Coal Mine Dust Lung Disease – Fact sheet for GPs

Since May 2015, there have been six confirmed cases of coal workers’ pneumoconiosis (CWP), one form of coal mine dust lung disease (CMDLD), reported among former and current Queensland coal mine workers, and the outcome of another suspected case is still pending. The Queensland Department of Natural Resources and Mines (DNRM) has commissioned an independent review of the respiratory component of the coal mine workers’ health scheme, including an interim strategy to detect and manage further CMDLD cases. This fact sheet contains information for General Practitioners about CMDLD, to assist in the assessment and management of such cases. Due to the high media interest in this issue, many coal miners in Queensland are likely to be worried about their respiratory health and seek advice from their GP.

Summary

- Coal miners occupationally-exposed to respirable coal mine dust over several years are at risk of developing CMDLD, which includes CWP, emphysema, chronic bronchitis, and lung function impairment.
- CMDLD should also be considered in former coal miners, such as retirees and ex-industry employees, who present with significant respiratory symptoms. These diseases develop gradually, usually after at least 10 years of exposure, however in sensitive miners or in cases of intense exposure symptoms may occur sooner.
- Typical symptoms of CMDLD include cough, sputum production, and shortness of breath, however individuals with early disease may be asymptomatic but may have detectable chest x-ray or spirometry findings.
- Early detection of CMDLD is based on chest imaging and lung function testing, usually with plain chest radiography and spirometry, along with careful evaluation of respiratory symptoms.
- Individuals who are or have been coal mine workers and are suspected of having CWP should be referred to a Respiratory and/or Occupational physician for further assessment.

About Coal Mine Dust Lung Disease

CMDLD is the broad term for diseases caused by coal mine dust exposure, and comprises a group of occupational lung diseases that result from the cumulative inhalation of respirable coal mine dust over several years. Coal miners are at risk of developing these diseases, which include pneumoconioses (coal workers’ pneumoconiosis, silicosis, and mixed dust pneumoconiosis). Pneumoconiosis is a disease of the lung parenchyma caused by deposition of dust particles, and the reaction of lung tissue to the dust. Emphysema, chronic bronchitis, lung function impairment, and diffuse dust-related fibrosis are other manifestations of the disease.

Coal workers’ pneumoconiosis, the form of disease identified by chest imaging, can be further classified by severity: simple CWP which may be category 1, 2, or 3 reflecting increasing profusion of scars seen on chest imaging. The more severe stage of the disease known as complicated CWP or
progressive massive fibrosis (PMF) is diagnosed when a scar is greater than one cm in diameter. The likelihood of CWP development is directly related to the intensity and duration of exposure to coal mine dust. The disease typically occurs after at least 10 years of exposure, and the risk of disease persists after exposure has ceased.

Under the current Queensland Coal Mine Workers’ Health Scheme, all coal mine workers are required to undergo a medical assessment prior to the start of their employment at a coal mine, and then at least once every five years during their employment. Employees identified as at risk from dust exposure, in particular underground coal miners are also required to undertake chest x-rays as part of their health assessments. Given the long latency between exposure and disease occurrence, the population at risk extends to previous employees including retired coal miners and coal miners who have transferred to other industries.

Coal workers’ pneumoconiosis was thought to have been eradicated from Australia, with no new cases having been reported for many years. In light of the recent CWP cases increased vigilance is required among treating doctors, in particular GPs, to identify individuals with early stages of CWP.

**Symptoms**

Individuals with early-stage CWP are often asymptomatic, however typical symptoms of CWP (and other CMDLD) include cough, sputum production, wheezing, and shortness of breath. Progressive massive fibrosis is a debilitating and life-threatening condition, and individuals may present with more severe symptoms. Emphysema, chronic bronchitis and lung function impairment are well described adverse health outcomes of coal mine dust exposure and have the same presentation seen when caused by tobacco smoke exposure. The toxicity of tobacco smoke and coal mine dust are roughly equal in potency, and result in an additive effect.

**Investigations**

Detection of CMDLD requires identification of relevant occupational exposure history and evaluation of respiratory symptoms, as well as chest imaging and lung function testing, which usually includes plain chest radiograph and spirometry. Chest imaging is interpreted using International Labour Office (ILO) criteria. CWP is a more complex disease to diagnose, and suspected cases should be referred to specialist Respiratory or Occupational physicians for assessment and management.

There is currently no effective treatment for coal workers’ pneumoconiosis, and emphasis is therefore on early detection of asymptomatic or early-stage disease, and advice to avoid further exposure to coal mine dust and other respiratory hazards including smoking cessation.

**Further information**

A list of radiology clinics reporting chest x-rays to the ILO classification has also been compiled. This list can be accessed on DNRM’s webpage, and will be regularly updated. See [https://www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/medicals/coal-board-medical/pneumoconiosis-screening](https://www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/medicals/coal-board-medical/pneumoconiosis-screening)

**Reference**