Mesothelioma in Great Britain 2014

Mesothelioma mortality in Great Britain 1968-2013

Contents

Summary

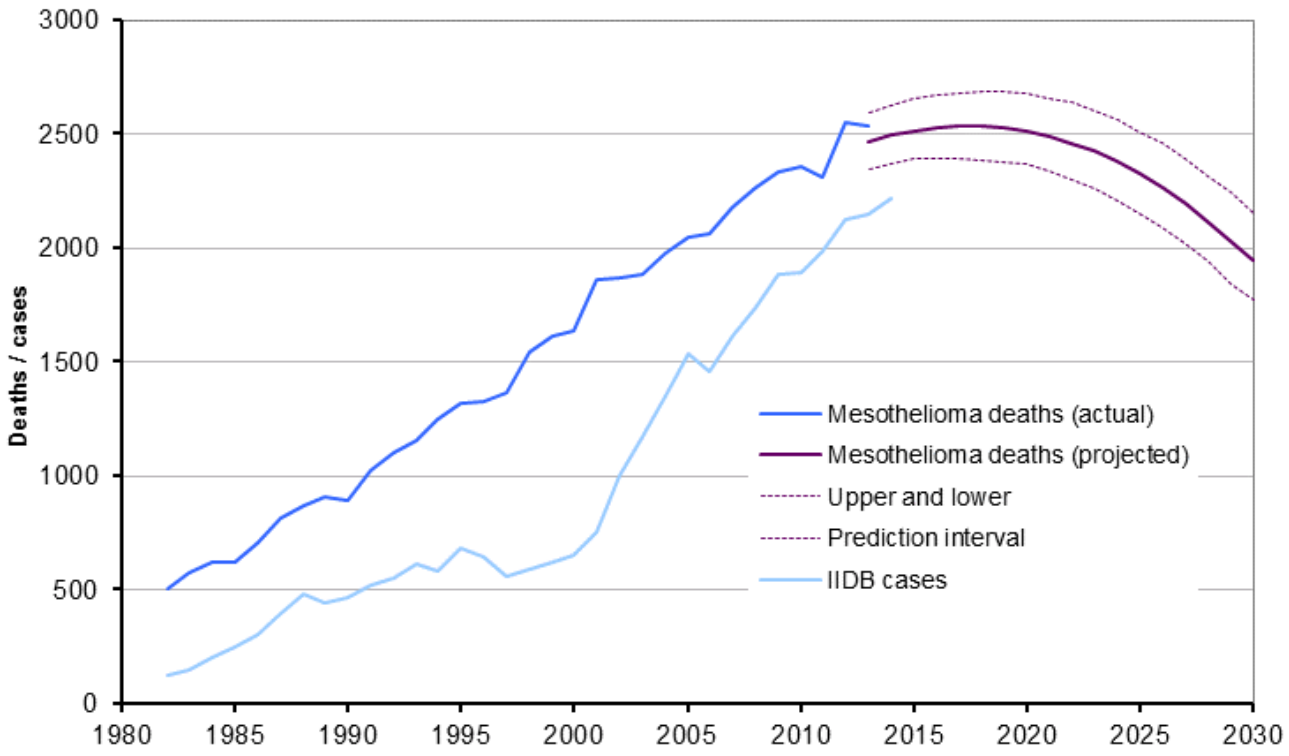
The information in this document relates to Health and Safety Statistics published by the Health and Safety Executive in 2015.The document can be found at: www.hse.gov.uk/statistics/causdis/mesothelioma/

Most mesothelioma deaths occurring now are a legacy of past occupational exposures to asbestos when it was widely used in the building industry.

The latest information shows:

- There were 2,538 mesothelioma deaths in Great Britain in 2013, a similar number to the 2,548 deaths in 2012, but substantially higher than the 2,312 deaths in 2011.
- The latest projections suggest that there will continue to be around 2,500 deaths per year for the rest of this current decade before annual numbers begin to decline.
- The continuing increase in annual mesothelioma deaths in recent years has been driven mainly by deaths among those aged 75 and above.
- In 2013 there were 2,123 male deaths and 415 female deaths.
- There were 2,215 new cases of mesothelioma assessed for Industrial Injuries Disablement Benefit (IIDB) in 2014 compared with 2,145 in 2013.
- Men who worked in the building industry when asbestos was used extensively are now among those most at risk of mesothelioma.

