

# Chapter 18

## Discussion and future directions

### 18.1 ISSUES NOT COVERED IN SPECIFIC CHAPTERS

#### 18.1.1 INTRODUCTION

The main issues arising from each analysis are addressed in the relevant chapters.

However, some issues that do not relate to a specific Chapter, or that relate to the methods used and are not addressed in any specific chapters, are included here.

#### 18.1.2 CASE DEFINITION

As mentioned elsewhere, the case definition used was developed to be consistent with that used in the first work-related fatalities study, with some minor variations. The definition proved useful and able to be applied validly. The reliability and validity of the application of the definitions are considered in Chapters 13 to 17, but there are some specific issues that are worth emphasising, and others that could not be appropriately included in those chapters.

#### **Workers**

The most fundamental, and probably the most difficult, aspect of the definition of work-relatedness is to decide how large a contribution must be made by work before an injury or disease is considered to be related to work. All incidents that result in an injury or disease can be viewed as resulting from one or more harmful exposures. The problem lies in determining what connection to work that exposure must have for a disorder to be accepted as being work-related.

To answer this question, firstly, activities classed as work must be defined. Secondly, the required relationship of the fatal occurrence to the work activity must be determined.

In general, work is defined as any activity for which a direct (or indirect) financial benefit can be expected, and any other activity that directly supports this activity. Under this heading is included a variety of financial benefits: money, shares, other formal benefits, services, food, etc. The benefit may be delayed, or present but difficult to define, such as might occur when working in a family business. A variety of employment arrangements are also included: formal and informal agreements between parties, and ad-hoc activities like collecting and selling cans or firewood. (For this study, the definition was designed to be consistent with the ABS definition of work used for the Employed Civilian Labour Force in the Labour Force Survey – working for pay, profit or kind, in a family business or on a farm<sup>242</sup>).

There are also a number of activities that support the primary work activity that should be included, but these create some difficulty. For example, training received as part of a person's employment conditions seems appropriately regarded as work, as does training of a self-employed person to help them pursue their current career. However, a self-employed person training for a change in career is less clear, and vocational training of an unemployed person even more so. Other supportive activities such as preparing lunch to take to work and buying clothes for work seem to be beyond the scope of work activity, because they are usually activities that could be expected to occur regardless of whether the person was planning to work.

The required relationship to work is not straightforward. The basic test that should be applied is whether the exposure and associated risk could be expected to have occurred if not for the work activity. Relevant examples include business trips, work breaks and occurrences while not at work. Business trips meet the above test, but it is not clear whether all activities on a business trip (eg walking to a restaurant, or having a shower)

do so. An injury sustained while participating in a work-sponsored sports event during a lunch-break is probably rightly seen as being work-related. Being hit by a car crossing the road to get lunch seems less connected, although connections to work could be argued, and many workers' compensation systems include such occurrences or have until recently. Occurrences while not at work can still arise directly as a result of work. For example, someone might be assaulted at home by a colleague at work as a result of a work dispute, arising from issues such as pay or staff appointments. Or, an apparently minor head injury at work can cause a slowly developing blood clot, and a resulting seizure, which causes a motor vehicle crash whilst driving for non-work reasons.

There was a high level of validity/agreement in the identification of deaths that met, or did not meet, the definitions for the work-related deaths of workers. For other categories of work-relatedness, the validity/agreement was less, but still acceptable. These findings strongly suggest the definitions used, and the training of research officers, was effective.

### **Bystanders**

There were problems with bystanders who were killed in motor vehicle crashes on public roads as to whether they should be viewed as workplace bystanders or road bystanders. There are arguments both ways, and in the end it was decided to include them in both categories for the relevant analyses. This makes the description of the number and type of cases more difficult, but allows the extent of problems arising from particular circumstances to be better appreciated.

### **Medical misadventure**

Deaths arising from medical misadventure cases (E870-E876) were included in the list of deaths requested and received from the ABS. These had not been included in

WRFS 1, but arguments for their inclusion have been made<sup>22</sup>. Medical misadventure deaths pose particular problems, because their connection to the work activity of the relevant individual is often not clear. Many arise from system failures, or from occurrences that might be seen as part of the unavoidable risk of certain treatments. Therefore, whether some deaths arising from medical misadventure should be viewed in a similar way to other bystander cases arising from the work activity of others is not clear. The final approach in this study was to exclude all medical misadventure cases unless the relevant coroner implicated a clear failure of systems and/or breach of appropriate work practices in the health care setting. This resulted in only eleven bystander cases (3.4% of all bystander cases) arising from medical misadventure being included as cases. This is almost certainly an underestimate of the true number of deaths arising from these factors. In future, it might be more appropriate to exclude these cases from general studies of work-related deaths, or at least to separately identify them.

