



Submission to The Coal Workers' Pneumoconiosis (CWP) select committee

About The Royal Australian and New Zealand College of Radiologists

The Royal Australian and New Zealand College of Radiologists (RANZCR) is the peak body advancing patient care and quality standards in the clinical radiology and radiation oncology sectors. It represents over 4,000 members in Australia and New Zealand. RANZCR's role is to drive the appropriate, proper and safe use of radiological and radiation oncological medical services.

This includes supporting the training, assessment and accreditation of trainees; the maintenance of quality and standards in both specialties, and workforce mapping to ensure we have the staff to support the sectors in the future.

Clinical radiology relates to the diagnosis or treatment of a patient through the use of medical imaging. Diagnostic imaging uses plain X-ray, computerised tomography (CT), magnetic resonance imaging (MRI), ultrasound and nuclear medicine imaging techniques to obtain images that are interpreted by a radiologist to aid in the diagnosis of disease. In addition to their diagnostic role, clinical radiologists also use imaging equipment to plan and guide treatments (interventional radiology).

Clinical radiologists are medical practitioners who have undertaken broad medical training as well as comprehensive specialist training in performing and interpreting diagnostic imaging tests and performing imaging-guided procedures or treatments.

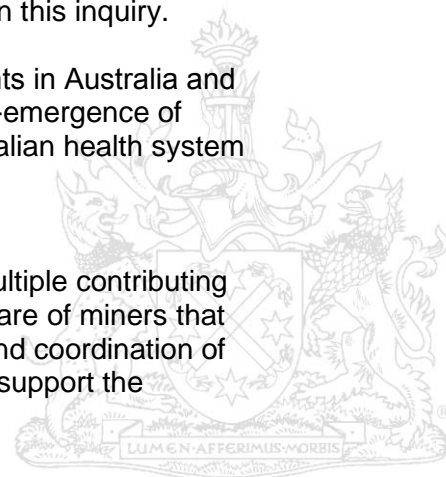
The radiologist works closely with two other members of the medical imaging team – the radiographer and the medical physicist. A radiographer is a health professional who uses medical imaging to capture high quality images for the diagnosis of injury or disease. A medical physicist is involved in the quality control of imaging systems including equipment performance and control of radiation hazards.

Introduction

RANZCR welcomes the inquiry by The Coal Workers' Pneumoconiosis (CWP) select committee. Coal workers pneumoconiosis is a serious disease that has significant consequences for a patient and their family. The re-emergence of CWP is an important issue for our community and we look forward to participating fully in this inquiry.

RANZCR's first and foremost consideration is the welfare of patients in Australia and New Zealand. RANZCR is keen to contribute to ensure that the re-emergence of pneumoconiosis is managed in a sustainable way within the Australian health system with patients able to access the care they need.

The Federal Senate Inquiry and Monash Report have identified multiple contributing causes and a number of gaps in the system relating to the healthcare of miners that include dust levels in the mines, medical testing, record keeping and coordination of examination results. RANZCR has already stated publicly that we support the recommendations of the Monash Report.



This submission from RANZCR emphasises the vital role that clinical radiology plays in the early detection of coal miners' lung disease and has been put together with regard to the terms of reference outlined on the Queensland Parliament website¹. It largely focuses on the role of clinical radiologists in the detection and treatment of CWP and makes suggestions for implementation of an effective screening process.

Radiology in Context

Clinical radiologists are medical practitioners who have undertaken broad medical training as well as comprehensive specialist training in performing and interpreting diagnostic imaging tests and imaging-guided procedures or treatments.

The radiology training program is a five year specialty program undertaken following graduation from a medical school and after completion of two years as a resident. The RANZCR training program is a generalist training program designed to educate trainees across all areas of radiology practice.² This means that on graduation from the RANZCR training program, radiologists have undertaken at least 12 years of study. In addition, many fellows undertake further sub-specialty training following completion of the training program.

Viewing radiology in its clinical context is critical to understanding the role that radiology plays in diagnosis. Generally speaking, a radiologist assists other doctors to treat their patient by making a diagnosis based on imaging. The radiologist utilises the clinical information provided by the referring doctor, the imaging acquired and their own medical expertise to provide a diagnosis and opinion for the patient.

There are notable differences in the provision of day to day radiology and diagnosis compared to a screening program designed for a known at risk population. The early signs of CWP in a patient's lungs are subtle and appear like a variety of other lung conditions. If a patient attends for a chest X-ray without any history of dust exposure noted in the referral, in normal day to day practice those appearances would be identified as emphysema, bronchitis, sarcoidosis, atypical infection or malignancy, all more probable than CWP. On the other hand, in a screening program for miners and former miners those early signs of CWP would be classified as an abnormality which might be CWP, requiring further investigation.

Identification of mild simple CWP in the absence of occupational history or the explicit understanding that the study is for pneumoconiosis screening is simply not achievable, and may go a long way to accounting for underreporting of true cases in recent times.

