The [GREAT] Australian Mortality Decline

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Mortality analysis: comments on methods from an epidemiological perspective

1. Purpose
To aid in the interpretation of cross-sectional analyses of magnitude of level and cause of mortality (by age and sex) by the addition of secular trends to assess possible causes and effects of interventions for major diseases and the effects of age or cause specific mortality on total premature mortality

2. Study Type
Longitudinal aggregate analyses with comparison of mortality trends with the introduction or trends in putative causes or control measures

3. Bias
Measurement bias: under enumeration of deaths is often a problem
Selection bias: ensure complete inclusion of study populations

4. Confounding
Stratification by sex, Province/State, other variables
Age adjustments for change in age structure over time
Poisson regression for count data using multiple strata
Cardiovascular disease mortality for Australia, aged 35-79 years (age standardised) 1935-2005

Age specific CVD mortality rates (less RHD)
Australia 1935-2005

Coronary heart disease (CHD) mortality age 35-74 years per 100,000 and life expectancy at birth in New Zealand

Plateau in life expectancy in males during the late 1950s and 1960s at the height of the epidemic of CHD mortality
Resumption of increase in life expectancy from 1970 with decline in CHD mortality
Coronary heart disease (CHD) mortality age 35-74 years per 100,000 and life expectancy at birth in USA

Plateau in life expectancy in males during the 1950s and 1960s and in females during the late 1950s and 1960s at the height of the epidemic of CHD mortality

Resumption of increase in life expectancy from 1970 in both sexes with decline in CHD mortality
Coronary heart disease (CHD) mortality age 35-74 years per 100,000 and life expectancy at birth in Australia

Plateau in life expectancy in both males and females during the late 1950s and 1960s in males and during the 1960s in females at the height of the epidemic of CHD mortality.

Resumption of increase in life expectancy from 1970 in both sexes with decline in CHD mortality.
IHD and Stroke mortality by area (LGA) SES 35-74 yrs DASR Australia 1979-2006

Population proportions: Low SES 20%; Mid SES 60%; High SES 20%

Estimates of IMR in Aboriginals compared to other Australians


Figure 3 Australian infant mortality rates for Aboriginals and all Australia. By period, 1900-2010 (a) and 1990-2010 (b).
Lung cancer incidence and mortality in NSW 1972-2008

NSW Cancer Institute