Department of Health & Human Services

Health Protection Branch

Project brief: Updating Age-standardised Latrobe Valley mortality report

Background

On 7 February 2014 a grass fire, believed to have been deliberately lit, started burning in the Morwell region. On 9 February 2014 this fire spread to disused areas of the coal mine at the Hazelwood power station complex near Morwell in the Latrobe Valley. The fire was unusual in two important respects:

- the substrate for the fire was brown coal, rather than vegetation;
- the fire burned at the same location and intermittently exposed the adjacent town of Morwell to smoke for approximately six weeks.

The fire was brought under control and the mine was handed back to its owners on 25 March 2014.
During the time of the fire the region experienced periods of high levels of smoke which impacted on local air quality.

Many Morwell citizens and other residents of the Latrobe Valley were adversely affected by the fire and vulnerable residents were urged to relocate until air quality improved. A large number of people reported having respiratory and other health-related problems as a result of the conditions.

On 11 March 2014, the former Premier of Victoria announced an independent inquiry into the circumstances of the Hazelwood mine fire, including the emergency response and the support provided to Morwell residents and other affected communities.

An interim report on the health impacts of the fire was prepared for the Board of Inquiry and included an analysis of a range of health service data. However, the report did not include any analysis of deaths in the region during the period of the fire.

The Board of Inquiry provided its final report, including 18 recommendations, to the Governor of Victoria on 29 August 2014. The report was tabled in Parliament on 2 September 2014.

The Hazelwood Mine Fire Inquiry officially closed its office on Friday, 5 September 2014.

The Victorian Government has announced its intention to reopen the Hazelwood Mine Fire Inquiry, with the express purpose of determining whether excess deaths occurred as a result of the fire. The formal terms of reference relating to this have not yet been released.

Key issues

The Department is seeking assistance in updating the draft report: *Age-standardised mortality and cause of death in the Latrobe Valley at the time (and five years prior) of the Hazelwood coalmine fire in Morwell, Victoria,* Flander, Ouakrim, Dashti and Ugoni, 2015 (unpublished). The Department will provide air quality and temperature data for the period January 2009 to December 2014 so that mortality statistics from the period of the Hazelwood coalmine fire can be reviewed. Using this information, the following questions should be answered:

- Were there excess deaths in the area/s affected by smoke from the coalmine fire, and adjacent areas, ie the four postcodes 3840 (Morwell), 3842 (Churchill), 3825 (Moe) and 3844 (Traralgon)?
- If there were a statistically significant excess of deaths, could these be reasonably attributable to the Hazelwood coal mine fire and the smoke emitted or to extreme heat days (as indicated by daily mean temperature data)?

The Department seeks to build upon the draft report in the following ways:

- Temperature data and air quality/particulate matter are to be built into the updated report. Factors such as the January 2014 Victorian heatwave event should be considered as a discussion point, as it alone was estimated to have resulted in 167 excess deaths across Victoria. This heatwave event could have impacted the morbidity/mortality data within the above postcodes. See also the next dot point regarding temperature data.

- The draft report noted that all-cause mortality and smoke-exposure-related mortality were examined for the study periods in the absence of comparable air quality and temperature records for 2009-13. To assess comparable air quality data for 2009 to 2013, there is one air monitoring station in the Latrobe Valley that has consistently operated over the study period (ie from 2009 to 2014), at Traraglon, measuring PM10 fine particles. This may be the most useful dataset to assess comparable air quality data. This data will be provided by the Department.

  The temperature data from 2009-14 will be provided by the Department. When controlling for temperature, mean temperature should be used, and mean temperatures above the heat health threshold for the region (30 degrees Celsius) are the relevant data. The Department notes that in his papers, Barnett states that temperature was controlled for, but does not state whether minimum, maximum or mean temperatures were used.

- The draft report discussed the issue of small datasets; for the updated report, more discussion on this issue is requested. More emphasis could be given to the fact that all-cause mortality should not be considered a good indicator of exposure to smoke or particulate matter compared to cardio-vascular and respiratory mortality. Given the small datasets, cardio-respiratory mortality (especially in those >65 years) may be a better indicator.

- The draft report stated that the corresponding months in 2009 were a season of similarly high temperatures to 2014, but which did not have fire. However the Black Saturday fires occurred from 7 February to 14 March 2009; the Churchill fire claimed 11 lives. It is important that this data be acknowledged in the updated report.

- The updated report could specifically refer to the summary of significant mortality difference to previous years (2009-2013) for the period Feb-March 2014; as well as the summary of significant mortality difference to previous years (2009-2013) for the period Feb-June 2014.

- The updated report could include commentary around Moe, given the air quality data that was sent in the initial data set. This data shows that Moe did not breach the NEPM standard for PM2.5 at any point, yet the PM2.5 results from other stations shows high values throughout the mine fire period. This would suggest Moe was not impacted by the smoke from the mine fire.

- The updated report should include a formal discussion section. It should also include narratives for each table to help explain these.

- For the age-standardisation process, age groups under 50 years, those between 50-64 years and 65 years and above will be calculated.

- The Executive Summary should be updated so that it could be simplified for the reader. As it stands, a number of statistical findings are provided for different time periods. It should include a narrative about what the key findings are.

- The updated report should be titled: *'Age-standardised mortality and cause of death in the Latrobe Valley at the time of (and five years prior to) the Hazelwood coalmine fire in Morwell, Victoria.'*

- The updated report should clearly explain the number (203,965) in the first report under the heading 'Cause of death categories definitions'. If this number refers to the number of deaths for the state over a certain period, it should state this.

- The updated report should also include a plain language definition of 'Age-standardised mortality' to improve clarity for the lay person.

Data has been obtained from the Registry of Births, Deaths and Marriages which include age, sex and cause of death for the above four postcodes and relevant time periods. The analysis will include the mean daily temperature and the PM10 data for the Morwell region. Where relevant and possible, the analysis undertaken should take account of confounders/effect modifiers such as age and sex, comorbidities, seasonality, geography (topography, distance from mine etc), SES, meteorological factors, such as temperature (noting the heat wave which occurred in Victoria in January 2014 and was estimated to have resulted in 167 excess deaths) and prevailing winds, and other sources of smoke or particulate matter, such as bushfires, industrial pollution, etc.

Outputs:

1. An updated report on the analysis of the expanded data set from the Registry of Births, Deaths and Marriages. This analysis is to consist of the Poisson regression results updated to include the temperature and air quality measures as specified above. It will also include the standardised mortality tables (direct method) with plain-language explanations of all tables.

Timelines:

Draft report due Tuesday 26 May.
Departmental response to draft report due Thursday 28 May.
Final report due Monday 1 June.

Client:

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