

## Position Statement

**Subject: Telepathology**  
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Telepathology, a type of telemedicine, is the process by which diagnostic pathology is performed on transmitted digital images that are viewed at a distant site on a display screen rather than by conventional light microscopy with glass slides. In addition to histo- and cytopathology specimens, telepathology may be used for examinations such as electron microscopy, blood films/ bone marrow morphology, immunofluorescence and microbiological assessment of cultures. At present in Australia, the main use for telepathology is for external quality assurance in anatomical pathology.

Limitations in telepathology include:

- quality of image accession for diagnostic purposes
- computer hardware specifications for image processing and display
- software interfaces for image manipulation
- network bandwidth for data transmission
- memory available for data storage
- encryption technology for data security

Rapid advances in enabling technologies are continuing to improve the speed at which image data can be acquired and viewed, and access to telepathology is growing as the costs of acquiring and maintaining the systems decreases. Fast computers, user-friendly software, secure and reliable information systems, archiving of image data used for diagnosis, and report delivery systems remain important components of any telepathology system.

It has been shown that diagnostic accuracy using virtual slides is comparable to conventional microscopy (RCPA QAP, 2008). Real-time remote robotic microscopy for diagnostic or frozen section assessment has high concordance with the accuracy of conventional pathology practice. However, diagnosis based on digital still microscopy suffers from operator field selection bias and telepathology based on transmitted video recordings is slower than conventional microscopy when assessment of the entire glass slide is required.

The benefits of telepathology include provision of a service in remote locations where employing a full-time pathologist may not be cost-effective or even possible; more rapid second or expert opinions on diagnostically difficult or unusual cases especially for pathologists working alone or in small practices; and in setting up virtual group practice models to manage pathologist shortages. Provided diagnostic accuracy and quality of pathological assessment can be maintained and provided there is adequate and appropriate opportunity for clinicopathological consultations and correlations, telepathology offers an important means by which the workforce shortages in pathology may be ameliorated.

Benefits of telepathology in education and training are currently being exploited worldwide on an increasing scale. These include sharing of interesting cases on the Web by digital still images or virtual slides, distribution of virtual slides as case material for workshops and

seminars, organising group viewing of virtual slides by participants in different locations and annotation of virtual slides for review, retrieval and training purposes. Telepathology has revolutionised teaching pathology in the medical school curriculum. Competency assessments and external quality assurance programmes are increasingly being based on use of virtual slides.

There are quality issues that must be considered when telepathology is being assessed for provision of a diagnostic pathology service. These include:

- credentialing of the pathologists involved and demonstrated maintenance of their diagnostic skills and knowledge through continuing professional development.
- the usual issues regarding conformity with strict protocols regarding specimen and patient identification,
- resolution and colour quality of images
- appropriate description of gross histopathology specimens and selection of appropriate tissue for microscopic examination
- quality of the staining and sections
- rapid access to histochemical or immunohistochemical staining, or deeper levels through the paraffin block, or in situ molecular testing
- acknowledgement that the digital image may not necessarily obviate retention of original clinical material for the purposes of subsequent or additional examination, especially where such examination requires further staining or molecular testing
- access to the clinicians to discuss case or obtain further clinical history
- access to the reporting pathologist for questions or clarifications regarding the report

In order to promote optimal benefits from the use of telepathology, the RCPA will:

1. promote telepathology through its website, journal, newsletters and conferences
2. include telepathology as a learning objective in the Fellowship curriculum
3. promote the need for Fellows and Trainees to have access to digital photo microscopy, fast computers with high-resolution monitors, and high speed Internet connections in the workplace
4. work with NPAAC and NATA to develop quality protocols so that telepathology services are provided using appropriate quality controls and quality assurance
5. promote the concept of, and funding for, diagnostic telepathology services in its interactions with governments, to assist in overcoming regional workforce shortages
6. advocate to governments to introduce broadband more widely