Figure 1 – Mesothelioma annual deaths, IIDB cases and projected future deaths to 2030 in GB



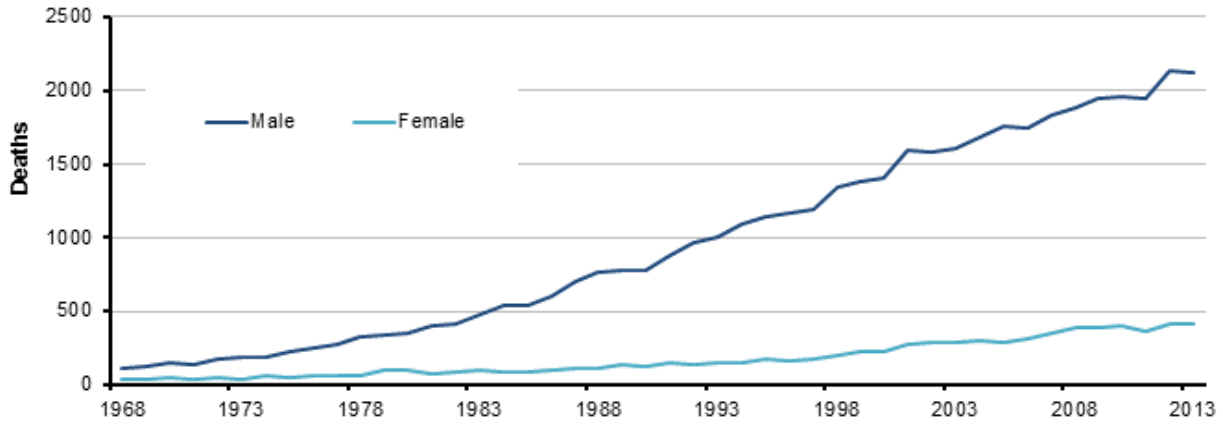
Introduction

Mesothelioma is a form of cancer that principally affects the pleura (the external lining of the lung) and the peritoneum (the lining of the lower digestive tract). Many cases of mesothelioma are diagnosed at an advanced stage as symptoms are non specific and appear late in the development of the disease. It is almost always fatal with most of those affected usually dying within twelve months of diagnosis. Mesothelioma has a strong association with exposure to asbestos and current estimates suggest that around 85% of all male mesotheliomas are attributable to occupational asbestos exposures. Most deaths occurring now are a consequence of the long latency period (i.e. the time between initial exposure to asbestos and the manifestation of the disease) which is typically between 30 and 40 years.

Overall scale of disease including trends

The annual number of mesothelioma deaths in Great Britain has increased from 2,312 in 2011 to 2,548 in 2012 and 2,538 in 2013. See Table MESO01 www.hse.gov.uk/statistics/tables/meso01.xlsx. There were 2,123 male deaths and 415 female deaths in 2013. Figure 2 shows the number of male and female deaths from mesothelioma from 1968 to 2013. The higher proportion of mesothelioma deaths among men is largely due to high levels of asbestos exposure in male dominated occupations many years ago.

Figure 2 – Male and female mesothelioma deaths 1968-2013(p)