### **Suicide**

Suicide deaths were not included in the study for several reasons. These include that it is very difficult to develop a standard definition of work-related suicide that can be applied consistently by multiple coders, that incorporating suicides would have added about 10,000 to 12,000 extra coronial files to examine, and that suicides were not included in WRFS 1.

### **General issues**

The main general problems were determining the strength of evidence required for a definitive code to be applied, and allocation of a code to deaths where circumstances had elements of more than one category.

Specific circumstances that caused difficulties included:

- domestic violence;
- business trips;
- work-related social functions;
- travel on public roads for work versus commuting;
- apprentices or other workers involved in training;
- hobby farmers;
- “fringe” forms of work (such as collecting cans);
- bystanders, whether in a workplace or on public roads;
- volunteers; and
- deaths on farms of non-workers.

It is important that any study of work-related injury pay particular attention to these areas when developing case definitions. These problem areas can generally be effectively dealt with through the use of clear definitions and appropriate training of those who must apply the definitions. In addition, the reliability and validity of the application of the definitions must be monitored, and the training must be reinforced at appropriate intervals.

The comparison of codes applied by WRFS 1 and WRFS 2 research officers showed that, especially for working cases, the coding approach was very similar. This strengthens the validity of the comparisons that are made between the general results from the two studies in Chapter 6. The comparison of scenario coding with New Zealand and the United States, although not directly related to the overall Australian study, showed that each country had problems in similar areas, but that there was a high level of agreement between countries when coding the work-related deaths of workers.

This supports the need to pay attention to particular areas when conducting studies of work-related injury, and suggests that comparisons can be made between the results of studies of work-related (fatal) injury in different countries, provided that appropriate adjustments are made for the different inclusion and exclusion criteria that may exist.

Overall, the experience from this study is that:

- developing clear definitions and including appropriate training and feedback during the course of data collection can help develop and maintain a high level of coding reliability and validity;
- research officers were able to validly and consistently apply the study definitions using scenarios and full coronial files;
- there was not likely to have been an important level of variation in the application of definitions by research officers during the data collection;
- the coding of coronial deaths was similar for research officers from WRFS 1 and WRFS 2; and
- similar aspects of circumstances of fatal incidents cause problems for coders attempting to apply the definitions of work-relatedness in various situations.

### **18.1.3 DENOMINATOR**

Fatality rates are generally used as measures of risk. That is, an individual in a group with a higher rate is assumed to be more likely to sustain a fatal injury than an individual in a group with a lower rate. Rates are based on the number of deaths that occur, divided by the person-time at risk. Most rates presented in this thesis are based on information on the number of persons working in a particular sector. The denominator data used include full-time and part-time workers, but do not take into account the amount of time worked. The rates are therefore based on the implicit assumption that each person works full-time for the whole year. These rates are

therefore potentially misleading, because groups whose members only work part time or casually actually have a shorter period of exposure than persons who work full time. If the denominator took this into account, the calculated rate would be higher. This is not a major problem in most instances, since the rates are usually used for comparison to other groups, or to the same group at a different time. As long as the proportion of part-time or casual workers, and the number of hours they work, is similar between the groups being compared, these comparisons will remain valid. This appears to be the case most of the time. For example, comparison of the rates determined using hours worked rather than person employed for the main industry and occupation groups produced similar absolute and relative rankings to those determined using rates based on person employed. A similar result has been found using CFOI data in the United States<sup>29</sup>. However, the rates for specific groups with particularly high rates of part-time or casual work may be considerably underestimated. Groups more likely to be subject to this problem include young and old workers<sup>29</sup>, and seasonal workers such as fruit pickers, fishers, and forestry workers. This study primarily used denominators based on persons rather than hours worked because more detailed information was available on the basis of persons, and because the other study to be used for comparison (WRFS 1) had used persons rather than hours worked. This choice of denominator is not likely to have influenced the conclusions made on the basis of the results.

Another potential problem with the denominator data are that they do not adequately take into account persons with more than one job. The surveys used to collect the information focus on the main job held, and not on additional jobs. This has the potential to bias the results, especially if a particular type of job is commonly held, but usually as a second job, in which case the number of persons employed would be

underestimated. Although this could theoretically be the case for jobs such as security workers or some labourers, it is unlikely to be a problem to any meaningful extent.

## **18.2 INFORMATION ON WORK-RELATED FATALITIES**

The current thesis provides detailed information on work-related traumatic death and is the most up-to-date information available. Although the results were first released six years after the study period ended and almost ten years after commencement of the study period, the causes and rates of work-related traumatic death are not likely to change quickly. Therefore, the information remains useful to identify high risk groups, understand the relationships between various factors contributing to work-related traumatic death and identify potentially relevant areas for prevention work. However, it would clearly be more appropriate to use more recent data to allow closer monitoring of problem areas and approaches to prevention if such information was available.