In the screening setting, it is appropriate that potential early cases are flagged and subsequently assessed in order that true cases of early disease are picked up. This is the case with American screening and would be entirely appropriate in the Australian setting as the planning for an integrated screening system evolves.

It is also important to note that a diagnosis of CWP cannot be made solely on the basis of a screening X-ray. Other medical input and information is necessary to form a diagnosis. This is important given that the consequences of a false positive diagnosis for a patient include distress and financial repercussions.

¹ <https://www.parliament.qld.gov.au/work-of-committees/committees/CWPSC/inquiries/current-inquiries/CWPSC>

² The RANZCR training program and curriculum are accredited by the Australian Medical Council.

Screening and Early Detection of CWP

A comprehensive screening program is a critical component of management of coal workers pneumoconiosis.

Queensland has not had a genuine screening program in place for CWP exposure. It is clear that the screening process in the past has neither been rigorous nor effective in capturing the re-emergence of CWP. The Monash Report thoroughly covered the deficiencies in the system.

As noted above, the early radiographic signs of CWP are subtle but it is vital for the protection of miners that they be referred with appropriate history so that potential abnormalities may be detected and reported in the correct context.

The work of a clinical radiologist does not exist in isolation from the broader health system. Radiologists rely on clinical information provided by the referring practitioner, quality image capture by other members of the medical imaging team and communication with other relevant health practitioners. A thorough and effective health screening process involves the proper operation of every part of this chain.

In order to ensure that the screening program is working effectively, the following points are essential to incorporate in the pathway:

Referral

- Appropriate clinical information must be included on referral forms, specifically including past medical history including any respiratory illness, occupational history and smoking history. Radiologists rely on this information when detecting abnormalities due to dust exposure. There has been inconsistent clinical history provided in the past, for example X-rays have been labelled as for clearance for general employment, rather than as screening for a person who has been working in the mines for a number of years. In some instances no clinical information was provided. This has meant that radiologists were not provided with proper patient history and were restricted in their ability to provide a full diagnosis.

Image Acquisition

- The X-ray should be taken by a qualified radiographer or any other appropriately trained health professional that is licensed and registered to take radiographs in relevant jurisdictions. The quality of an image is absolutely critical. An inferior image will impair the radiologist's ability to interpret the image. RANZCR notes that coal mines are often located in remote areas and some travel may be required to ensure appropriate image acquisition.
- The machine used to capture the images must meet the appropriate standards including those under the Diagnostic Imaging Accreditation Scheme (DIAS) and the RANZCR Standards of Practice for Diagnostic and Interventional Radiology Version 10.1.

Reporting

- It is critical that a clinical radiologist always be sent the X-ray for reporting. It appears that in the past, X-rays were not always sent to a radiologist and may have been reviewed by other medical practitioners such as the nominated medical adviser. Only a clinical radiologist has undertaken specialist training in interpreting diagnostic imaging tests.

- Professional supervision and reporting of X-rays is a highly advanced skill which requires medical qualifications, specialist understanding of anatomy, pathology and clinical medicine and considerable experience in this area in order to detect CWP.
- Clinical radiologists are the only clinicians adequately trained to protocol and supervise image acquisition. They also integrate knowledge about anatomy, physiology, pathology and clinical medicine with the clinical setting of the patient and the imaging findings to provide an expert medical specialist opinion and associated recommendations. In the setting of CWP screening, assessment is somewhat different but needs to be accurate, comprehensive and to have low inter-observer variability.

In the future, a best practice screening program must be established in Queensland to capture all cases of CWP. The BreastScreen program may serve as a model for consideration. Additional features of best practice screening programs include:

- Training for participating radiologists on induction. For example, the BreastScreen screening program requires induction style training for reporting radiologists. The NIOSH program in the USA requires the b-reader certification.
- Double reading by two experienced radiologists, with a third radiologist to review if there is a difference of interpretation between the first two.
- Ongoing audit of patient and screening program outcomes with feedback regarding radiologist performance. This allows the participating radiologists to receive feedback, make refinements and where needed improve their performance within the screening program.
- Central collation of data and previous images for comparison purposes.

RANZCR believes that ongoing feedback to participating radiologists is the most important aspect of a properly functioning screening program.

Conclusion

Thank you for the opportunity to make a submission to this inquiry. RANZCR looks forward to assisting in any way we can to incorporate best practice screening for miners in Queensland.

As outlined above, RANZCR believes that clinical radiology will play an important role in combating this disease through early detection and treatment. For further information please also refer to RANZCR's submission to the Senate Health Select Committee Inquiry into the re-emergence of pneumoconiosis³.

For further information please contact RANZCR's Senior Project Officer, Kate Scott-Murphy

The Royal Australian and New Zealand College of Radiologists

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³ Available on the RANZCR website: <http://www.ranzcr.edu.au/advocacy/submissions>