

Chapter

1. Asbestos Exposure Assessment, Risk Identification, and Substitutes

Section

C. Epidemiology of ARDs

No./Title

10. Projected mesothelioma incidence in men in New South Wales

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Introduction

Asian context

Asian countries should also apply statistical models for future projection of mesothelioma in due consideration of available data (type and timeframe). Prediction of future mesothelioma cases will be required in Asian countries because asbestos has been used widely in this region.

Critical appraisal

Two separate models for future projection of mesothelioma incidence were applied and compared, producing similar and thus reasonable results. Authored by UOEH researchers.

Unique keywords

Prediction, model, male, mesothelioma

Abstract

Objectives: Based on observed numbers of incident mesotheliomas since 1972, to predict future numbers in men in New South Wales.

Methods: The incidence of mesothelioma was modeled in two ways. First by using an age/birth cohort model, and second by using a model based on potential exposure to asbestos in terms of age and calendar year. The latter model included a term for clearance of asbestos fibers from the lungs, and a term for diagnostic fraction. The age and calendar year model was based on the model introduced by Hodgson and colleagues but replaced piecewise effects by smooth functions represented by cubic splines.

Results: The number of mesotheliomas between 2004 and 2060 was predicted as 6,690 with the age-cohort model and as 6,779 by the age and calendar year model, with peak annual numbers of 187 in the year 2021 and 196 in the year 2014 with the two models respectively.

Conclusions: The pattern of parameter estimates in the two models was in accord with the known use of amphibole asbestos in Australia. The predicted peak year of 2014-21 is 30-35 years after the phasing out of amphibole use, and this period is in accord with predictions for the UK and the US; in the latter country the peak was 10-15 years earlier corresponding to a marked decline of amphibole use in and following the 1960s.



Annotation

Fact 1

- The total number of male mesothelioma incident cases in New South Wales (NSW), Australia during 1972 to 2002 was 2,461, with an age range of 22-97 years.

Fact 2

- The age and birth cohort model (Model 1) gives a predicted future number of male mesothelioma cases in NSW for 2004-2060 of 6,690 with a peak annual incidence of 187 in 2021.

Fact 3

- The age and calendar year model (Model 2) predicted 6,779 (95% CI; 5,243-9,431), with a peak of 196 cases in 2014.

Fact 4

- Future predicted mesothelioma incidence is useful to establish health service plan to potentially contribute to public and product liability.

Fact 5

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References