The reasons that there are delays in producing information from a study such as this include:

- the need to wait for the relevant ABS Deaths Data List to be released;
- the files being paper based and difficult to access;
- the coronial system not having codes that can be used to screen out unwanted files;
- the coronial offices being widely spread across the country;
- the complexity of the information in the files;
- the large number of files that need to be read in order to identify the work-related deaths; and
- the time required to code the data in as much detail as reasonable in order to be able to answer a wide range of questions regarding work-related traumatic death.

Many of these problems would be overcome by the establishment of a national, computer-based system for coronal information. This would allow the information to be coded, stored and accessed more easily. The National Coroners Information System (NCIS) is currently being established by the Australian Coroners' Society. It is a computerised data storage, coding and retrieval system that is designed to allow prompt access to coronal data. Occupational health and safety is not the main reason that the NCIS is being developed. However, the information available from the system will be very important to the monitoring and prevention of work-related traumatic death at both State and Territory and national level.

The NCIS should allow most work-related traumatic deaths to be identified quickly and with little effort, and will provide some basic information on each fatal incident. Information should be available on a regular basis regarding major aspects of interest such as the number and rate of deaths, and aspects of the circumstances such as the mechanism, agencies involved, place, age, gender, role of alcohol and jurisdiction. Some coding may still be needed to allow this provision of information, but the huge resources required for a study such as the one reported here should no longer be required. The NCIS has been in operation since July 2000, but like many complex surveillance systems has had initial problems with establishing and implementing systems to ensure data quality and completeness, and in determining appropriate access rules. However, these issues are being addressed. In the medium term, the system will not provide detailed information. However, it certainly could be used to rapidly identify specific groups of files if more in-depth information on a particular area is required.

There would also be value in supplementing the data from the NCIS with information from other sources. For example, missing cases or extra information can be found through cross-checking with information from State and Territory OHS and compensation agencies, or inspectors' reports on incidents could be matched to the coronial information. In addition, press reports may prove useful in some situations.

It would therefore be appropriate for a single agency (presumably NOHSC or a group designated by NOHSC) to be responsible for reporting regularly on work-related fatal injuries in Australia, and that this agency use the NCIS as the focus of its work, supplemented by information from whatever other data sources are available and useful. These would provide a system similar to CFOI in the United States, but with a better case ascertainment and presumably better information because of the reliance on the coronial system. Similar recommendations have been made regarding work-related fatality surveillance in New Zealand<sup>316</sup>.

### **18.3 INFORMATION ON ALL INJURY**

Fortunately, most people injured at work do not die as a result. While studying work-related traumatic death can provide information that is also relevant to injuries where people are not killed, it is important to study non-fatal injury as well. The NDS remains the best source of information on non-fatal work-related injury, but there are areas that it does not cover well. So, it remains important to use and develop other data sources such as the NCIS. Other potential sources of useful information on fatal and/or non-fatal work-related injuries are hospital emergency department data systems and hospital in-patient records. Both of these areas are currently undergoing developments which may allow them to be used for OHS surveillance purposes. These changes in emergency department data systems include refinement and wider implementation of

the systems. The hospital in-patient information is now available at a national level and development of an Injury Severity Score based on International Classification of Disease coding may allow the hospital system to be used as a source of incidence data for different classes (severity types) of work-related injury.

Using these various data sources allows a mosaic of information to be built up to give the best possible picture of work-related injury in Australia. This can be used to inform the most appropriate prevention measures and lead to the best allocation of resources for both fatal and non-fatal injury.

#### **18.4 FURTHER USE OF INFORMATION FROM THIS STUDY**

The study described in this thesis has produced a wealth of information on the number, type and circumstances of work-related traumatic death in Australia. Apart from updating information provided by the first work-related fatalities study, the current study provides a breadth and depth of information that has not previously been available.

This thesis provides only an overview of much of this information, as it is not possible to report comprehensively on every aspect of interest, although some areas are considered in detail. More detailed information is provided in specific publications released in the peer-reviewed literature or through other publications. These are listed in Appendix 2.

#### **18.5 CONCLUSION**

The overall rate of work-related traumatic death decreased over the period 1982 to 1992. Some industries showed considerable improvement, but for other industries there was no change or a worsening of the rate of death. The rate of death varied widely for different workforce groups, and for some occupations the rate of death was 10, 20 or 30

times greater than the workforce average. A number of patterns were evident in the study findings, with similar groups of factors associated with many of the fatal incidents.

Most work-related deaths occur in incidents that involve only one death and these incidents occur at varying times and varying places. This makes it difficult to fully appreciate the size and scope of the problem of work-related traumatic death. The results presented here clearly identify what amounts to a major disaster, but one that is spread over time and place.

Fatal work-related trauma therefore remains an important problem for the Australian community. By understanding how and why these deaths occur, appropriate steps can be taken to prevent similar incidents recurring. It is expected that the results reported here, and other information that has arisen from the study, will make an important contribution to developing this understanding and preventing the occurrence of work-related traumatic death in Australia.