clinical teleradiology*.

Following determination of the level of compliance the authors can draw some conclusions about the requirements of the industry to ensure compliance against these standards.

Methodology

We developed the form, "Request for Information", that was available to stakeholders (attachment 1). This form provided a "tick box" format that could easily be completed by a technically competent teleradiology operative. Furthermore, space was available for comments and feedback that was unique to some facilities.

The results were collated and individual categories examined to determine trends and variances. Moreover, comparisons were made against the information contained in the literature review, telephone conversations and the discussion paper.

The result of this process is that only some minor changes were added to the draft technical standards for teleradiology.

Limitations

Clearly the respondents to this project are interested in teleradiology and engaged in the debate. It may not be appropriate to assume that all teleradiology providers are represented by this cross section and as such the results may not be applicable across the industry.

Results

The data obtained from the request for technical information was collated and is presented in the following section.

Statistics

Number of Respondents:

There were a total of 22 respondents to the survey.

Of these respondents there was a representation of 496 locations.

Of these locations there were 487 private practice sites and 9 public hospital sites.

The total number of teleradiology systems of the respondents was not defined.

General Teleradiology Information

Comment:

This section provided information on how teleradiology is utilised in Australia and in particular how information flows across jurisdictional boundaries.

There was a mixture of reporting in this area with the majority of respondents reporting to and from their own practices within the same state. This was particularly relevant for respondents from public hospitals.

There were several respondents that perform teleradiology interstate, that is from other jurisdictions within Australia.

There were two respondents that perform teleradiology services across international boundaries

Conclusion:

Teleradiology is being used in Australia to provide services locally, interstate and internationally. The international reporting is being performed by Australian Radiologists from jurisdictions outside Australia in the public and private setting.

Technical Information

Monitor Display

Monitor Resolution

The respondents to the request for technical information generally used a mixture of monitor configurations. There was an even spread of 2MP, 3MP, colour and monochrome. Of note was a single respondent utilizing 1MP colour monitors in pairing with 3MP monochrome. This was the only respondent using monitors less than 2MP.

Colour Profile

The monitors were spread between colour and monochrome with a majority of respondents utilizing both. Monochrome was the dominant choice.

Size

All of the respondents utilized monitors of 20 inch (50cm) or larger where responses were completed.

Brightness

The monitor brightness ranges from 200 to 700cd/m².

Software Functionality

All respondents indicated that their software functionality has a high level of sophistication.

Compression

There is currently a mix of compression types implemented. This includes:

- JPEG Lossless,
- JPEG Lossy,
- No compression
- Proprietary compression.

Generally the respondents indicated that they are using compression that does not reduce diagnostic quality in a visual context.

Data Transfer

Bandwidth

There is a mix of bandwidth technologies used in teleradiology. These include: DSL/Cable which is the majority use, ISDN, Microwave and others including frame relay and direct network connections.

The range of speeds are from 128kbps up to 1Gbps with the majority between 512kbps and 4mbps.

Data Security

The connections used for teleradiology are point to point or VPN connections. Universally encryption was a minimum of 128bit. The encryption used includes 3DES, SSL, WPA.

Image Acquisition

The vast majority of image acquisition is through DICOM standard. There was still the use of film scanning devices in a small but significant number of cases for general radiography.

Conclusions

Of the practices that responded to the request for technical information, there is general compliance with the technical standards. The quality control and calibration requirements have not been tested and have not been part of this process.

Cost Implications

The cost implications associated with the implementation of these standards are of little significance to those respondents.

The cost of ongoing QA has not been quantified here and may require review in the future.

Attachment 1: Survey Form