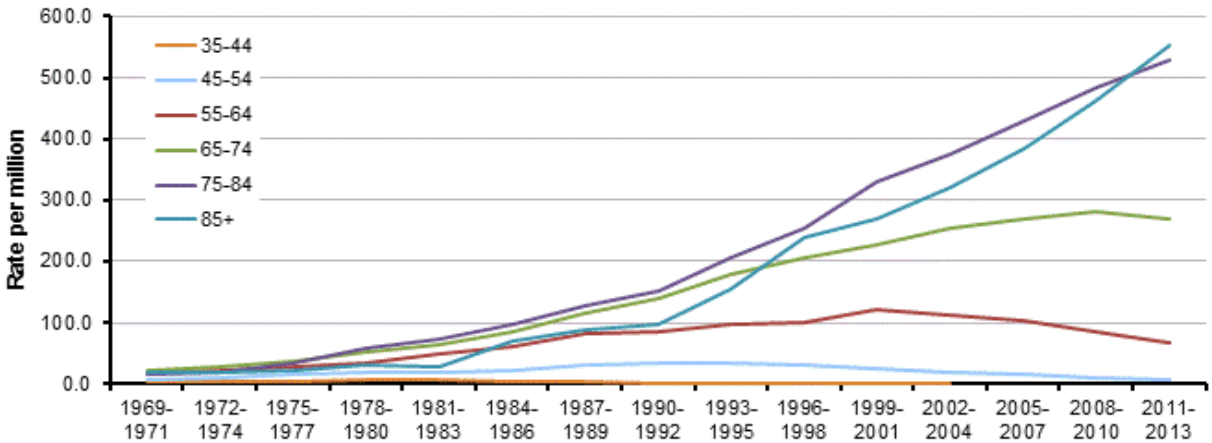


(p) Provisional.

Table MESO02 www.hse.gov.uk/statistics/tables/meso02.xlsx shows the number of mesothelioma deaths in each year in 5-year age groups for males and Table MESO03 www.hse.gov.uk/statistics/tables/meso03.xlsx shows the number of mesothelioma deaths in each year in 5-year age groups for females.

Table MESO04 www.hse.gov.uk/statistics/tables/meso04.xlsx shows the number of mesothelioma deaths and death rates by age, sex and three-year time period from 1969-2013. Death rates for males are shown in Figure 3(a). There are large differences in the magnitude of the rates between the different age groups for males. Men aged 75 and over have the highest rates and these continue to follow an upward trend over time. For those aged 65-74 rates have increased steadily since 1968 but have fallen in recent years. In the 55-64 year age group the increase in the rate over time has generally not been as steep as for older age groups, and rates have continued to fall after reaching a peak in 1999-2001. After an increasing trend in the earlier time periods, rates in the 35-44 and 45-54 year age groups now show a downward trend with rates falling from the mid 1990s. This pattern of increasing death rates in older age groups and decreasing rates in younger age groups over time is consistent with an epidemic as it approaches its peak.

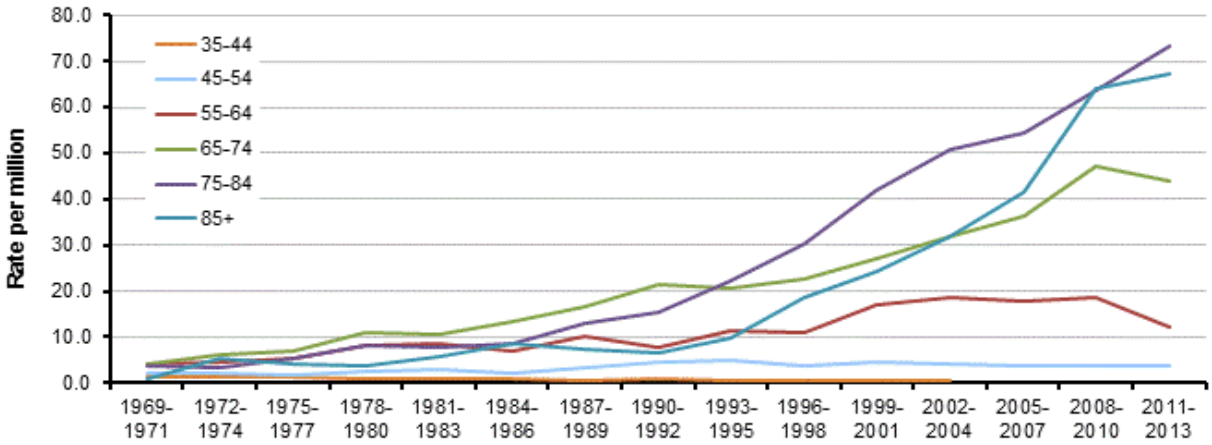
Figure 3(a) – Male mesothelioma death rates by age and time period 1969-2013(p)



(p) Provisional.

Death rates for females are shown in Figure 3(b). Although the age-specific rates for females are generally an order of magnitude lower than for males, similar patterns are evident, though with greater year-on-year fluctuations due to the smaller numbers of deaths. However, there is some suggestion that the rates in the 45-54 and 55-64 year age groups have not reduced as strongly in women as in men and this may be due to a smaller proportion of female cases being caused by distinct occupational sources of exposure which ceased many years ago.

