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RCPA
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Position Statement

Subject:	**Telepathology**
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Telepathology is the practise of pathology from a distance, where pathology images and data are electronically transmitted and analysed by a pathologist remotely for the purpose of diagnosis, education or research. There are a number of clinical applications of telepathology including, but not limited to, the remote interpretation and assessment of:

- Digital images of anatomical pathology and cytopathology slides;
- Tissue from surgical pathology using frozen sections;
- Microbiological cultures and microscopy images including parasitology, urine analysis, etc.;
- Digital images and/or data from Point-of-Care testing (PoCT) devices[1] (e.g. blood gas, clinical chemistry, toxicology, haematology, etc.);
- Digital images of peripheral blood and bone marrow films;
- Graphical data and/or data from automated differential haematology analysers; clinical chemistry analysers (e.g. gel electrophoresis); flow cytometry, molecular pathology and genomics devices that will generate large data sets to be analysed in distant laboratories with the relevant pathology/clinical expertise;
- Photographs and medical images in Forensic practice.
- Images of macroscopic surgical pathology specimens

The main drivers for a laboratory implementing telepathology for diagnostic use include:

- Recent technological advances have led to improvements in speed and cost-effectiveness of image scanners, data compression and storage, analysers, communication, etc.;
- Improvements in user friendliness of software and diagnostic tools;
- Improvements in the quality of scanned images
- Advances in technology for creation and viewing of histology, cytopathology and haematology WSI (whole slide images) which are z-stacked in entirety, better simulating current glass slides and microscope
- Introduction globally of evidence-based validation criteria for use of digital microscopy/telepathology
- Increasing evidence in the literature that digital microscopy is not inferior to traditional pathology for diagnostic accuracy
- The need for rapid access to patient's result data, clinical history and images;
- The ability to work remotely, this may assist geographically dispersed laboratories and pathologists, which is important due to pathologist shortages;
- Ease of sharing images or data files for collaboration such as for second opinions (internal and external), multi-disciplinary team, etc.;

- Improved tools for sharing interesting cases for education, research and quality assurance purposes.

Although there are a number of benefits for using telepathology, there still remains a number of challenges to be addressed before it can be adopted for diagnostic use in a pathology laboratory, these include:

- Network bandwidth, as significant bandwidth is required to handle the fast transfer of very large digital image files and data files;
- Ergonomic issues related to physical environment, software and navigational controls;
- Patient privacy issues when using laptops, smartphones, tablets and other devices for viewing digital images and data files, including issues relating to encryption of patient files;
- Credentialing of the pathologists involved and demonstrated maintenance of their diagnostic skills and knowledge through continuing professional development;
- Medico-legal issues with sharing digital images or data files between pathologists from different organisations or countries;
- Security of data with regards to access, distribution and the ability to copy or forward to other parties.
- Validation criteria for all components of the digital microscopy diagnostic workflow, although these criteria are being developed globally
- Addressing the digital microscopy issues that are specific to cytopathology samples, such as 3-dimensional cell groups and the diversity of specimen types in cytopathology that need to be dealt with e.g. FNA (fine needle aspirate) versus exfoliative-based specimens versus gynaecological cytopathology

The RCPA acknowledges the transformational potential of using digital microscopy systems for diagnosis, with the recent technological advances in digital microscopy systems, storage devices, and communication technology, and has recently developed guidelines for the safe implementation of digital microscopy into diagnostic laboratories in Australia, for anatomical pathology and cytology[2].

With the technology advances of devices that may be used in telepathology for other disciplines, the RCPA will continue to update these guidelines to ensure the appropriate evaluation and safe implementation of these into diagnostic laboratories. Additionally, in order to facilitate recognition of benefits from the use of telepathology, the RCPA will also:

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 microscopy, fast computers with high-resolution monitors, and high-speed communications in the workplace and facilitate the training opportunities, develop user and cost guidelines for this laboratory transition etc;
4. work with NPAAC and NATA to develop quality protocols so that telepathology services for diagnosis as well as quality assurance, research and education (both RCPA training as well as medical school) are provided using appropriate quality controls and quality assurance;
5. ensure that all Fellows are updated on relevant Privacy Act, the relevant security guidelines for transferring patient related data digitally and knowledge of data breach regulations.
6. promote the concept of, and appropriate funding for, diagnostic telepathology services in its interactions with governments;
7. advocate to governments to introduce broadband more widely.
8. support funding acquisition for research into accuracy and validation of telepathology

9. Encourage the introduction of telepathology as part of a clinical informatics component in medical school curricula

References:

1. RCPA Position Statement, Point of Care Testing. (2016)
2. RCPA, Guidelines for Digital Microscopy in Anatomical Pathology and Cytology. (2015)
3. RCPA Policy: Privacy Policy (2018)
4. RCPA Guideline: Managing Privacy Information in Laboratories (2018)
5. RCPA Position Statement: Pathologists working in isolation (2018)