Figure 3(b) – Female mesothelioma death rates by age and time period 1969-2013(p)



(p) Provisional.

Region

Table MESO05 www.hse.gov.uk/statistics/tables/meso05.xlsx shows age standardised mesothelioma death rates per million by 3-year time period, government office region and sex. The period 2011-2013 was taken as the base for standardisation over time and Great Britain for standardisation over region. Thus the standardisation allows for changes in the age-structure of the underlying population over time and between regions.

In Great Britain mesothelioma death rates for both males and females follow an upward trend over time - reaching 68.2 and 12.7 deaths per million respectively in 2011-2013 compared with 24.6 and 3.3 in 1984-1986. Overall for males, upward trends were evident in the rates over the period for all regions, although rates have fallen in the most recent 3-year period in the East Midlands, London, South East, Wales and Scotland. There is some evidence that rates for the different regions are converging over time. Regions with the lowest rates in earlier periods tend to increase most, and those with higher rates increase to a lesser extent. Although the numbers of cases are much smaller for females and so the pattern in the rates over time is more erratic, an upward trend is fairly clear in all regions.

More detailed analyses of mesothelioma deaths in Great Britain by geographical area can be found in the section Fact sheets on mesothelioma below.

Occupation

Mesothelioma death statistics for males and females and relative mortality for different occupational groups in 2002-2010 are available in the fact sheet Mesothelioma Occupation Statistics – male and female deaths aged 16-74 in Great Britain (see below). The analysis shows that a number of occupations associated with the construction industry – such as carpenters, plumbers and electricians – are recorded much more frequently than expected on death certificates of men now dying from mesothelioma. This highlights the effect of past occupational asbestos exposures due to the use of asbestos containing materials in the construction industry.

A recent epidemiological study of mesothelioma in Great Britain [1] confirms the high burden of disease among former building workers. However, it also shows that occupational analyses of national mesothelioma deaths – which are based on only the last occupation of the deceased as recorded on death certificates – will tend to underestimate the proportion of male mesothelioma deaths that are attributable to asbestos exposures in the construction industry. The epidemiological study suggests that about 46% of currently occurring mesotheliomas among men born in the 1940s would be attributed to such exposures, with 17% attributed to carpentry work alone. A key factor in causing the higher risks now seen in these former workers appears to be the extensive use of insulation board containing brown asbestos (amosite) within buildings for fire protection purposes.

Occupational analyses of female mesothelioma deaths are more difficult to interpret because a lower proportion is caused directly by occupational exposures. Occupations are recorded on death certificates as a matter of course, and so inevitably there are various occupations that are recorded in appreciable numbers on female mesothelioma death certificates. However, these occupations are recorded with the frequency expected if in fact there was no difference in risk between occupational groups. This suggests that where exposure to asbestos did occur at work – for example, due to unwitting exposure caused by others working with asbestos in the vicinity – it was no more likely in any particular occupational group.

The recent epidemiological study supports this view. It suggests that only a minority (around a third) of mesotheliomas in women are a result of either occupational or domestic exposures. This, together with the fact that deaths among women have also increased over the last 4 decades, implies that there has been an increase in the average background mesothelioma risk among both older women (and men) due to exposures that are not readily identifiable. Such exposures could have taken place in a wide variety of settings during the 1950s, 1960s and 1970s when asbestos was being widely used within the building industry.

Further details about mesothelioma and occupation are available at:

www.hse.gov.uk/research/rrhtm/rr696.htm

Estimation of the future burden of mesothelioma deaths

In 2011, the total number of mesothelioma deaths fell for the first time in many years before increasing again substantially in 2012 with a similar figure in 2013.

Updated projections of total annual mesothelioma deaths which incorporate the latest data to 2013 suggest there will continue to be around 2,500 deaths per year for the rest of this current decade before annual numbers begin to decline – see table MESO06 www.hse.gov.uk/statistics/tables/meso06.xlsx. These updated projections are very similar to previous projections based on deaths occurring up to and including year 2010. The fact that the actual number of deaths in 2012 and 2013 is already similar to that expected in the predicted peak year of 2018 is not surprising given that counts of actual deaths will tend to fluctuate year-on-year due to random variation, whereas the projections describe the expected future mortality as a smooth curve.

The projections for the total number of annual deaths are in fact derived from separate analyses of deaths among men and women. While the overall numbers are dominated by the expected pattern in men, these separate predictions suggest that the peak among females will occur later than in males – i.e. well beyond 2020 – at a level of about a quarter of the male peak. However, the female projections are more uncertain due to the smaller number of deaths than in males.

The statistical model used for these projections provides a reasonable basis for making relatively short-term predictions of mesothelioma mortality in Britain, including the extent and timing of the peak number of deaths. However, longer-term predictions comprise two additional sources of uncertainty which are not captured within the published uncertainty intervals for the annual number of deaths. Firstly, the long term projections beyond 2030 are particularly dependent on assumptions about certain model parameters for which there is no strong empirical basis – and in particular, the extent of population asbestos exposure beyond the 1980s. The second source of uncertainty relates to the specific mathematical form of the models we have used. Whilst they provide a good fit to observations of mortality to date, they are influenced by the fact that deaths to date are still dominated by the effects of heavy past occupational exposures; it is not clear whether the models will be valid for different patterns of exposure in more recent times.

The statistical model used in the latest predictions is described in detail at:

www.hse.gov.uk/research/rrhtm/rr728.htm

This model was updated for males and females separately using mesothelioma mortality data for 1968-2013 in order to produce the latest projections for 2014 and beyond. An earlier project to investigate alternative models was published in 2011 and is available at:

www.hse.gov.uk/research/rrhtm/rr876.htm

Fact sheets on mesothelioma

The following statistics show how mesothelioma rates for geographical areas and occupational groups compare with the average for Great Britain:

- Mesothelioma Mortality in Great Britain by Geographical area, 1981 – 2011 www.hse.gov.uk/statistics/pdf/mesoarea1981to2011.pdf
- Mesothelioma deaths – the latest picture for Great Britain: Geographical analysis 1981 – 2005 and Occupational analysis 2002 – 2005 www.hse.gov.uk/statistics/pdf/mesojune08.pdf
- Mesothelioma mortality in Great Britain: an analysis by geographical area, 1981-2000 www.hse.gov.uk/statistics/pdf/area8100.pdf
- Mesothelioma area statistics: county districts in Great Britain 1976-1991 www.hse.gov.uk/statistics/pdf/cd7691.pdf

The following occupational statistics show how the mesothelioma rates for different occupations compared with the occupational average for Great Britain:

- Mesothelioma Occupation Statistics – male and female deaths aged 16-74 in Great Britain 2002-2010 www.hse.gov.uk/statistics/causdis/mesothelioma/mortality-by-occupation-2002-2010.pdf

- Mesothelioma occupation statistics for males and females aged 16-74 in Great Britain, 1980-2000 www.hse.gov.uk/statistics/pdf/occ8000.pdf

Relevant scientific publications on mesothelioma

1. Rake C, Gilham C, Hatch J, Darnton A, Hodgson J, Peto J. (2009). Occupational, domestic and environmental mesothelioma risks in the British population: a case control study. British Journal of Cancer; 100(7):1175-83.
2. Hodgson JT, McElvenny DM, Darnton AJ, Price MJ, Peto J. (2005). The expected burden of mesothelioma mortality in Great Britain from 2002 to 2050. British Journal of Cancer; 92(3): 587-593.
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5. Hutchings S, Jones J, Hodgson J (1995). Asbestos-related diseases. In: Drever F (ed). Occupational Health: Decennial Supplement. London: Her Majesty's Stationery Office: 127-152.
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7. Peto J, Hodgson JT, Matthews FE, Jones JR (1995). Continuing increase in mesothelioma mortality in Britain. Lancet 345(8949): 535-9.
8. Jones RD, Smith DM, Thomas PG (1988). Mesothelioma in Great Britain in 1968-1983. Scandinavian Journal of Work Environment & Health 14(3): 145-52.
9. Greenberg M, Lloyd Davies TA (1974). Mesothelioma register 1967-68. British Journal of Industrial Medicine 31(2): 91-104.

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Additional data tables can be found at www.hse.gov.uk/statistics/tables/

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Last Update: October 2015

Next Update: July 2016

First published 10/15.